

Children's Literature: A Gateway to Sustainability

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CHILDREN'S LITERATURE: A GATEWAY TO SUSTAINABILITY

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Abstract

We are now in a time when global consumption and production levels have surpassed the Earth's sustainable carrying capacity. There have been several national and international appeals to find ways to sustain the Earth for this generation and those that follow. An essential premise of this capstone is that education can play a key role towards sustainability by embedding education for sustainability into curricula. In order to accomplish this educators require a better understanding of education for sustainability and must move beyond the narrow focus of science based environmental education. Situated in the wider discussion about sustainability it was ascertained that children's literature can act as a low barrier entry point for educators to introduce the concept of sustainability. Stories that present a positive outlook, balanced and factual information, provide appropriate steps for action and view children as capable citizens are essential elements of quality children's literature in this field. Supportive practices of classroom discussion, dialogic reading, drama and storytelling may be required to further the understanding of how ecological concerns are linked to human rights and social justice and the ways degradation of the environment affects human communities. An outcome of the project was the creation of a children's story that utilizes the strengths of both fiction and non-fiction and integrates the essential elements identified in the literature. This story can be applied to the academic disciplines of science, social studies, environmental education and education for sustainability.

Key words: sustainability, environment, education, children's literature, stories

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Dedication

I would like to dedicate this capstone in memory of Dr. John Fawcett. His high regard for education was inspiring and contagious. Without his encouragement and support I would not have begun this journey. His belief in my ability to accomplish this was a defining moment in my life. Thank you John.

Acknowledgments

Thank you to my husband for supporting me in all the little ways that make a big difference. His willingness to *take over* so I could study was appreciated more than he will know.

Thank you to my study partners, Marie Claire, Mariann, Margaret and Janaki. Your support and insight were invaluable. It was always a pleasure to be in your company and the opportunity to share challenges that only you would understand was treasured.

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Abbreviations

ARIES	The Australian Research Institute for Environment and Sustainability
B.C.	British Columbia
EE	Environmental Education
EfS	Education for Sustainability
ICUN	International Union for Conservation of Nature
IERGP	Imaginative Education Research Group Portal
UN	United Nations
UNEP	United Nations Environment Program
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization

Chapter One: Introduction

My Roots

Human progress is neither automatic nor inevitable. We are faced now with the fact that tomorrow is today. We are confronted with the fierce urgency of now. In this unfolding conundrum of life and history there is such a thing as being too late. We may cry out desperately for time to pause in her passage, but time is deaf to every plea and rushes on. Over the bleached bones and jumbled residues of numerous civilizations are written the pathetic words: Too late (King, 1968).

I began this journey in the fall of 2013 when I enrolled in an Ecoliteracy course as part of my Masters in Education. The introduction to the course was a video featuring renowned scientist Dr. Suzuki and author of *Last Child in the Woods*, Richard Louv (David Suzuki and Richard Louv at AGO - YouTube, 2012). During the video Dr. Suzuki pointed out how utterly dependant we are on the earth's resources and this statement alone had a profound impact on me. It seems strange that I have not thought in these terms before. This expanded my thinking from the 3R's, reduce, reuse and recycle to conservation and sustainability for the survival of our species. In my present position with the Greater Victoria School District I am the Coordinator for the Green Initiatives Programs which has the very narrow focus of recycling and composting. Many schools incorporate a variety of additional environmental learning opportunities but very few emphasize sustainability as an issue of concern. It has been the belief of many in our district that students brought up on the recycling/composting system in our schools will automatically become environmentally responsible youth and adults. This understanding corresponds with the oldest and most naïve model of pro-environmental behavior. This model makes the assumption

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that educating people about environmental issues will automatically result in pro-environmental behavior. It has been proven to be wrong and has been termed an inadequate model of understanding behaviour change (Kollmuss & Agyeman, 2010) (see figure 1).

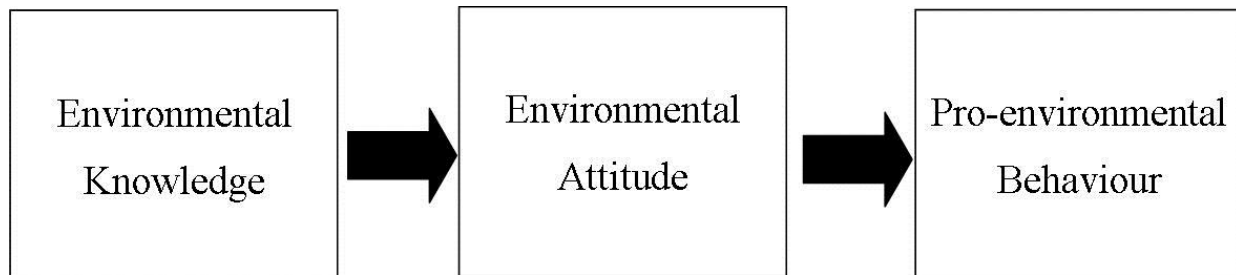


Figure 1. Early models of pro-environmental behaviour

To date, my experience corroborates with these findings. When students transition from elementary to middle school and middle to secondary and experience diminishing levels of supervision a large majority cannot be bothered with the simplest of tasks, such as putting the recycling items in the proper bins. In an attempt to encourage recycling, many schools have cut down on the number of garbage cans in the classrooms. As the number of garbage cans in the classrooms are reduced the amount of garbage in the outdoor cans increases proportionality, with items that should be recycled or composted. This indicates to me that we have not been successful in helping students create a connection to human behaviours and the state of the planet.

Sobel (1999) speaks to the importance of children's connection to our planet "if we want children to flourish, we need to give them time to connect with nature and love the Earth before we ask them to save it" (p. 1). In an effort to enhance children's connection to nature Greater Victoria School District implemented a Coastal Kindergarten Program in 2014. It is a program of choice which takes the Kindergarten program into an outdoor environment located in the Lkwungen territory beside the Salish Sea. Much of the learning take place outdoors

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complemented with indoor classroom time. A foundational component of this program is developing the underpinnings for environmental stewardship by introducing children to parks, beaches and walking trails in the local community. I commend the district for having the foresight and fortitude to develop this program as an offering, albeit to a small number of children. I believe it is vital that we instill a sense of caring and reverence for our earth in young children which has learning significance by itself, but I will argue that it is not enough to embrace the broader agenda of sustainability.

The Roots of Sustainability

The world was cautioned over twenty five years ago of the necessity to make progress toward sustainable development. In 1987 the World Commission on Environment and Development chaired by Gro Harlem Brundtland, released *Our Common Future*, also known as the *Brundtland Report*. This document highlighted the necessity of sustainability practices and defined the meaning of the term sustainable development; which is described as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1988). The overall objective of sustainable development then, is to provide global equity with, to, and for, future generations. The *United Nations Development Programme Human Development Report 2007/2008* challenges all people to reflect upon how we manage the resources of our planet Earth. It challenges us to reflect on social justice and human rights across countries and generations. It challenges politicians and wealthy nations to acknowledge their responsibility for the problem and above all, it challenges all humanity to take immediate collective action based on shared values and a shared vision (United Nations Development Programme, 2007). “No one country can win the battle against climate change

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acting alone. Collective action is not an option but an imperative” (United Nations Development Programme, 2007, p. 5).

The literature reveals that sustainability issues have been an ongoing concern for nearly three decades, arguably with limited impact. Perhaps this is due to the scope of sustainability which includes global economic crises, poverty and disparity, climate change and environmental degradation (Pavlova, 2013). Therefore upholding the planet involves sustaining social, environmental and economic systems. Pramling Samuelsson (2011) states that the issues facing this generation require a dramatic shift towards sustainability in economic, social and environmental systems. Continuous improvements are essential to ensure a quality life for present and future generations in ways that regard humanity's common legacy and the planet on which we live (UNESCO, 2005).

Shallow Roots

Although the *Bruntland Report* brought sustainability issues to the forefront almost thirty years ago the development of education for sustainability (EfS) practices with young children from infant to eight years is presently an evolving area in scholarly and professional literature as well as practical application. The addition of social and economic issues is a divergence from most environmental education (EE) models, which historically have been firmly linked to the field of science (Pavlova, 2013). Sustainability education differs significantly from the non-political, naturalist and scientific focus that was considered EE two decades ago (Tilbury, 1995). Until recently EE has imparted knowledge about the environment and biodiversity as well as the web of connections between people and nature. The focus has now evolved to a perspective highlighting sustainable development (Siraj-Blatchford, Smith, & Samuelsson, 2005).

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There is a growing body of literature pointing to the significant impact sustainability education can have when implemented with children in early learning contexts (Pramling Samuelsson, 2011; Davis, 2009; Deans & Brown, 2008). Siraj-Blatchford (2014) suggests that early education can play a key role in realizing sustainable development. But if we are to join forces in creating a more sustainable future educators must go beyond the narrow focus on the natural environment and incorporate a more holistic approach. Davis (2010) challenges pre-school and primary schools to re-evaluate their environmental education approach and expand to include the economic and social dimensions of sustainability. To attain this we need well educated teachers, willing to make informed decisions and direct their pedagogical activities to align with the goals of EfS. A study conducted by Bonnett & Williams (1998) indicates that there is a need for improvements within teacher education programs incorporating issues linked to EfS and to the value of children's influence and participation. Teachers working with EfS need to build their curriculum based on children's authentic participation. It is also essential that the teachers have an inquiring and humble attitude towards their pedagogy in the everyday life of the classroom (Bonnett & Williams, 1998).

Deepening the Roots

As the narrow field of science based environmental education gradually shifts into the more holistic field of EfS the challenge for early educators is to begin introducing sustainability concepts into current curricula (González Gaudiano, 2007). Children's stories may be an effective instructional strategy to deepen the knowledge and understanding of sustainability for students as well as educators. As literature-related activities span all areas of the curriculum they can easily be incorporated into existing program content. Books and stories can serve as a valid tool for encouraging behaviour changes such as environmental stewardship (McCall & Ford,

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1998). Bigger & Webb (2010) posit that stories have the potential to empower students, foster a positive attitude and personal agency in regards to environmental issues as well as provide an avenue to nurture thought and understanding about the environment. The need for EfS will intensify as environmental concerns play a more prominent role in the day-to-day lives of individuals. Children's stories can support teachers to engage their students in this multifaceted and difficult issue (Spearman & Eckhoff, 2012). Hug (2010) argues that teachers who see themselves as lacking EfS knowledge, are likely to avoid teaching it. Stories can act as a low barrier entry point to begin addressing their concerns of content knowledge. As young children have receptive minds, storybooks can greatly influence a child's perspective. ... "as children listen to stories, as they take down books from library shelves, they may...be choosing their future and the values that dominate it (Saxby, 1987, p. 5).

Central Research Questions

The research questions guiding this project were established as a response to concerns about the current state of the world and the recognition of the importance of early education to address these concerns. They are also underpinned by my professional observations regarding the lack of impact current practices have had on student behaviour. The questions are:

1. How does education for sustainability differ from environmental education?
2. How is the current education system responding to the urgent calls to implement education for sustainability?
3. Can children's literature function as a low barrier entry point for educators to introduce education for sustainability?

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Chapter Summary

Chapter one has highlighted the rationale for this capstone project and responds to calls made by various international and national reports that all sectors of humanity participate in meeting the challenges of sustainability. The view that education for sustainability needs to begin in early childhood was discussed, where it was argued that science based environmental education must transition to the broader agenda of sustainability. The need for teacher training to advance the field of education for sustainability was established. Children's stories were identified as a non-threatening and familiar strategy to increase teacher's willingness to engage in EfS. The direction was informed as a response to the slow but steady growth of the field of early education for sustainability and a need for more practical work on the teaching and learning of EfS (Hedefalk, Almqvist, & Östman, 2014). From this, the research questions were developed. I feel strongly that sustainability is of such significance that education, beginning in early childhood, must embed education for sustainability into its practices if we do not want our time here on Earth to be finite.

In the second chapter of this Capstone project, I endeavour to explore the research questions by reviewing research related to education for sustainability and children's literature as a gateway to EfS. I will research how education is responding to the call to implement education for sustainability and the role quality children's literature may play in advancing the implementation and integration of education for sustainability in pre-school and primary education settings.

In chapter three I introduce a hybrid fiction and non-fiction children's book that I have authored. I will present the rationale for the elements I have included in the story and provide guiding questions that will provoke educators to go beyond the science focused environmental dimension that currently exist in the curriculum. I examine the B.C. Ministry of Education draft

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science and social studies curriculum and discuss the existing opportunities to include education for sustainability. Lastly, I provide a list of additional children's stories on sustainability that I have discovered in my journey. These stories will serve as a useful resource for educators when introducing the topic of sustainability to their students. I believe the combination of my children's book with, provoking questions, curricular connections and list of additional stories will provide a practical starting point to enable an educator to launch the topic of sustainability with a level of familiarity and confidence.

Finally, in chapter four I reflect on aspects of my professional understandings and positions that have expanded as a result of my learning journey over the two years in the graduate program.

Chapter Two: Literature Review

Why Sustainability

Increasing world population combined with rapidly expanding consumption, are causing a substantial stress on the earth's finite resources and affecting its ability to sustain humanity's quality of life. David Suzuki a well-known Canadian scientist, writer and broadcaster has warned us of this since the 1980's.

Human use of fossil fuels is altering the chemistry of the atmosphere; oceans are polluted and depleted of fish; 80 per cent of Earth's forests are heavily impacted or gone yet their destruction continues. An estimated 50,000 species are driven to extinction each year. We dump millions of tonnes of chemicals, most untested for their biological effects, and many highly toxic, into air, water and soil. We have created an ecological holocaust. Our very health and survival are at stake, yet we act as if we have plenty of time to respond (as cited in Tucker, 2012).

The task for this generation and those yet to come, is to prevent or ease the adverse consequences that accompany this growth while allowing for constant development in human health protection, environmental conditions and our general quality of life (Curran, 2009).

Sustainability as a course of action has its beginning in the *Brundtland Report* of 1987. The report spoke to the discord between the ambitions of humanity for a better life and the finite resources imposed by nature (Brundtland, 1988). In 1992 at the United Nations Conference on Environment and Development (known as the Rio Earth Summit), it was agreed that that sustainability should draw from the perspectives of economic, social, and environmental dimensions (less commonly referred to as profit, people, and planet) (Curran, 2009). The connection between these three domains is known as the "three pillars of sustainability" (Curran,

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2009, p. 7). The interconnectedness of the economic, social and environmental dimensions is the goal of sustainability. It is commonly portrayed as the intersection of three intertwined circles (see figure 2).

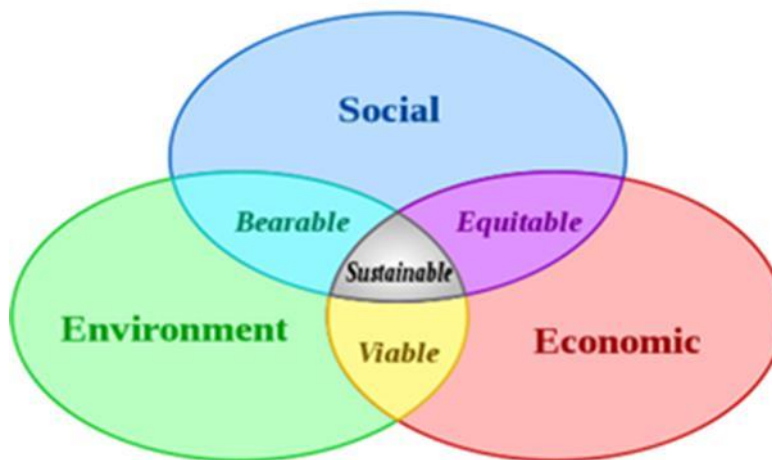


Figure 2. Three pillars of sustainability

While all of the pillars have the same standing it is important to note that without a life sustaining environment, the other two pillars would cease to exist. It is key to recognise that sustainable developments are supported by these three pillars working as a unit, and any strategies and policies developed must take all three domains into account. From this perspective the most effective environmental, economic or social strategy may not be the most sustainable. The choices that we make in any one pillar need to be weighed against the remaining two. An example of this would be water shortage in developing countries. The most environmentally safe, high-tech water treatment plant would not be practical as it requires costly or highly skilled regular maintenance. In this instance a more suitable technology capable of being supplied without long delays and maintained by the local community would be the most sustainable option

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(Siraj-Blatchford et al., 2005). Although the three pillars are interrelated it is beneficial to understand them as they exist independently.

Social Pillar

Social sustainability addresses human rights issues and promotes people living together in culturally respectful ways (UNESCO, 2005). The social dimension advocates for a democratic government, reduction in disparity, preventing crisis and appropriate recovery, environment, energy and HIV/AIDS in an effort to achieve global sustainability (UNDP, 2007). Fien (2004) describes social sustainability in terms of “systems which provide ways for people to live together peacefully, equitably and with respect for human rights and dignity” (p. 185). Sustainable societies are therefore regarded as fair and inclusive societies, which are defined by participation, emancipation, freedom, security and solidarity (Siraj-Blatchford et al., 2005). They also suggest that to achieve social sustainability, equality and justice are required, combined with an attitude of compassion and respect amongst individuals and groups and between generations within and beyond national borders. The main objective of social sustainability is to promote participation and dialogue, neutralize inequality and secure peace. It is widely understood that social development and social justice cannot be achieved without peace and security or respect for human rights and basic freedoms (Siraj-Blatchford et al., 2005).

Economic Pillar

Economic sustainability is concerned with people's livelihood such as jobs and adequate income (UNESCO, 2005). The issues include the threat of a global financial crisis, substantial unemployment challenges and potential economic defaults by some countries (United Nations Department of Economic & Social Affairs, 2009). “Exploitation of people and resources around the world has allowed people in developed nations to enjoy a standard of living that is not

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sustainable. We simply consume too much. And people who have scarcely enough to survive are less likely to worry about large scale-environmental problems” (Hanington & Suzuki, 2012, p. 3).

What is yet to be achieved is a sustainable economic model that ensures just and efficient allocation and distribution of resources balanced with the maintenance of a healthy ecosystem (Siraj-Blatchford et al., 2005).

Environmental Pillar

Environmental sustainability identifies the importance of a healthy, balanced natural environment in order to sustain all human and non-human life; this includes water, soil, air and food (UNESCO, 2005). The main concern of this pillar is to preserve natural systems to ensure that all life is protected in a manner that allows future generations to enjoy a quality of life (Fien, 2004). In order to ensure sustainability, UNESCO (2005) states that humans must learn how to foresee a sustainable future and the consequences of our actions, and generate the steps needed to achieve this vision. This pillar supports initiatives such as renewable energy, reducing fossil fuel consumption and emissions, organic farming, tree planting and reducing deforestation, sustainable agriculture and fishing, recycling, and improved waste management.

Rising to the Challenge?

One might expect that there would be encouraging international responses and actions concerning sustainability. However humanity's problems caused by unsustainable patterns of living are increasing. United Nations Education Programme (UNEP) (2011) *Keeping Track of Our Changing Environment* publication reports that there has been negligible progress on environmental issues. This publication further reports that: carbon emissions continue to rise; the global mean temperature has increased by 0.4 degrees Celsius between 1992 and 2010; oceans are warming and becoming more acidic; the sea level continues to rise; forest areas have decreased

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by 300 million hectares since 1990; renewable energy currently accounts for only 13% of global energy supply; biodiversity in the tropics has declined by 30%; human losses and economic damage from natural disasters show an upward trend, and the number of natural disasters is increasing. In summary, UNEP (2011) states that:

Maintaining a healthy environment remains one of the greatest global challenges. Without concerted and rapid collective action to curb and decouple resource depletion and the generation of pollution from economic growth, human activities may destroy the very environment that supports economies and sustains life (p. iv).

Concerns about the condition of the planet have been acknowledged through several agreements and reports in which international collaboration has been strongly encouraged. These include the *Kyoto Protocol*, December, 2007; *The Garnaut Climate Change Review* (2008) which echoed the considerable consequences of unsustainability and urged judicious attention; and the *Stern Report* (2008) in the United Kingdom which also highlighted the importance of swift and clear international action. More recently the *Framework Convention on Climate Change* (United Nations) was held in Copenhagen in December 2009. This international meeting resulted in the *Copenhagen Accord* which recognises climate change as one of humanity's most pressing challenges. However, this meeting did not result in a legal international agreement. Examining progress close to home, Canada's action on climate change under the *Copenhagen Accord* remains well short of meeting its international 2020 climate change prediction as reported by Environment Canada. The 2014 Emissions Trends Report states that Canada that will fail to cut greenhouse gases 17 per cent below 2005 levels by 2020, as they committed to achieving. The report, suggests that under its benchmark projection, Canada will get just over halfway to its international commitment (Government of Canada, 2014).

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Where to from Here?

An idle attitude towards the health of the planet is no longer an option for humanity and society must respond. At a Rio+20 (UN Convention on Sustainable Development, Rio De Janeiro, 2012) side event UNESCO (2012) reported that:

Moving towards sustainable development cannot be achieved by political agreements, financial incentives or technological solutions alone. To safeguard the natural environment and promote greater global equity, we need a fundamental change in the way we think and act. This can only be achieved if all individuals and societies are equipped and empowered by knowledge, skills and values as well as heightened awareness to drive such change (p. 1).

World leaders and policy-makers play a critical role in addressing sustainability issues, however if we are to achieve sustainable futures sustainable practices must become entrenched as a way of life for all citizens. This is not an easy task. For the last three decades psychologists and sociologists have sought the answer to the questions: "Why do people act environmentally and what are the barriers to pro- environmental behavior?" (Kollmuss & Agyeman, 2010, p. 240). Although hundreds of studies have been carried out, no conclusive answers have been confirmed. Kollmuss & Agyeman (2010) reviewed the many theoretical frameworks that have been developed to explain the discrepancy between knowledge and awareness and engagement in pro-environmental behavior. From this they developed a framework that incorporates the numerous factors that dictate our everyday decisions and actions (see figure 3). The model that they propose is the blending of knowledge, values, and attitudes concerning the environment with emotional involvement rooted in personal values surrounded by personality traits and other internal and external factors. The scope of this paper does not allow for an in depth examination of this

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complex model. However following is a brief discussion of the numerous factors considered in the framework.

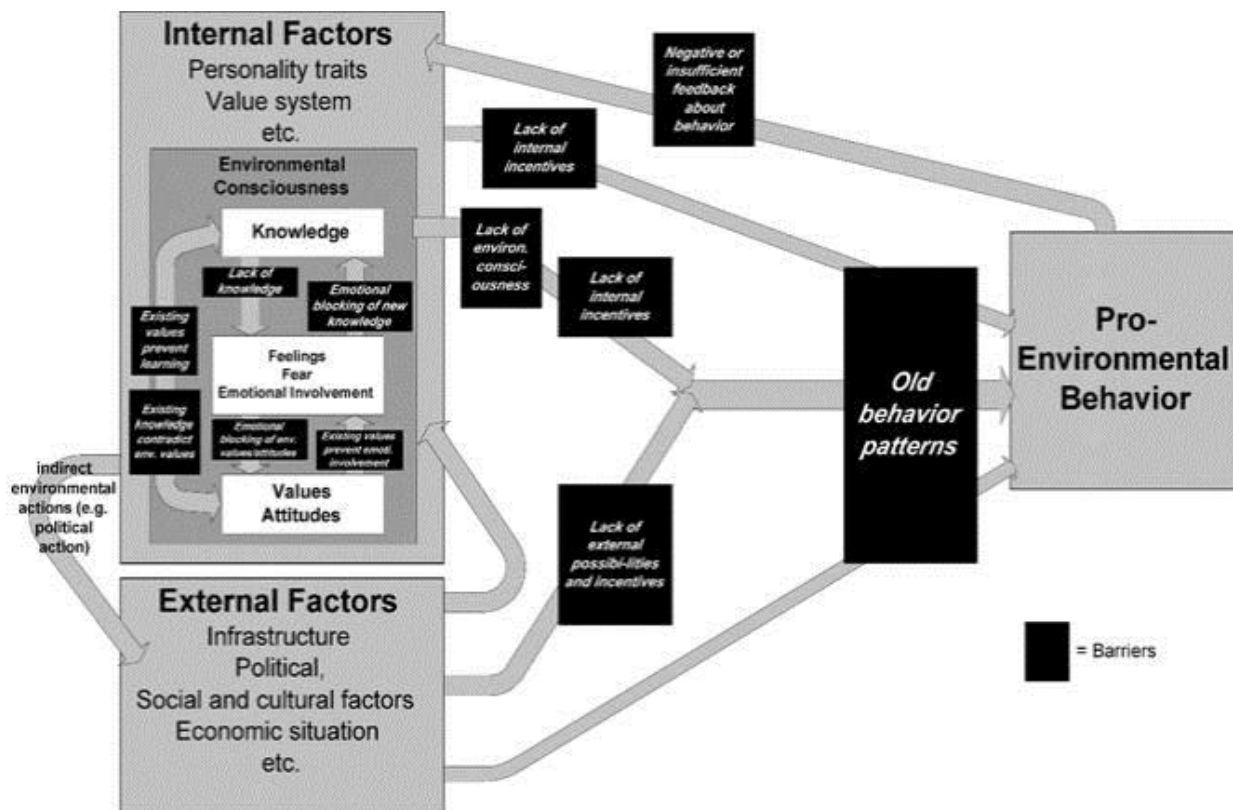


Figure 3. Model of pro-environmental behaviour (Kollmuss & Agyeman, 2010).

Gender - it has been found that women tend to be more emotionally involved; demonstrate more concern over environmental degradation; and are more open to making the changes that are necessary (Kollmuss & Agyeman, 2010).

Institutional factors - the necessary infrastructures must be provided before many pro-environmental behaviors can be implemented. The less convenient the services are the less likely people are to use them (Kollmuss & Agyeman, 2010).

Economics - people's economic choices are very complex and not fully understood. However, it has been proven that economic incentives can persuade people to adopt pro-environmental behaviours (Kollmuss & Agyeman, 2010).

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Culture - the norms that surround a culture play a key role in governing people's behavior. As an example Kollmuss & Agyeman (2010) hypothesize that cultures in small, but densely populated areas such as Switzerland tend to be more responsible about the use of resources than societies in large and resource-rich areas such as North America.

Motivation - motivation can be described as the general desire or willingness of someone to do something. Kollmuss & Agyeman (2010) hypothesize that motives such as altruism and generosity are often superseded by more individualistic motives which involve one's own needs such as being comfortable or saving time or money.

Environmental knowledge and awareness - most researchers agree that only a small fraction of pro-environmental behaviour is related to this factor. This argument is supported by a study done by Kempton, Boster and Hartley (1995). They surveyed individuals who were ardent environmentalists as well as those that identified as strong anti-environmentalists. The average knowledge about environmental issues in both groups was low. This indicates that adequate environmental knowledge is not a requirement for pro-environmental behavior.

Values - values inform much of our intrinsic motivation. The question of what shapes our values is a complex one. Fuhrer, Kaiser, Seiler and Maggi (1995) proposed that a person's strongest influence on values comes from the immediate surroundings such as family, neighbours, peer-groups, then by the media and political organizations and lastly the cultural context in which the individual lives.

Experiences - Chawla (1998) interviewed several professional environmentalists about the experiences and people who influenced their decision to enter into the field. She revealed that there is a combination of factors that inform people's choices. However the most frequently mentioned factor was childhood experiences in nature. This demonstrates the importance of

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fostering an emotional connection to the natural environment when nurturing pro- environmental behaviours.

Attitude - attitude is defined as the persistent orientation of the mind, positive or negative, in relation to a person, object or issue (Newhouse, 1991). As most environmental destruction is not immediately observable we do not become emotionally engaged. This disengagement often leads to non-involvement (Kollmuss & Agyeman, 2010).

Emotions - Kollmuss & Agyeman (2010) hypothesize that the feelings of sadness, fear, pain, and anger are more apt to generate pro-environmental behaviors than guilt. When we are exposed to environmental degradation the main emotional reactions we experience disturb us. In an attempt to relieve us of the negative feelings we defer to secondary emotions such as denial, rational distancing, apathy and delegation. These secondary responses do not evoke pro-environmental behavior.

Responsibility and priorities - we prioritize our responsibilities, and a person's own well-being and the well-being of their family is commonly at the top of the list. Motivation increases when pro-environmental behaviors align with our personal priorities (Stern, Dietz, & Karloff, 1993).

As it can be determined by this extensive list of factors, engaging humanity in pro-environmental behaviour is a gargantuan task. If we are to have any hope of succeeding we must begin in early childhood. Early childhood is generally viewed as the period when the greatest and most salient development occurs, and the base on which the remainder of life is formed (Government of Australia, 2005; OECD, 2006). Given its significance early childhood is the rational and clear starting point for education for sustainability (The Centre for Environment & Sustainability, 2009). We must take advantage of the early years when children are both open and willing to learn. Teachers must not miss this chance to wield a positive influence on children with the goal

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of creating a better world for all (Pramling Samuelsson, 2011). In addition to the importance of starting early we also have a moral obligation to children. The United Nations Convention on the Rights of the Child states that young children should be acknowledged as participating members of families, communities and societies, with their own concerns, interests and opinions (United Nations, 2006). Pramling Samuelsson and Katz (2008) state that a sustainable society is where all children's rights to adequate care, protection, learning and development are recognized respected and satisfied. Sustainability advocates for a safe, secure and healthy future for every child and providing children control over their own futures is a basic human right. Stuhmcke (2012) posits that the consequences of unsustainable living will be most severe for children who are left with the aftermath of previous generations. Foreboding this, children need to learn how to contribute to present improvements as well as be prepared to face the challenges of the future. If current patterns of living unsustainably are not curtailed, it is the children who are the most at risk as they will be around longer to endure the compound effects of present unsustainable patterns of living (Stuhmcke, 2012). The education sector can potentially make significant contributions to sustainability (Davis, 2007). The next section will examine whether or not the education system is living up to its potential in the area of education for sustainability.

Environmental Education vs Education for Sustainability

While environmental education has had a place in our education system for many years, the focus has now evolved to a perspective highlighting sustainable development (Siraj-Blatchford et al., 2005). This enhanced perspective has an increased emphasis on preparing the younger generation to take responsibility for making knowledgeable decisions towards a sustainable future by taking into account what is best in the long term. This involves children learning about what has transpired but more prominently, learning what can be done for the future

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(Siraj-Blatchford et al., 2005). The inclusion of the social and economic dimensions in EfS is a departure from most current EE models, which traditionally has had connections to the natural environment based in science (Pavlova, 2013). Although EE with its main focus on environmental topics and issues remains valuable, it is not adequate to address the broad range of factors concerned with living sustainably. Knowing and understanding environmental issues is no longer sufficient as endorsed by UNESCO's (2002) description of sustainable development as cultivating the mindset of thinking about *forever*. EE can be considered a subfield of EfS (Pavlova, 2013). Both can be viewed as legitimate and necessary with the following in common: an expectation of lifelong learning including both non-formal and conventional education and use of pedagogies that encourage hands-on learning while developing higher order thinking skills (Pavlova, 2013). They also have a shared vision of quality education and a society that lives within the Earth's finite capacity. However, where they diverge is how they see the vision realized. EE views environment at the centre of concerns and external to the person, with a focus on curriculum and learning. EfS views humans at the heart of concerns and environment as an extension of the person (Pavlova, 2013). The goal is to create a new ideal for society through education, curriculum and learning.

Sustainability Education Defined

There are two definitions of education for sustainability identified in the literature. Several researchers refer to EfS in terms of education *about*, *in* and *for* the environment (Davis, 2009; Deans & Brown, 2008). Education *about* the environment emphasizes knowledge about how ecological systems function. Education *in* the environment highlights outdoor experiences in nature. Education *for* the environment emphasizes engaged participation in environmental concerns and making sustainable adaptations. This approach should be seen as a whole in order

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for children to take effective action for the environment. The second definition of EfS includes the environment but expands to include the economic and social pillars of sustainability. Both definitions share the goal of inspiring children to take actions towards sustainable development. However what separates them is that the first definition, education *about, in and for* the environment focuses exclusively on the environment. For example, education may include the problem of air pollution and the negative effect on the environment. Children learn why pollution is damaging, and they might also learn how to change their behaviour to minimize the pollution. EfS in this view is based on scientific facts. In other words the right way to behave is grounded in science (Deans & Brown, 2008). The definition of EfS with the inclusion of economic and social issues has a broader aim, and recognizes that sustainability is related to society and to human actions. For example, the connection between childhood obesity and consumer choices is having an effect on the health of children in Australia. EfS can support the unraveling of this problem by helping children link their participation in digital media affects with the consumption of high calorie and nutritionally poor foods. Explained in this way, EfS enables children to make connections between food choices, obesity, environmental sustainability and the use of digital technologies (Cutter- McKenzie, Edwards, Huang, O'Conner, Rutherford, Skouteris, 2010). Bonnett & Williams (1998) argue that essential to EE is not the understanding of scientific facts, but the hypothetically more difficult and complex task of helping children to develop an understanding of the values that dictate daily choices.

Beyond Science

It cannot be assumed that the practice of providing children with knowledge *about* the environment will result in a pro-environmental attitude (Hedefalk et al., 2014). Lex (2005) states that when deciding on a solution to a problem, the choices are processed through the values and

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beliefs held by the student. Students with a strong set of pro-environmental values are more likely to make decisions that support the environment. This implies that environmental values must play a part in EE and EfS. The results of the study by Lex (2005) are supported by research from Bell and Lederman (2003) which validates the supposition that people often use values rather than knowledge when making decisions. Bonnet & Williams (1998) state that values education addresses a key issue for environmental education: to what level should teachers intervene in the development of a child's attitude? Should education make a conscious attempt to influence children towards a specific set of principal values and behaviour, if yes, how are they determined, how are they justified and what do they imply for the curriculum as a whole? These questions would require further investigation prior to implementing values education. However, Fien (1997) believes that educators should indeed teach students an ethic of care. He states that teachers should adopt a "committed stance in teaching young people an ethic of care so that they may participate in the personal and social changes needed to advance the transition towards a healthy and sustainable world" (p. 438). Bell and Lederman (2003) believe that values education needs to be incorporated into the curriculum if we hope to realize the goals of environmental education. Bonnett (2002) argues that sustainability asks more of us than just being amiable to nature; it is not simply the issue of our attitude towards the environment. It is a frame of mind that operates from a position of concern about human behaviours and the beliefs and the values that guide the behaviours. This frame of mind focuses on our daily practices and our general *modus operandi*. It requires a review of our motives and values from the perspective of what is mutually sustaining. It implies that actions may be required that involve a fundamental shift from existing practices (Bonnett, 2002). If the aim is to equip students with the ability to tackle the source of environmental problems rather than the symptoms, we must be willing to engage them in enquiry

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that guides them to explore motives which are integral to our most basic ways of viewing ourselves and the world (Bonnett, 1999). This has to be the depth at which any authentic transformation of awareness occurs (Bonnett & Williams, 1998). The challenges of sustainability have led to growing interest in transformative learning as a pedagogic approach that delivers the depth of learning appropriate to gravity of the change that many argue is necessary (Blake, Sterling, & Goodson, 2013).

Is Education Rising to the Challenge?

The rhetoric for sustainability education is robust. There is a substantial body of literature and a number of international agreements that have been written sanctioning education as a strong force to prepare children for a sustainable future. *Agenda 21* was the first international document that identified education as an essential tool for achieving sustainable development (United Nations, 1993). *Gothenburg Recommendations on Education for Sustainable Development* (2008) called on governments, civil society and in particular educators to prioritise processes that develop and strengthen education for sustainable development” (p. 1). When UN declared 2004-2014 as the *Decade of Education for Sustainable Education*, this underscored the idea of education as the main vehicle for realising global sustainability. According to the declaration, there was mutual agreement that education was a driving force for the change required (UNESCO 2005). The document highlighted strategies to enhance capacity building such as promoting basic education, revamping education programs and raising public understanding and awareness. It also brought to the forefront the importance of providing practical training for educators with the goal of embedding EfS across all sectors of education (UNESCO, 2005). Education has clearly been summoned to participate in the task of *saving the world*. In 1990, UNESCO pronounced the development of teachers who are sustainability-literate as the highest of priorities (UNESCO-

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UNEP, 1990). International support for educator training to teach environmental education began at the 1971 European IUCN conference (Tilbury, 1992), when its importance was first emphasized publicly. Four years later, the *Belgrade Charter* (UNESCO-UNEP, 1976) and following that the *Tbilisi Declaration* (UNESCO-UNEP, 1978) recommended that environmental education be mandatory in all teacher education. Despite the clear recommendations, Buchanan (2013) states that leadership on this issue has been minimal at best. In the United States and Australia the political leaders have withdrawn from previous comments on responses to climate change while public demand for governments to resolve environmental problems has not corresponded with individual efforts (Buchanan, 2013). Educating for sustainability requires students to move beyond facts as the main method of knowledge and struggle with real-world problems through explorations that engage multiple ways of understanding (Bigger & Webb, 2010). Unfortunately research indicates that our current education system may be doing the opposite (Redman, 2013). Stevenson (2007) offers the historical perspective of why this might be the case. Present day schools evolved in the early nineteenth century as institutions for collective education with the purpose of transferring fundamental knowledge and skills of reading, writing and arithmetic. They were also tasked with conveying a basic understanding of the student's role in society or in other words, maintaining existing social conditions and relations (Schrag, 1988). Traditionally then, schools were not meant to encourage social change or reconstruction through the implementation of critical thinking, social inquiry or problem solving (Stevenson, 2007). One of the main purposes of EfS is that of transforming our current values which aids and assists environmental and human ruin to those that support a sustainable planet in which all people live with equality (Tanner, 1974). This runs counter with the historical purpose of schools of maintaining the existing social order by perpetuating the norms and values that currently dictate

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environmental decision making. Redman (2013) offers a similar explanation. She states that traditional approaches to learning and assessment promote individual success and simplify complex issues all at the expense of society's progress. The practice of asking students to learn through planned information presented by their teachers is still standard, even though the literature indicates that the outcome of didactic, teacher-centered education is diminished cognitive results (Duerden & Witt, 2010). School systems and assessment regimes tend to be consumed with basic skills testing which engender a culture of *right* answers. All of this, serves as a distraction or barrier to an earnest, sustained confrontation of environmental issues by the students that we educate (Redman, 2013). Orr (2004) argues that education needs to integrate experience into the curriculum. An emphasis on experiences is supported by current research on how humans develop pro-environmental beliefs and behaviors. As mentioned earlier Chawla (1998) demonstrated the seminal role children's experience in nature played in the development of pro-environmental behaviour. Dewey (2007) whose ideas have been influential in educational reform highlights the importance of the connection between schooling and *real* life in educative experiences. According to Dewey (2007) continuity and interaction are the conditions required for an educative experience. If experiences are insulated, or do not connect in a meaningful way with everyday social life, he argues that they are not educational. Present experiences must also relate to future experiences, they must send us on a course of advancement. As (Dewey, 2007) offers, "every experience is a moving force. Its value can be judged only on the ground of what it moves toward and into" (p. 38). Moroye & Ingman (2013) believe that it is through the lens of Dewey's quality educative experiences that we are better situated to realize the aspirations of EfS. Current EfS practices may be lacking in educative experiences when they do not connect to everyday social life, support future growth, or value the process of the student. When we examine

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the aims of EfS, to encourage sustainable values and actions, it makes sense that we orchestrate experiences that students' can connect to their daily lives. As Dewey (2007) states, "the trouble is not the absence of experiences, but their defective and wrong character—wrong and defective from the standpoint of connection with further experience" (p. 27).

Curricular Connections and Gaps

Core Competencies. Sustainability education requires students to be competent in the skills of inquiry and research; critical and creative thinking; collaboration; communication; literacy and reflection. It also requires qualities such as resolution and persistence (Tilbury & Wortman, 2004). The new B.C. Ministry of Education 2013 draft curriculum appears to be moving in the right direction in regards to the core competencies they propose. The updated version aligns more succinctly with the abilities required for EfS. The curriculum identifies three core competencies that all students need to cultivate in order to engage in meaningful and life-long learning. The first is *communication* which includes the ability to convey and share information, experiences and ideas, to explore and discover the world, and to understand and successfully utilize digital media. The second is *thinking* which encompasses the knowledge, skills and practices equated with academic development. This also includes critical and creative thinking. The last competency is *personal and social*. This is described as how a student views their individual identity in the world, as well as members of their community and society. Personal and social competency encompasses the abilities students need to flourish as individuals, to understand themselves and develop personal and social empathy, and to discover and reach their aspirations in life (B.C. Ministry of Education, 2015).

Big Ideas. Currently the term sustainability is predominantly associated with recommended behaviours for individuals and facilities operations such as recycling, composting

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or energy conservation. Although this is a step in the right direction, it limits the potential to integrate sustainability across the curriculum (Sherman, 2008). It is difficult to see how a prescriptive list of practices can be assimilated into the variety of academic disciplines. Sherman (2008) argues that if sustainability is to realize its possibilities in education it must move beyond a list of behaviours or dedicated areas of study and become a pedagogical big idea. Big ideas are the concepts that are core to a course of study. They are the keystones that connect a collection of knowledge in a meaningful manner. Big ideas are the concepts that teachers hope students will remember and be able to apply in diverse situations long after they have forgotten the factual information. Sustainability as a big idea would not only transform behaviours and operational procedures, but also transform how we think (Sherman, 2008). As the new B.C. Ministry of Education 2013 draft curriculum stands presently the environment nor sustainability have been identified as big ideas. This will be discussed further in chapter three.

Critics and Barriers

It is important to recognize that EfS is not without its critics. Jickling (1992) examines the phrase in the *Brundtland Report* (1988, p. 46) “How are individuals in the real world to be persuaded or made to act in the common interest? The answer lies partly in education, institutional development, and law enforcement”. Jickling (1992) argues that this statement proposes that sustainable development is in the mutual interest of society and they must be convinced, or forced to participate in this goal. It also makes the assumption that education should contribute to the process of conversion by promoting a pre-conceived outcome such as sustainable development. Even more poignant is the notion that the work of education is to demand people behave in a particular way. The sanction of a specific outlook is offensive to the advancement of independent thinking (Jickling, 1992). Education *for* sustainable development

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suggests a prescriptive approach to thinking in which the student is required to follow. The very idea conflicts with the principles of education (Jickling, 1992). He also posits that teaching students *about* this concept is a different matter. Students should be aware of the arguments which support EfS and those that criticize. Armed with opposing perspectives they should be able to participate intelligently in a debate if they feel the need. In this interpretation, the job is not to educate *for* sustainable development but rather educate students to debate, assess, and decide for themselves the benefits of the opposing positions. The latter approach is about education; the former is not.

If education for sustainability is to improve there are several barriers to overcome in order to mitigate the complex challenges humans behaviours have created on the planet (Ryan, Tilbury, Corcoran, Abe, & Nomura, 2006). Kollmuss & Agyeman (2010) state that there are number of factors that must be in place in order for educators to take action on EfS. They must understand the issues and its root causes and be familiar with strategies for action. They must have a strong internal locus of control and individual sense of responsibility, and finally they must communicate a verbal commitment to take action. Borg, Gericke, Höglund and Bergman (2012) argue that many teachers feel ill-prepared and limited in their ability to teach complex and controversial issues due to: (1) lack of knowledge; (2) lack of understanding of the goals; (3) teachers' personalities; (5) the dominant school climate regarding the use of certain teaching methods; and (6) lack of support from of the head of the school. Numerous teachers, worldwide, report wanting to improve their teaching interdisciplinary, but they feel they do not have the time because they need to keep up with the curricula (Borg et al., 2012). Although these are all valid barriers the preceding section will discuss the lack of knowledge and understanding as particularly problematic to the implementation of EfS.

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What are Educator's Understandings and Practices of Education for Sustainability?

Environmental education researchers believe if teachers receive dedicated environmental and sustainability training that begins in pre-service they could play a vital role in creating capacity for EfS in the education system (Ferreira, Ryan, & Tilbury, 2006). The aim of this training would be to develop the necessary understandings, abilities and pedagogies to implement EfS across the curriculum (Ferreira et al., 2009). The entrenching of sustainability issues is contingent on the support of the majority of educators as their thinking, values and practices are vital in the delivery of sustainability education (Buchanan, 2013). Evans, Whitehouse & Hickey (2012) state that a teacher's personal position or outlook towards an area of study is critical. Education is not free of external influences, teachers have beliefs and views that interrelate and impact their practice. These beliefs have more impact than knowledge, in establishing teaching tasks and organising pertinent knowledge and information (Evans et al., 2012). Therefore classroom content and pedagogy is effected by what teachers know, think and believe (Stipek, Givvin, Salmon, & MacGyvers, 2001; Nespor, 1987). Educators are more likely to teach material they are knowledgeable about and interested in (Nespor, 1987). A teacher's competence and understanding of sustainability is a key factor for fostering children's competence in EfS. Children can only be as competent as the surroundings allow. EfS will not happen by itself, there has to be teachers who are trained, knowledgeable and willing to make the commitment to teach children about the essential elements of EfS (Pramling Samuelsson, 2011). Many teachers report that they are amiable to environmental/sustainability education, but they do not receive the level of support they need to acquire the knowledge and skills necessary (Evans et al., 2012). This could be resolved by including sustainability education in pre-service teacher education. Ferreira et al. (2006) argue that by doing so, new teachers will proceed with the capacity to embed

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sustainability education into their daily practice and eventually enable mainstream implementation in schools. However, at this present time very few educational institutions include this topic in pre-service teacher education courses (Miles, Harrison, & Cutter-Mackenzie, 2006). As a result, the majority of teachers graduate lacking the understanding, capacity and conviction to implement EfS (Miles et al., 2006). In spite of the absence of training Summers, Childs and Corney (2005) found that the understanding of sustainable development was more sophisticated in pre-service teachers than their supervisors. This holds the potential for new educators to increase the capacity to focus on these issues. However it is acknowledged that novice teachers do not wield much power in regards to swaying the policy and practices of their schools (Buchanan, 2013). In contrast to this, research by (Evans et al., 2012) found that the majority of pre-service teachers demonstrated a limited understanding of EfS. The study categorized the levels of sustainability knowledge of pre-service teachers from one to four, one being the most naïve. Pre-service teachers in category one did not link environmental or ecological issues to EfS but rather they interpreted sustainability in the general sense of the word, meaning “to keep going” continuously into the future. Category two pre-service teachers described EfS as education *about* the environment. This approach is based on one of the oldest and least effective models of behaviour change as discussed in chapter one. This theory assumes that teaching facts and concepts about environmental patterns, processes and problems inspires people to take actions that diminish ecological deterioration (Davis, 2009; Deans & Brown, 2008). More recent research tells us that environmental knowledge and awareness does not necessarily ignite action for sustainability (Kearney, 1994). In the third category, pre-service teachers expand on the education *about* the environment approach by inserting a hands-on and local component. However, the underlying belief that informs this approach is that of an

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uncritical form of pedagogy. This approach does not acknowledge the environment as a social structure or the social settings or consequences of changes in peoples relationships with their environment (Evans et al., 2012). Category four represents the highest level of understanding. Pre-service teachers' described EfS within a context of cross-curricular integration. This approach takes into account the advancement of higher order thinking and problem solving skills by incorporating inquiry-based, multidisciplinary learning. These teachers also emphasized the importance of students learning a set of transferable skills to equip them for the future. This type of understanding lies within what Davis (2009) and Deans and Brown (2008) call education *for* the environment. All pre-service teachers offered the simplified view that environmental issues are free of values, interests, oppositions and incongruities (Evans et al., 2012). As Gaard (2009) states an important component of EfS involves approaches that integrate and uncover the complex interaction between the ecological, social, economic pillars of sustainability. A study carried out by Davis, Dymont, Getenet, Hill, McCrea & Nailon (2014) yielded similar results. The researchers explored sustainability understandings and practice initiatives as reported by early childhood educators and parents. Two theoretical frameworks were used in the analysis of the data. The UNESCO (2010) framework represents a holistic and integrated approach to sustainability with four dimensions: natural, economic, social and political. The Australian Government's (ARIES, 2009) five components of EfS provide key principles which guide how EfS might be conceptualised and implemented. The results determined that education *about* the environmental or as described by Davis, et al. (2014) nature/natural aspects of sustainability make up eighty nine percent of the participants understanding and practice initiatives (see Appendix A for further detail). The authors argue that there is much work to be done to expand thinking and practice beyond the natural environment in order to embrace a holistic model of sustainability

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incorporating social and economic pillars. Redman (2013) states that teachers with a desire to work systematically with EfS need to articulate goals in terms of concepts of sustainable development in their own minds as well as being able to provoke children to think beyond their present experiences and ideas. This puts great demands on their pedagogical approach (Pramling Samuelsson, 2011). As Hart (2002) contends:

The best we can do to extend our portrayal of sustainability education in schools is to deepen the conversation with teachers. We need to remind ourselves that if the cost of action is high, the cost of inaction or procrastination would appear to be absolutely beyond our means (p. 98).

The following section will discuss the viability of using children's literature, in particular children's stories as an entry point to begin these conversations.

The Power and Practicality of Story

Stories are part of the fabric of human existence. Throughout history, we have maintained and restructured our sense of the world and our place in it through story. We cannot help but engage in storytelling as is at the very essence of the human experience (Parsons, 2000). As story is embedded in the human culture it has the potential to become a strong ally for educators. Some of the skills that are believed to be significant to success in today's world are critical thinking, problem solving, creativity, motivation, ethics, and a functional level of literacy (Premier's Technology Council, 2010). The following discussion will examine the ability for story to support the development of these skills which are commonly referred to as 21st century skills.

21st Century Skills

Critical Thinking and Problem Solving. The skill of critical thinking is needed to analyse and evaluate information while problem solving skills are required to use the information.

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Parsons (2000) suggests that children seek information when it serves their purposes. Stories move children to the place where they are ready to explore the abundance of information available to them and apply it to the real world. Well written stories invite us to critical thought resulting in deeper insights into ourselves, our relationships and our place within the world. Stories call us to connect and respond (Parsons, 2000).

Creativity and Innovation. The skills of creativity and innovation allow one to conceive of ideas and concepts and to approach issues from a variety of perspectives. The Merriam-Webster dictionary (2015) defines imagination as the ability to think of new things; creative ability; ability to confront and deal with a problem; and the thinking or active mind. Many researchers (Blenkinsop 2008; Egan 2005; Judson 2008; Parsons 2000) agree that story fosters imagination and as an extension, creativity. The Imaginative Education Research Group believes that imagination should be the foundation of all learning and that engaging students' imaginations is critical to bringing the curriculum to life (IERGP, 2001). "To bring knowledge to life in students' minds, we must introduce it to students in the context of the human hopes, fears and passions in which it finds its fullest meaning. The best tool for this is the imagination" (Egan, 2005, p. xii). Imagination is what leads us to ponder "What could be?" This is a question of deep significance for our future. It requires us to assess what is important to us and examine our relationship with the world we live in. Imagination can therefore lead us into the future as children come to believe in a world that is better off for their actions within it (Parsons, 2000).

Motivation and Self-Regulation. The skills of motivation and self-regulation are required to set and accomplish goals. Knowing how and when to put in effort and how to prioritize choices and actions facilitates independence. Stories provide experiences that instill

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passion, which leads to enthusiastic attention to learning. Children learn best when it has relevance to them and story helps them to discover and understand the relevance (Parsons, 2000).

Functional Literacy. The skill of functional literacy is the ability to comprehend and learn from what one has read. Blenkinsop (2008) believes that stories can be a magnificent tool of language. They provide descriptions and images that enable us to make sense of, and remember what is being said. They provide a construct for sharing critical information and valuable lessons. Stories have the ability to evoke and trigger emotions. When we have an emotional response to something, our proclivity is to remember it. Egan (2007) believes that if stories are complemented with mental imagery, mystery, and curiosity, they can be an effective teaching and learning tool. Research attributes learning to intellectual involvement and the depth of involvement determines how well information is processed, remembered and transferred to new situations (Egan, 2007). Stories have the capacity to deeply involve the reader as well as supply a context under which the information is useful. Therefore information presented as a narrative is much easier to recall and transfer than general information supplied by textbooks (De Young & Monroe, 1996). Text that is interesting has been found to inspire people to read, increase comprehension of what has been read and strengthen the probability that the information will be applied to new and existing situations (Kearney, 1994). Stories can make the abstract concrete and understandable. They can turn what was only perceived intellectually into something emotional and powerful. Humans are very discerning about what they pay attention to and remember. If they find information boring, confusing, or irrelevant they will often ignore it altogether. Information that does not get processed by the brain is rarely stored and recalled (Kearney, 1994).

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Ethics. In order to properly function in society, commonly understood ethics about how we treat others, how we treat our environment, our social responsibilities and obeying the law are important skills to possess. Parsons (2000) believes that story summons empathetic engagement with the world and at the same time helps children to move beyond their natural egocentrism view to see more clearly and feel more deeply. Story can promote relationships. Characters entice us to enter into their surroundings, to share their perspectives, to put ourselves in their world to understand on an emotional level, what matters to them (Parsons, 2000). The literature both supports and criticizes the method of using stories to foster moral and ethical functioning. Narvaez (2002) criticizes the practice of using moral stories to foster ethics and morality. He suggests that the use of children's literature in this way is an effort to indoctrinate children with a sense of morality rather than offering them experiences to develop their own insights into what it means to do the right thing.

Dialogic Reading

While it is important to note this criticism it does not take into account the practice of dialogic or shared reading. This is a collaborate way of reading aloud with young children that gives them the opportunity to be active participants (Doyle & Bramwell, 2006). The technique involves multiple readings of the same story and ongoing discussions with children in smaller groups. Learning is promoted when adults help children understand and interpret stories by referencing the children's experiences and background. Questions are asked and answered and adults are able to adjust instruction to meet the children's level of understanding providing them with a meaningful experience (Doyle & Bramwell, 2006). Dialogic reading is based on the understanding that books can't give children morality but that they can serve as impetus for meaningful social interaction. Various elements of dialogic reading are supported by many

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researchers. Parsons (2000) suggests that dialogue is an extremely powerful tool in helping children to move beyond the page to connect story with the world. When an educator asks her students for their opinion and stands back she implicitly communicates to the learners that they have the responsibility for offering their ideas and thoughts. Through this dialogue, children share the various connections and interpretations they have made which serves to broaden the experience and deepen the understanding of all learners. She recommends when responding to complex texts focus first on the surface features such as the sequence of events and character recognition and gradually move to the deeper features such as character motivation and embedded metaphors. Hunter and Eder (2010) suggest that narratives present an opportunity for children to put themselves in the place of a character and reflect upon the situation. The process of self-reflection can provide children with the skills to manage moral situations that arise in their everyday lives. One of goals of moral education as stated by Nucci (2001) is to connect the practices of reflection, discussion, meaning making, and reasoning to the student's personal experiences and sense of self. Encouraging dialogue and debate further enhances the student's ability to strengthen their understanding.

Dramatizing Stories and Storytelling

Wright, Bacigalupa, Black and Burton (2007) suggest that the pedagogy of dramatizing stories can be particularly useful for moral reasoning. The act of dramatizing stories requires children to internalize the ideas and translate them into action which demands the employment of higher order thinking skills. This process is generally challenging for young children but becomes achievable within the context of playacting a story.

The process of storytelling can be useful for understanding how students use the content to illustrate insights to their own lives and moral dilemmas. Hunter and Eder (2010) examined the

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process by which grade 4 students engage in ethical deliberation through storytelling. The findings put forth by the researchers support the view that storytelling can provide a meaningful platform from which children can explore their own personal moral or ethical decision making. Experts agree that morality develops in the context of social interactions and social relationships. The use of stories and the supporting practices of dialogic reading, discussion, problem solving and dramatization can provide this context for children. Consequently stories can play a central and significant role in helping young children emerge as moral thinkers (Hunter & Eder, 2010).

Stories and our Brain

Wilson (2000) explains that humanity's affinity for stories is not a coincidence, as our brains function by creating narratives. Both adults and children live, learn, and relate to others through stories. Wilson (2002) states that researchers in social cognition have hypothesized that: "storytelling is not something we happen to do. It is virtually something we have to do if we want to remember anything at all" (p. 10). Over the past thirty years, researchers in cognitive psychology have learned that the stories we recall and those we create while interacting with the world, are key to learning. Facts presented in stories opposed to textbooks are much easier to remember. Similarly, facts that provoke powerful emotions are more easily stored in our brains, and stories are an excellent way to marry emotions with facts (Wilson, 2000). Researchers have also demonstrated that metaphors and analogies are effective because they allow the audience to relate the story to previous knowledge and experience (Wilson, 2000). Wilson (2000) states that recently neuroscientists have joined cognitive psychologist and they are merging on a common understanding of the brain. They posit that the brain creates stories to sift and make sense of the myriad of information that we are exposed to on a daily basis. It then mobilizes memories or past stories to help filter and organize the incoming data into narrative segments. Then a small

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fraction of these segments are chosen for higher-order processing in the prefrontal cortex. That small fraction is what we call the conscious mind. The most memorable among these segments are shared across generations and transformed into history, literature, and the oral tradition (Wilson, 2000).

From the field of neuroscience Zak (2015) found stories that emotionally engage participants cause an increase in the hormones cortisol and oxytocin. The change in oxytocin has a positive correlation with participants' feeling of empathy for the characters in the story. This heightened empathy motivated participants to partake in a pro-social behaviour which in the study by Zak (2015) was donating money to a charity. The study connected a story to a feeling and then to a prosocial behavior. These findings suggest that emotionally engaging narratives have the potential to inspire post-narrative pro-social actions.

Stories have been identified as a strong ally for educators. Blenkinsop (2008) suggests that the purpose to sharing a story is to engage the emotions. When educators view stories as an emotional engagement tool their instructional method is altered. They begin to ask questions such as what is it about the world that inspires wonder and what is it that captures our attention? If these become the first questions they ask, they no longer begin with the prescribed learning outcome in mind. They start to view curriculum as dynamic and subjective (Blenkinsop, 2008).

All Stories are not Created Equal

This universal understanding of the power of story can be transferred to helping even the youngest citizens become aware of their responsibility towards creating a sustainable future. The challenge then, becomes sourcing children's literature written on the topic of sustainability. Ecological and environmental children's literature has been available for many years but the popularization of sustainability is relatively recent (Spearman & Eckhoff, 2012). Therefore, it

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can be difficult to find children's literature that highlights the three pillars of sustainability, social, economic and environment. In addition, using children's literature to teach about an ecologically sustainable future is an area that has not been well researched (Baratz & Abu Hazeria, 2012). As Reid, Payne, and Cutter-Mackenzie (2010) note, the field of children's sustainability literature warrants further discussion. However what is well researched is the use of children's literature as a method to inspire emotional responses to important issues in education, therefore exploring how it can be used to help teach for a sustainable future will enhance the field (Baratz & Abu Hazeria, 2012). Quality environment and sustainability texts include an abundance of information in a focused field, it is therefore appropriate to treat children's books addressing this subject with a level of appropriate importance (Baratz & Abu Hazeria, 2012).

The other challenge is that educators often lack the knowledge and in-depth understanding of children's environmental and sustainability literature. Therefore their choices of stories are often based on the popularity of the book or they choose stories that are written with simple language and content, without literary or emotional depth (Hug, 2010). Educators can help create ecologically aware citizens if they select accurate and well written stories. Educators are not only charged with choosing stories that are factual but also have the obligation to mediate when a story attempts to turn students into activists before they understand all sides of an issue. If educators take this responsibility seriously they must develop more sophisticated ways of selecting and evaluating the quality of children's environmental literature (Meyer, 2002).

What's in a Story?

Evaluative criterion for choosing environmental books has been researched in the literature, although it is not prevalent. Rule & Atkinson (1994) proposed a series of ten criteria for choosing ecology picture books for children, taking into account both the quality of the

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illustrations and the story. For the purposes of this paper nine of the ten criteria they suggest will be discussed. These include nature appreciation, interrelatedness of nature, realistic ecology problem, hope for a solution, steps for a solution, positive tone, non-stereotypic portrayals, story appeal, developmental appropriateness and appropriate illustrations. The criteria relating to illustrations are not within the scope of this paper as the focus is on the content of the story (see Appendix B for a detailed list of the criteria).

Nature Appreciation and Interrelatedness of Nature. There is general awareness and understanding that children need to have frequent and direct exposure to the natural world in order to develop an emotional connection to it (Sobel, 1999; Singer, 2003; Louv, 2008). There is no experience that can take the place of children's active contact with nature, and increasing the frequency of children's exposure is vital (Dighe, 1993; Louv, 2008). However aesthetic literary experiences may act as an enhancement and supplement to direct experiences with nature (Kemple & Johnson, 2002). Aesthetics resides in the field of philosophy that is concerned with beauty and diverse forms of art as well as the psychological responses to art and beauty (Jalongo & Stamp, 1997). Kemple and Johnson (2002) describe aesthetics as...“the capacity to sense, appreciate, and respond emotionally to beauty in both human creations and the natural environment” (p. 1). Evidence suggests that aesthetic experiences of young children are powerful and can have lasting impact as their sensory input is assimilated, unlike adults who tend to compartmentalize these experiences (Jalongo & Stamp, 1997). The power of an aesthetic response to nature can be stimulated, attuned, and harnessed through storybooks with illustrations (Kemple & Johnson, 2002). Stories can nurture a sense of awe and wonder, according to Wilson (2010) and should not be overlooked in our attempts to understand the world around us. An aesthetic response to literature has the potential to evoke environmental responsibility, an

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appreciation of the interdependency between nature and humans and create a caring attitude.

When this is combined with information, knowledge and social consciousness, it is a powerful catalyst to developing environmental stewardship (Kemple & Johnson, 2002).

Realistic Problem and Accurate Information. The story should portray a realistic ecological problem and provide accurate information. Hug (2010) states that one challenge with using children's environmental literature resides in possessing the ability to evaluate the scientific accuracy. Several authors have demonstrated that children's literature can convey misinformation and serve to reinforce science misconceptions on important science topics (Ford, 2006). Kearney (1994) offers a word of caution, although stories can be quite effective, they should not be used arbitrarily. In addition to the risk of creating a false understanding, the use of analogies or specific case studies can be misinforming guides to action. Rule and Atkinson (1994) note that ecology-related picture books should intensify concern for the environment by representing problems realistically and helping children recognize they can be part of the solution. According to Alder (1992) much of what is taught to children is over simplified and not accurate. He states that environmental stories that give children incomplete understandings of the issues turn students into activists who do not understand the entire issue.

Hope, Solutions and a Positive Tone. The story should offer hope for a solution, offer steps to a solution and have a positive tone. Environmental stories, as all children's literature, should offer an element of hope. The reclaiming and protection of our environment is a major responsibility with powerful consequences for the future (Parsons, 2000). Fortunately children have an innate optimism for their future, they want to grow up and they look forward to their life ahead. Therefore when given the opportunity to take action they are not afraid to do so, and with it they gain a sense of personal agency. Stories should demonstrate to children in a realistic

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manner, how their present actions can change the course of the world for the better (Parsons, 2000). Lynne Cherry the author and illustrator of over thirty award-winning environmental books for children is adamant that she will not write a book about topics that young people cannot act upon. She wants children to know that they can participate in the democratic process and have the power to challenge government decisions (Meyer, 2002).

Many environmental books use fear to shock students into an awareness of the uncertain state of the environment. That is unfortunate as children's literature offers the opportunity to connect environmental thinking with a sense of joy and wonder, rather than alarm and doom (Meyer, 2002). A frequent criticism of environmental literature is that it is biased toward a doomsday perspective and oversimplifies complicated environmental issues. Critics argue that this can lead to the creation of advocates, who do not have adequate knowledge to examine issues from multiple perspectives (Meyer, 2002). Still, author Cherry admittedly writes to promote activism. She has argued that we need to get children out there on the streets and to take responsibility for the planet. If they don't, she believes we are doomed (Meyer, 2002).

Stereotypes. The story should not perpetuate stereotypes. A stereotype is a simplified generality regarding a particular group which usually carries deprecating implications. Stereotypes may be obvious or subtle. Educators should be aware of depictions that demean or ridicule characters because of their race, gender, age, ability, appearance, size, religion, sexual orientation, socioeconomic class, or native language. Many children's books are told from the perspective of animals which is described as anthropomorphism. When anthropomorphizing an animal there are stereotypical traits which generally tend to be connected with specific species. Often these are simply embellishments of real aspects or behaviours of the animal such as, sloths are lazy, weasels are crafty and owls are wise. For the purpose of this discussion,

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anthropomorphism refers to the practice of instilling animals with human characteristics, behaviors or values. Anderson and Henderson (2005) argue that anthropomorphism has the potential to shape the human/animal relationship in negative ways. The hazard of anthropomorphism is making non-human creatures something other and, therefore, less than what they are (Parsons, 2000). However, anthropomorphic portrayals in children's literature may also have positive benefits. It seems plausible that it can offer children the opportunity to develop empathy for animals and a sense of wanting to protect and care for them. Simons (2002) argues that powerful anthropomorphism may have the ability to make us question the way that we think about the human-animal relationship. He posits that anthropomorphic representations can inspire people to treat animals with greater respect. It is possible, and even likely, that these fabrications can change attitudes and behaviors toward animals in a positive manner. However the authors should make certain that the main character's perspective is not completely removed from the children's. If they fail to do so, children may not see their own role in protecting wildlife. Rather, they may feel that it is something out of their hands (Zynda, 2007). As the research identifies advantages and disadvantages of utilizing anthropomorphism educators should have an understanding of anthropomorphism when they select children's literature books and move from an unaware, naive, taken-for-granted position towards examining how culture, in this case children's literature, characterizes the human-animal relationship (Hug, 2010).

Gender stereotyping. Hamilton, Anderson, Broaddus, & Young (2006) argue that stereotypical portrayals of the sexes in children's literature can have a negative influence on their development. It can limit their career goals, alter their attitudes about the roles of adults and parents, and even impact their personality characteristics. Research suggests that gender bias in picture books can be damaging to children. Schau and Scott (1984) examined twenty one studies

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written on the effects of sexist versus non-sexist children's teaching materials. They discovered a reliable tendency for sexist materials to reinforce children's biases. A study by Ashton (1978) determined that children 3-5 years old who read gender-biased books versus those who read unbiased books made more stereotypic toy choices. Other researchers have concluded that children's literature provides standards of masculinity and femininity, offers socially acceptable behaviors that children may emulate and presents a rudimentary model for understanding oneself and others (Hamilton et al., 2006). A study by Hamilton et al. (2006) determined that female characters are under-represented in children's picture books. In a sample of two hundred well-known books, close to twice as many books had male title characters as female title characters. There were also close to twice as many male as female adult characters per book. For child characters the gap was smaller, with twenty-four percent more male than female child characters. Boys appeared in fifty-three percent more pictures than did girls. Occupational stereotyping yielded similar results. Hamilton et al. (2006) determined that men were portrayed in more than nine times as many traditional as non-traditional jobs. Women were portrayed in traditional jobs such as nannies, servants, nurses, dressmakers and dancers over ten times as often as in non-traditional jobs. Only a small number of men or women visibly had jobs outside the home, however over two-thirds of those who did, were men. Although women's variety of jobs has expanded in relation to men's in the past twenty years, men were still depicted in a much wider range of jobs than women. Based on this and other studies, Tognoli, Pullen and Lieber (1994) concluded that gender bias in children's books gives boys a sense of privilege and lowers girls' self-esteem and occupational ambitions. This suggests that gender bias in books matters.

Cultural Stereotyping. In today's multicultural society, it is imperative for educators to welcome and embrace the diversity of children and families. "In the United States, children of

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color make up about 40% of the population, and across the world children of color make up approximately 70% of the population” (Brinson, 2008, p. 30). How children’s books portray this diversity is an important consideration for educators. All children need to be subjected to positive images that represent their culture and themselves in the literature they listen to and read. Pires (2011) states that children are constantly developing their personality and absence of cultural diversity in the literature may have a significant impact on their identity. Conversely when a culture of origin is not met with diversity, it creates citizens whose identity is based on a narrow perspective, resulting in rigid attitudes concerning atypical behaviours, costumes, values and beliefs. It is important to start when children are very young when teaching them to develop a flexible attitude towards people who are different than they are (Sobel, 1990). Reading to young children from ethnically diverse, family oriented literature benefits children of all cultures. It is important for individuals to have early and lifelong experiences with literature that provides windows into other cultures as well as mirrors that reflect those who are like themselves and their families (Brinson, 2008). Cai and Bishop (1994) use the term parallel cultures to describe the perspective of different cultures as equal. Children’s books that include cultural diversity can help future generations view people around the world, as well as those in their own community, as members of society or as a parallel culture. Children’s literature can be a powerful tool for teaching concepts involving race, culture, and discrimination to students as well as nurturing a positive attitude towards people different than themselves (Harlin & Morgan, 2009).

Appealing Story. The content of the story should be appealing to children. Creany (1994) argues that fiction and fantasy should not be dominated by oppressive messages writers feel they must share. We want children to think about environmental issues. We want them to consider and analyze and come to their own understanding. For this reason stories that intend to

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foster environmental learning should avoid didacticism. Books that put the lesson above the story line often lack appeal as no one enjoys being lectured. Such stories state the lesson and give children nothing to think about. Once the lesson is heard it doesn't require further consideration (Parsons, 2000). Creany (1994) states that didacticism irritates children as well as adults and deprives them of the opportunity to have a personal response to what they are reading; in other words, the author expects a certain response and does not welcome any other. She notes that, didactic stories fail to teach environmental education in an appropriate way. Since children absorb literature more fully when they feel connected to it, didacticism may not impart environmental messages as effectively as the author had intended. Didacticism, though well intended, dead ends the process (Junker, 1998). An alternative viewpoint is raised by Peter Hunt. He claims that it is nearly impossible for a children's book not to be educational or influential in some way. It cannot help but reflect a belief and, by extension, didacticism. All books teach something and because children do not always have the maturity to decode the lessons, the writer often feels obligated to supply them. Children's writers therefore hold the responsibility of transmitting cultural values, rather than simply telling a story (Bigger & Webb, 2010).

Developmentally Appropriate. The final criteria is that the story must be developmentally appropriate. It is common practice for educators to match a book's reading level to the reading level of the student, however many educators do not consider a book's environmental content and match it to the developmental level of their children. Teachers may introduce young children to stories about the destruction of far-away tropical rainforests and the death of unfamiliar tropical animals. Children often do not have a sufficient understanding of their own ecosystem, much less a distant one they have not experienced directly (Hug, 2010). In

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addition, young children may not have the ability to put into perspective complex human and environment relationships such as cutting trees for forest products versus forest preservation.

When using books that depict worlds beyond children's present experience or raise abstract issues such as deforestation we must look for common elements that children can connect with such as having lumber for a home (Hug 2010; Parsons 2000). This is not to suggest that educators should ignore unfamiliar ecosystems and avoid difficult topics; however it is important for educators to consider if the environmental content is developmentally appropriate to introduce to children. Sobel (1999) concurs that parents, educators and caregivers should take into consideration the environmental developmental appropriateness of materials for use with children.

Additional Criteria

Perspectives. The evaluation criteria by Rule and Atkinson (1994) was established over twenty years ago but it is still valid today. However over the last two decades EfS has become more mainstream and consequently the criteria must expand. Many researchers would argue that books that present varying perspectives should be included in the evaluative criteria. The purpose of using stories as pedagogy is not to sway student beliefs and attitudes to a particular point of view but to serve as a means for helping them to view all sides of an issue and to cultivate critical thinking skills (Monhardt & Monhardt, 2000). Environmental education is criticized for rarely portraying more than one side of an issue. Students must explore environmental issues in depth and from all perspectives before they take action otherwise they will be striving for results that they do not fully understand (Meyer, 2002). Bigger & Webb (2010) agree that environmental advocates are formed only when young people are brought head on with dilemmas, their values are challenged, and they are urged to make up their own minds. Story is a mechanism which can offer students different perspectives and role models to reflect on. Creany (1994) argues that

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children's books present biased views about environmental issues without offering differing viewpoints. A recommendation for elementary educators when using children's literature in teaching about the environment is to place more emphasis on critical thinking as a skill. We want children's books to touch their hearts, but we also want to take advantage of the richness of ecological content that is embedded in stories (Monhardt & Monhardt, 2000). A study by Christenson (2009) found that presenting and discussing multiple perspectives on environmental issues contributed to students' development of critical thinking skills. Children were able to argue different viewpoints and make choices based on the facts debated by the class. It was also noted that it was difficult to find books that presented multiple perspectives on issues or to find books that offered the "less popular" perspectives for some topics. This can limit the usefulness of children's books for teaching critical thinking and positive citizenship skills but it does not render them unusable. It will require educators to be thoughtful about book selection, the manner in which they present the information and the inclusion of additional dialogue in order to offer a balanced perspective (Christenson, 2009).

Questions and Considerations. Gaard (2009) suggests that stories with the theme of sustainability must include issues such as how ecological concerns are linked to human rights and social justice and the ways annihilation of the environment affects human communities. Stories must emphasize the connection and interdependence among humans, animals, and the natural world, they should include a presence of participatory democracy and lastly encourage readers to take appropriate actions toward environmental equality and social justice. She offers several questions and considerations to take into account when choosing stories about sustainability. She asks us to look at how humans are portrayed. Are they in relation or in opposition to nature, animals, and the diversity of human cultures? Does the narrative sanction roles for humans and

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nature that are reciprocal and sustainable? Does the story promote connection, community and interdependence among humans, animals, and the natural world? How does the narrative conclude? Does it promote community and participatory democracy over hierarchy? Are children left alone to solve ecojustice problems formerly created by the adults? All of these connections are the foundation as well as a commitment to a sustainable future (Gaard, 2009). Rarely do we have the opportunity in one body of literature to examine so many fundamental issues. When considering how children's literature deals with the environment, we are observing how children's literature deals with the world (Greenway, 1994).

Children's literature meeting the criteria I've outlined above may well prepare children to advocate against social, economic, and environmentally destructive actions. The goal is to illuminate the characteristics of high quality children's literature books and to support educators in teaching children the strategies of sustainability that is inclusive of all life on earth.

Chapter Summary

This chapter has presented a review of the literature on the three research questions presented in chapter one.

1. How does education for sustainability differ from environmental education?
2. How is the current education system responding to the urgent calls to implement education for sustainability?
3. Can children's literature books function as a low barrier entry point for educators to introduce education for sustainability?

The literature review has contributed to the understanding of the complexities of EfS, the expectations of education to be the main driver in EfS, how educators perceive EfS and the potential for story to be an ally for educators to introduce sustainability content in a non-

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threatening manner. In summary what was discovered is despite all of the rhetoric and international documents and agreements sanctioning education as a strong force to prepare children for a sustainable future, implementation of EfS is negligible. This is partially due to the lack of education and training for teachers as well as misunderstandings of teachers on the content of EfS. Stories were identified as possessing the potential to be an ally for educators in their efforts to introduce EfS. However there are limitations to EE and EfS stories such as providing a singular perspective, inaccurate information, inappropriate anthropomorphism of animals, gender and cultural stereotyping, too didactic and a negative tone of doom and gloom. It was also revealed that there is an apparent dearth of stories that encompass the three pillars of sustainability. Nonetheless, if educators are aware and informed of these limitations they can choose stories accordingly. With the use of the supporting practices of dialogic reading, drama, storytelling and authentic discussion stories can provide an entry point for educators into sustainability education that is familiar and non-threatening.

Chapter Three: Project

Based on my experiences as an educator and the review of the relevant literature, I have authored a children's storybook entitled *The Children the Tree and the Playground* (see Appendix C for the full story). From my research I determined that educator's understandings of sustainability are lacking and generally limited to the environmental dimension. The hope is that my story will provide a familiar and low barrier entry point for teachers to begin introducing the topic of sustainability to their students. This book is a hybrid of fiction and non-fiction and is intended for learning. It shares the mental imagery, mystery, and curiosity of a fiction story with the information and factual knowledge of non-fiction. The goal of the story is twofold. The first objective is to provide factual information in the context of a fictional story. The plot of the story involves children who live in the same neighbourhood on a quest to save their favourite tree in the park from being cut down to make way for a new playground. They are tasked with justifying why the tree should be saved. The children provide scientific facts on the importance and value of trees to human life in the story line. The intention is for students to acquire knowledge about trees free of didactic teaching. In the beginning of the story the children have an egocentric view of the tree; they want to save it because it is their favourite place to play. At the end of the story they transition to a biocentric understanding of the tree. This is a key transition for children to make in adopting pro-environmental behaviours. The second goal of the story is the more complex understanding of sustainability. There are several elements in the story that address the topic of sustainability. Most are implicit and will require classroom discussion to discern the connections. The elements include personal agency, gender, culture, employment and the science of trees. I will discuss each of these components and how they relate to sustainability. To assist educators in leading a classroom discussion I will provide follow up questions that further the

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understanding of sustainability. In the story I have embedded an opportunity for students to participate in a learning activity which will be explained in this chapter. Lastly, I will review the B.C. Ministry of Education draft curriculum and highlight how my story connects to the big ideas and how the big ideas can connect to the concept of sustainability.

The Importance of Agency

As it was discussed in chapter two, quality stories should provide hope for a solution as well as steps to a solution. The intention is to prepare and inspire children to take action and cultivate their sense of personal agency. Short (2012) suggests that agency demonstrates children's belief in their ability to take action or exert power within a particular situation. She also states that a child's sense of agency is critical, as it provides them with a knowing that they are capable of taking action to better their own lives as well as the lives of others. United Nations (1989) states that children of today are increasingly recognised as capable, active citizens with rights of their own. The idealized notion of childhood as an arena for innocent play, assumes the position that children lead sheltered lives untouched by events around them. When in fact they are not immune to these events and they are capable of engaging with complex environmental and social issues (Pramling Samuelsson, 2011). Engdahl and Rabušicová (2011) conducted research with young children using interviewers in several countries around the world. The feedback from the interviewers was that they were surprised by the knowledge the children possessed. Their results demonstrate that young children have knowledge about the environment, thoughts about environmental issues; they recognize the impact of human behaviour on the environment and have ideas about what to do in relation to sustainability.

Agency runs counter to adults views of children as innocent and in need of protection. Seeing children as naïve and vulnerable can result in wanting to protect them from harsh realities

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(Duhn, 2012). This view hinders opportunities to engage children in making meaningfully decisions that affect their lives. Young children as learners have the right to be involved in issues that concerns life here, now and in the future (Short, 2012). When adults control children's choices and protect them, instead of involving them in experiences where they examine new perspectives and approaches for problem solving they impede their development as human beings. Young children are continually assimilating the ways in which they think about and take action within their lives and world. They require perspective, and a sense of what is possible in order to develop agency, not protection (Short, 2012). Children's capacity to take action is based on their ability to move beyond the current world into thinking about possibility. Our challenge is to build on children's experiences and move them towards perspective taking and ultimately social action (Short, 2012).

Nurturing Agency in Children

Focusing on agency requires a shift in views of childhood. Society will need to move from assuming they know what is best for children to understanding the rights of children to have their views taken earnestly and to participate in decision-making. This view of childhood contests Western values that frequently see children as inactive receivers of adults' actions rather than active agents (Smith, 2007). Short (2012) argues that children's agency is often dismissed in school projects. More often than not the action projects are envisaged and directed by adults with little opportunity for student's to voice their opinions or choices. The process of adults introducing the project, engaging children in an activity, such as fundraising, and then mailing the money to the organization deprives children of developing their own sense of agency for taking action. The power and control is in the hands of adults rather than shared collectively. Adults are not working with children they are working for children (Hart, 1990). When children believe that

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the present system and practices of adults are inflexible or are not part of their responsibilities there is little reason for them to take action. Eventually they come to accept this hierarchy (Short, 2012). In order to support students to take action for social change adults must encourage them to question prevailing practices and to work at making the world a better place (Friere, 1970). Literature can play a key role in supporting these inquiries by offering examples of genuine action. Literature in which the characters take action for social change provides an opportunity for students to expand their thinking and imagine new potentials (Kornfield & Prothro, 2005). Stories can provides openings for conversations that challenge children's world views and the ways in which they work together to take action.

Agency and Education for Sustainability

EfS evolves from critical theory and focusses on pedagogies of humans as agents for change (Elliott & Davis, 2009). Participation and involvement are elementary components of EfS, with attention paid to emphasizing agency for active citizenship, human rights and societal change (Engdahl & Rabušicová, 2011). Educators often assume that EfS includes teaching children about looming tragedies, rather than something offered as a method that has the potential of empowering children to actively support the development of a more positive global future (Davis & Elliott, 2009). The assumption that environmental concepts such as the greenhouse effect and ozone depletion are beyond the capabilities of young children has served to hinder curriculum development and is to the detriment of fostering personal agency and skills such as problem solving, creativity and collaboration (Davis & Elliott, 2009). Sobel (2004) argues that we must be careful not to overwhelm children by teaching them about great tragedies like rainforest destruction and global warming. This doom and gloom approach can create a fear that turns into dissociation; children disconnect from the world so they don't have to face the complex

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and frightening problems. In order to create citizens who will eventually solve these problems, we must start on a more basic level and allow children to engage with place based learning to develop a sense of personal agency.

Agency and Story

The Children the Tree and the Playground depicts children taking collaborative action to save a tree from being cut down. Adults support the children by providing them with the steps they should take to save the tree in addition to incorporating their ideas into a city plan. Young children today, will as adults, have the very critical job of planning for their own maintenance and survival. Stories followed by critical discussion, may help to increase the depth of understanding required to engage in active citizenship and create resolute heroes/heroines prepared to become involved with their world. Larsson (2012) posits that stories should have a pervading emphasis on children making a difference as well as the recurrent claim that even though no one can do everything, everyone can do something—and together we can achieve much. He believes this statement of agency and responsibility is essential for the mobilization of knowledge. Literature can offer alternatives for how children view their responsibility and for developing their agency (Short, 2012). Stories can also inform children about the power of influence they have on their family and school, as well as decision makers and politicians. According to Mansini and Pacini (1971) “children’s voices will form an irresistible choir that will not leave adults or those in power indifferent” (p. 49) (as cited in Larsson, 2012).

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Gender

As discussed in chapter two portraying gender equality in children's books impacts how children view themselves and their role in society. The literature determined that female lead characters are under-represented in children's stories and the female occupations portrayed are very traditional. For this reason the ratio of male to female characters and assignment of adult occupations are incorporated into the story with great intention. *The Children the Tree and the Playground* includes three female lead characters and two male lead characters. The adult characters are a male Parks Department employee and a female who is the Mayor of the city. Additionally there is not one hero/heroine in the story. The implicit message is that sustainability is not a problem that one person can solve. We must work collectively if we hope to make a significant impact.

Gender and Sustainability

Gender equality is a pre-requisite for sustainable development and environmental sustainability. The 2011 Human Development Report (HDR) states that "greater equality between men and women and within populations may have transformative potential in advancing environmental sustainability (United Nations Development Programme, 2011, p. 64). Supporting gender equality can advance environmental outcomes by improving access to clean water and sanitation, decreasing land devastation and reducing deaths due to disasters and poor air quality. Increased involvement of women in decision-making is of fundamental importance in tackling environmental degradation, including evidence that women demonstrate more concern for the environment and support positive environmental policies (Kostus, 2015). It is also important to recognize women's procreative rights and access to quality health services, because long term,

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environmental sustainability cannot be achieved without the leveling off of population growth (Kostus, 2015).

Culture

Considering the multi-cultural society in which we live the inclusion of ethnic characters is a feature educators should be seeking when choosing stories for children. It is important for all children to see their culture and themselves represented in positive images in the stories they listen to and read. The inclusion of cultural diversity in the literature can have a positive impact on young children's sense of identity. *The Children the Tree and the Playground* incorporates culture diversity amongst the characters. The children represent Asian, Caucasian, African American and Aboriginal cultures. The adult characters are Latin American and Caucasian. Incorporating children and adults of different ethnic backgrounds is also representative of the coexistence of different cultures as well as signifying that sustainability as a practice is the responsibility of all humanity.

Culture and Sustainability

Until recently culture was situated within the pillar of social sustainability. It is gradually emerging out of this realm and is being recognized as having a separate, distinct, and central role in sustainable development (Creative City Network of Canada, 2003). UNESCO (1982) defined the cultural dimension of community development as being:

The whole complex of distinctive spiritual, material, intellectual and emotional features that characterize a society or social group. It includes not only the arts and letters, but also modes of life, the fundamental rights of the human being, value systems, traditions and beliefs (p. 1).

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Cultural sustainability means change occurs in a manner that takes into account and respects cultural values. When sustainability is being discussed it must include an understanding of culture as well as the environment in which it occurs, so that community and geographic perspectives are not overlooked (Creative City Network of Canada, 2003). Balanced development can only be accomplished by making cultural factors a significant part of the methods designed to achieve it. Discussions of sustainability require a thorough examination of each specific situation, and preservation of the environment and of culture must be weighed against considerations of current practices (UNESCO, 1982).

Using Stories to Teach Scientific Facts about the Environment

The Children the Tree and the Playground contains non-fiction information in the context of a fictional story to facilitate the children's learning and understanding of the importance of trees to humanity's survival. The typical approach to text hoping to encourage caring behavior and improving environmental problems has been to create copy that is abstract and not related to daily experience (Kearney, 1994). This coupled with doom and gloom, has proven to be inadequate in supporting comprehension of the enormity of the problems and offering potential solutions. Resnick (1987) offers the viable solution of changing text into the form of a story to take advantage of human's innate cognitive processes to enable learning and understanding. Halford and Sheehan (1991) suggest that a good story is well-suited to the way we process information. Stories can help us grasp the meaning and extent of environmental changes as well as provide options for appropriate actions.

Activity for Students

The opportunity for students to study the importance of trees lends itself well in my story. A natural break occurs on page one, paragraph seven at which point students can be assigned the

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task of researching justifications as to why trees should not be cut down. Once this project is complete the story can be resumed and their answers can be compared against the ones presented by the characters in the story. To add perspective students could also research why we cut down trees. Depending on the age of the children a classroom debate on the advantages and disadvantages of cutting down trees could be an extension to the activity.

Questions for Educators

Following are questions that educators can pose to their student's midway through the story, at the end of the story or a combination of the two. The goal is to begin introducing the concept of sustainability as well as provoke critical thinking. In chapter two I reviewed the core competency of *thinking* in the 2013 B.C. Ministry of Education draft curriculum. Paul and Elder (2000) state thinking is driven by questions not answers. To think through or rethink anything, we must ask questions that stimulate our thought. Questioning can play a significant role in cultivating critical thinking skills and deep learning. I have experienced the power of asking questions to provoke critical thinking when I was the team Manager for a program called Destination Imagination with grade four students. A small team worked together using creativity and critical thinking to solve a team challenge. Questions pushed the students to dig deeper and encouraged discussion and active learning. The premise is that only students who have questions are really thinking and learning. Paul and Elder (2000) argue that it is possible to give students an examination on any topic by asking them to list all of the questions that they have about a subject, then we will know they are thinking. This is the principal on which the following questions were developed.

What would happen if the park didn't get built? (loss of employment)

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Background information: Balancing growth and development with environmental degradation is an ongoing consideration in sustainable development. It is believed that sustainable development will not occur until the majority of people in the majority of countries reach levels of economic security. Universal problems such as over population, environmental damage, illness, poverty, hunger, and political volatility will not be solved unless we can create productive work at living wages for the ever increasing labor force. People who have barely enough to live on are not likely to place environmental problems on their list of priorities.

Did the children's reason for wanting to keep the tree change in the story?

Background information: The children move from wanting to save the tree because it is their favourite place to play to recognizing the value and importance of it. They move from a child's egocentric view to a biocentric view. This is an important transition in children's motivations for taking action.

How did the children save the tree?

Background information: the children take part in a democratic process in which they influence something in their own lives. They discovered they have the power to challenge government decisions. The children worked together as a team with adult support, along with the backing of a politician.

Do you think children can help to solve problems such as pollution and hunger? If yes, can you think of some ways they could do it?

Background Information: agency demonstrates children's belief in their ability to take action or exert power within a particular situation. A child's sense of agency is critical, as it provides them with a knowing that they are capable of taking action to better their own lives as well as the lives of others. Encourage children's own sense of personal agency, with the guidance of adults, rather

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than adults doing it *for* the children. Participation and involvement are elementary components of education for sustainability (EfS), with attention paid to emphasizing agency for active citizenship, human rights and societal change. Educators often assume that EfS includes teaching children about looming tragedies, rather than something offered as a method that has the potential of empowering children to actively support the development of a more positive global future. An example of the phrase think global, act local would be recognizing that hunger is a problem worldwide, however children can act locally by collecting food for their community food bank.

Did you notice the characters are different nationalities? Why do you think the author included that?

Background information: incorporating children and adults of different ethnic backgrounds is representative of the coexistence of different cultures as well as signifying that the practice of sustainability is the responsibility of all humanity.

Some stories have one hero/heroine. Does this story have one hero/heroine? Why do you think that is?

Background information: sustainability is not a problem that one person can solve. If we work collectively we will have a bigger impact. Even though no one can do everything, everyone can do something—and together we can achieve much.

Who do you think saved the tree? (the boys or the girls)

Background Information: Gender equality is an important concept in sustainability. Increased involvement of women in decision-making is of fundamental importance in tackling environmental degradation, including evidence that women demonstrate more concern for the environment and support positive environmental policies. Note: although there is no visual of the Mayor in the story, the character is female.

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A Review of the B.C. Education Curriculum

In 2010 the B.C. Ministry of Education began the transformation of the K-12 education system. Since then the Ministry has been collaborating with the B.C. Teachers' Federation and other partners to construct and redesign the curriculum. Stakeholders have had several opportunities to submit feedback along the way. Many have taken advantage of this opportunity and some have voiced strong concerns on the topic of environmental education. In this section I will review the draft curriculum and discuss what is new, what has changed, what has remained the same in regards to EE.

What is New?

Unlike the current curriculum the draft is less prescriptive about what content must be taught, which makes it more flexible. The hope is that teachers will be better able to innovate and personalize learning. Big ideas are introduced as concepts to be explored while allowing teachers autonomy in how they are implemented (B.C. Ministry of Education, 2013). The proposed curriculum has been criticized for not including environmental science as a big idea. An environmental educator Ross (2014) believes that if you don't identify environmental science as a key concept, there won't be materials provided for it and it won't be taught. He is also concerned that it will be cut from pre-service teachers program at university because it is not in the curriculum. The B.C. Environmental Educators Provincial Specialist Association has also voiced concern over the de-emphasis on EE. They believe that sustainability as a big idea is critically needed as a framework for learners to think and act responsibly on social, ethical and environmental issues (McEwan, 2014). The Ministry has responded to some of the criticisms by offering the explanation that a less restricted curriculum gives teachers the independence to spend

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more time on the topics they and their students are interested in, which could include environmental education (Hyslop, 2014).

What has Changed?

The existing curriculum has a sound foundation for the development of environmental education residing mainly in the area of Life Science. Life Science is described as “the study of the diversity, continuity, interactions, and balances among organisms and their environment, to extend students’ understanding of the living world and their place in it” (BC Ministry of Education, 2005, p. 25). Presently there is a clear progression of the basic concepts of ecology through the grades. By grade seven students are expected to have fundamental knowledge of the planet we inhabit and the role they play in it. Within the new draft curriculum the environmental goals are less explicit and less developed. The area of Life Sciences no longer exists and is replaced with biology. With the exclusion of Life Sciences a large component of environmental education has disappeared.

The proposed social studies curriculum also sees a reduction in EE. Where students are now receiving awareness of the need for environmental stewardship, the draft focuses on the relationship between a community and its environment rather than the importance of taking care of our planet.

What Remains the Same?

Although it appears that much of the EE has been removed there is also much that remains in K-3 that has the potential to be developed into a rich EE curriculum. The North American Guidelines for Environmental Education (2010) outlines the essential underpinnings that are required for EE. Following are the six elements that must be present in order for EE to be effective long term.

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Systems: Students learn that a system is made up of parts which can only be understood by recognizing the relationships and interactions among the parts. Systems include families, communities, animals and plants.

Interdependence: Our well-being is intimately bound with environmental quality. Students are challenged to recognize the consequences of human actions on the environment.

The importance of where one lives: EE often begins close to home. Students begin with forging connections with, and exploring their immediate surroundings. This local connection provides a foundation for expanding their understanding of global causes, connections, and consequences.

Roots in the real world: Students develop understanding and skills through direct experience with the environment. Effective EE is learner-centered and provides students with opportunities to form their own understanding through hands on investigations. Inquiry and problem solving are activities that are most effective when relevant to the real world.

Lifelong learning: Encouraging curiosity about nature and world, creative thinking, problem solving and collaborative learning are skills that build a strong foundation for lifelong learning.

Integration and infusion: EE does not have to be a separate activity and is best integrated with experiences in a variety of curricular areas such as literacy, creative arts, mathematics, science and health.

The very nature of the draft curriculum allows for the latter two elements to happen organically in the classroom. As the Ministry defines “what” to teach but not “how” to teach, educators can choose the instructional methods and approaches, assessment techniques and strategies as well as the selection of learning resources. This move towards systems thinking

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allows for the integration of topics within many subject areas. Upon reviewing the draft curriculum in science and social studies K-3 all of the essential elements of EE discussed above are contained within the big ideas (see Appendix D for a description of the big ideas).

However, as the draft curriculum sits presently, the general focus is on environmental issues with the exclusion of the social and economic considerations that would solidify it as EfS. Although the draft curriculum holds the potential for teachers to incorporate the social and economic dimensions, research in chapter two indicates that it would be a small minority of educators that possess the understanding and supporting practices to do so (Evans et al., 2012; Davis et al., 2014). Moving from predominately science based EE to a broader definition would require the B.C. Ministry of Education draft curriculum to be more explicit in the science and social studies K-3 big ideas. Nowhere is the term sustainability used in the big ideas which indicates that it has not been considered a priority by the B.C. Government. Shifting educators towards EfS would require small adjustments, as an example, the big idea in science K-3 reads “local actions have global consequences, and global actions have local consequences” (B.C., 2013, p. 3). It could be altered to read “local actions have environmental, social and economic global consequences.” This would provoke educators to go beyond the environmental dimension.

Curricular Connections to Big Ideas

As discussed in chapter two sustainability as a pedagogical big idea would not only transform behaviours it would also transform how we think. Unfortunately as the B.C. Ministry of Education 2013 draft curriculum stands presently the environment nor sustainability have been identified as big ideas. Working within these parameters but also understanding that there is much flexibility in how educators integrate the big ideas I have cross referenced elements of my story with the K-3 big ideas in science and social studies to discern the connections.

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Big Ideas Science K-3	Elements of Story that connect to Big Ideas
Communities are made up of individuals from diverse cultural backgrounds and traditions.	The inclusion of several ethnic backgrounds. They include Asian, African American, Aboriginal, Latino and Caucasian. Cultural sustainability means change occurs in a manner that takes into account and respects cultural values and traditions.
Local actions have global consequences, and global actions have local consequences.	The consequences of cutting down a single tree can be extrapolated to the consequences of cutting down hundreds of trees (deforestation). The children's sense of agency developed or enhanced by saving the tree can be discussed in a more global context. What actions could they take next that would expand their sphere of influence.
The basic needs of plants and animals are observable through their features.	The scientific facts about trees could be extended to observing their features such as leaves and bark and how they function to keep the tree alive.

Big Ideas Social Studies K-3	Elements of Story that Connect to Big Ideas
Living things and their environment are interdependent.	The scientific facts on the importance of trees demonstrate humanity's dependency on the nature. The children speak for the tree which demonstrates nature's dependency on humans.
Living things have features and behaviours that help them survive.	The scientific facts about trees could be extended to observing their features such as leaves and bark and how they function to keep the tree alive.

Following are the remainder of the K-3 big ideas that are not addressed in my story. For the convenience of educators I have related each big idea to the concept of sustainability.

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Big Ideas Science K-3	Big Idea Connections to Sustainability
<p>Individuals and families must make choices about how to use their limited resources to meet their needs and wants.</p> <p>The local environment affects how a community meets its needs and wants.</p>	<p>Educators can move from the micro unit of the family and their finite resources such as time and money to community resources (such as water and food) and finally to the finite resources of the planet.</p>
<p>Daily and seasonal changes affect daily life.</p>	<p>Weather impacts the risk of hunger and undernutrition through droughts, floods and fires which can destroy crops and vital infrastructure. This can lead to a discussion on the value of growing food locally and sustainable food systems.</p>
<p>Communities are interconnected with their natural environment.</p>	<p>The local habitat of a community dictates how they live on a daily basis. The inequities in developing countries can be inserted here.</p>
Big Ideas Social Studies K-3	Big Idea Connections to Sustainability
<p>Indigenous cultures have developed a variety of systems to organize and govern themselves.</p>	<p>Indigenous cultures knowledge and understanding of the natural environment is reflected in the importance they place on sustaining Mother Earth for seven generations to come. It is a requirement for all peoples to embrace the concept of survival of the seventh generation, which is truly the heart of sustainability.</p>
<p>Water is a vital resource that cycles through the environment.</p>	<p>2.5 billion people live in regions where there is not enough water. This can open a discussion about sustainable water use and global water projects that work with communities to bring them sustainable water systems.</p>
<p>Observable patterns and cycles occur in the sky and landscape.</p>	<p>This is an opportunity to introduce observable patterns of climate change.</p>

Chapter Summary

In this chapter I have introduced the story I authored entitled *The Children the Tree and the Playground* and I have discussed the various elements that were incorporated with conscious intention as a result of my research in chapter two. In addition to the story I embedded an activity that would allow students to participate in the main plot of the story. This is offered to educators as a tool to enhance student's engagement and learning. To support educators in leading a classroom discussion on the topic of sustainability I provide follow up questions with background information. In further support, I reviewed the B.C. Ministry of Education draft curriculum and highlighted the big ideas that are addressed in my story. As it was not possible to incorporate all the big ideas in one story, I considered those that were not included and demonstrated how they could be connected to the concept of sustainability. My review of the new draft curriculum also speculated how the changes may affect the delivery of environmental education in the classroom. This led me to the conclusion that the big ideas hold potential for a rich EE program. However, I posit that this will only occur if the classroom teacher holds the values, beliefs and knowledge to act on this potential. For this reason it is my opinion that a clear and explicit continuum of big ideas focused on the environment and ultimately sustainability would better serve our teachers, our students and our planet.

Chapter Four: Reflection

In this chapter I will reflect on how my professional thinking has been influenced and reinforced as the result of my experiences throughout the Masters of Education program. I will discuss the application of my graduate experience in my professional career and lastly provide recommendations for educators wanting to engage in the topic of education for sustainability.

Professional Thinking

Following is an excerpt from Wheatly (2000) entitled *Disturb Me, Please!* This was introduced to me in one of my early courses and it has remained with me throughout my graduate experience. I include this as a response to “what aspects of my professional thinking have changed as the result of my experiences throughout the MEd program?”

In graduate school, I had one professor who encouraged us to notice what surprised or disturbed us. If we were surprised by some statement, it indicated we were assuming that something else was true. If we were disturbed by a comment, it indicated we held a belief contrary to that. Noticing what disturbs me has been an incredibly useful lens into my interior, deeply held beliefs. When I'm shocked at another's position, I have the opportunity to see my own position in greater clarity. When I hear myself saying "How could anyone believe something like that?!" a doorway has opened for me to see what I believe. These moments of true disturbance are great gifts. In making my beliefs visible, they allow me to consciously choose them again, or change them.

What if we were to be together and listen to each other's comments with a willingness to expose rather than to confirm our own beliefs and opinions? What if we were to willingly listen to one another with the awareness that we each see the world in unique ways? And with the expectation that I could learn something new if I listen for

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the differences rather than the similarities?

We have this opportunity many times in a day, every day. What might we see, what might we learn, what might we create together, if we become this kind of listener, one who enjoys the differences and welcomes in disturbance? I know we would be delightfully startled by how much difference there is. And then we would be wonderfully comforted by how much closer we became, because every time we listen well, we move towards each other. From our new thoughts and our new companions, we would all become wiser.

It would be more fruitful to explore this strange and puzzling world if we were together. It would also be far less frightening and lonely. We would be together, brought together by our differences rather than separated by them. When we are willing to be disturbed by newness rather than clinging to our certainty, when we are willing to truly listen to someone who sees the world differently, then wonderful things happen. We learn that we don't have to agree with each other in order to explore together. There is no need to be joined together at the head, as long as we are joined together at the heart.

I believe looking at life from this vantage point has been the most significant change I have made in my professional thinking. The recognition that different is just different, it is not right, it is not wrong, just different. It is a difficult mindset to remain in on a daily basis and I am not always successful. However, when I find myself reacting strongly to another's opinion or thoughts, I ask myself, what is it I believe and am I willing to entertain another way of thinking? When I am open to this, I always learn and grow from the experience. Throughout my grad experience I have encountered those that think differently than me and I have learned to appreciate the opportunity they are offering me to become wiser. Adopting this mindset has also

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been a great asset in my professional life as I regularly encounter those that think differently than me and I remind myself that I don't have to agree, just listen, with an open mind.

I believe this also has applicability in the context of the classroom. In chapter two I discussed briefly how teacher's values and beliefs affect their pedagogy. What occurs in the classroom is shaped by the beliefs that teachers hold about education, learning and their role as an educator. Beliefs provide guidance to educators as they in turn guide their students on the path of learning. For this reason it is important that educators are aware of the beliefs they are enacting in the classrooms. Eisner (1979) states "teachers will close the door and do what they know how to do and believe it is best for students" (p. 82). If educators are willing to open the door and notice what surprises or disturbs them as Wheatly (2000) states an opportunity has opened for them to see what they believe. They can then knowingly choose these beliefs again, or change them. This process of examining beliefs can only benefit both the educator and students that they teach.

Professional Reinforcement

What has been reinforced for me during my graduate experience is how seminal early childhood development is in preparing a child for positive lifelong learning, behavior and health. Although the literature has always supported the importance of the early years recent advances in science have reinforced how significant the first years of life are for the development of brain circuits. This is the time when the brain has the most plasticity and ability for change, therefore the impact of experiences on brain development is greatest during these years, be it positive or negative. Making early childhood development a priority is less costly as it is easier to form strong brain circuits during the early years than it is to intervene in the later years (Swanson, 2003). The importance of providing a stable and stimulating environment along with protective

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relationships is brought to the forefront when the repercussions of the absence of these increases the probabilities for long-term problems in learning, behavior, and physical and mental health (Shonkoff, 2011). We owe it to young children to provide and advocate for their rights as a child.

Professional Application

Transferable Skills. The transferable skills I have gained will be of immeasurable benefit as I move forward in my professional life. My personal effectiveness skills such as time management and organization were honed when managing full time work, family and course work. Commitment, motivation and perseverance were tested on a regular basis. The ability to dive into new research areas, critically read journal articles compile, filter and synthesis information from contrasting sources improved my ability to read selectively, prioritize information and to organize my thoughts. It also underscored my willingness to learn, develop and grow academically and personally. All of these skills can and have been applied to my present occupation.

School Gardens. Specific to the topic of my capstone, a project I will be involved in for the 2015-2016 school year will be the development of a school garden policy for our district. School gardens can provide a practical and concrete gateway to sustainability. Desmond, Grieshop and Subramaniam (2002) describe garden based learning as:

...an instructional strategy that utilizes a garden as a teaching tool. The pedagogy is based on experiential education, which is applied in the living laboratory of the garden. This simple definition, however, is misleading in that it does not take into account some of the powerful elements of the garden experience. It overlooks the relationship of these experiences to educational reform and to the transformation of contemporary basic education from a sedentary, sterile experience to one that is more engaging of the whole

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child. It also misses the elements of the garden experience that contribute to ecological literacy and sustainable development (p. 20).

Desmond et al. (2002) state that school gardens create a gateway for a more profound understanding of environmental and social sustainability and can transmute early learning. Spearman & Eckhoff (2012) suggest that sustainability in the early years should focus on the daily activities that support the preservation of a healthy relationship among these three pillars of sustainability. They offer the example of students growing and maintaining a school garden which provides the opportunity to connect to the sustainable benefits of eating locally grown foods. Teacher's fears about teaching sustainability can be alleviated when they recognize that utilizing sustainability-related concepts demonstrated in nature can connect subjects together in ways that make sense to students. School gardens and schoolyard habitats provide excellent settings for these connections to occur (Stone, 2010).

Additional professional responsibilities I have influence over include the Green Initiatives website content, green grants to schools and district organized professional development for educators. At the present time I have no specific plans that I can discuss in detail, however I have made the personal commitment to facilitate and deliver these initiatives through the lens of sustainability.

Recommendations for Educators

The first recommendation for educators is foundational and that is to think about sustainability as a big idea, a concept or theme that permeates the curriculum. "Transformative education for sustainability can start with a simple change in our focus or context. What if *everything* we taught, we taught with the Earth, the future, and the children of all species in mind — and heart?" (GreenHeart Education, 2015). This would require educators to familiarize

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themselves with education for sustainability and recognize the differences between environmental education and education for sustainability which is my second recommendation. Lastly as a practical component I offer three gateways to sustainability. The first of course, is children's literature. In addition to my story, I have provided a list of stories that are considered quality literature in the field of EfS/EE (see Appendix E for list of stories). The second gateway to sustainability is spending time in nature. Although this was not the scope of my paper it has been determined that experiences in nature lead to pro-environmental behaviour (Chawla, 1998). The third gateway to sustainability is school gardens as discussed above. This does not have to be a full scale garden, although that is the ideal. There are programs such as Spuds in Tubs that are smaller scale but still provide the opportunity to discuss sustainability concepts. I am optimistic that educators will recognize the profound importance of supporting children to develop the understanding and personal agency that will be required of them to ensure the future of our planet.

I have come to the end of my journey as a graduate student however in many respects it is just the beginning. The last two years has influenced my thinking, strengthened my beliefs and provided me with practical skills and knowledge that will endure a lifetime.

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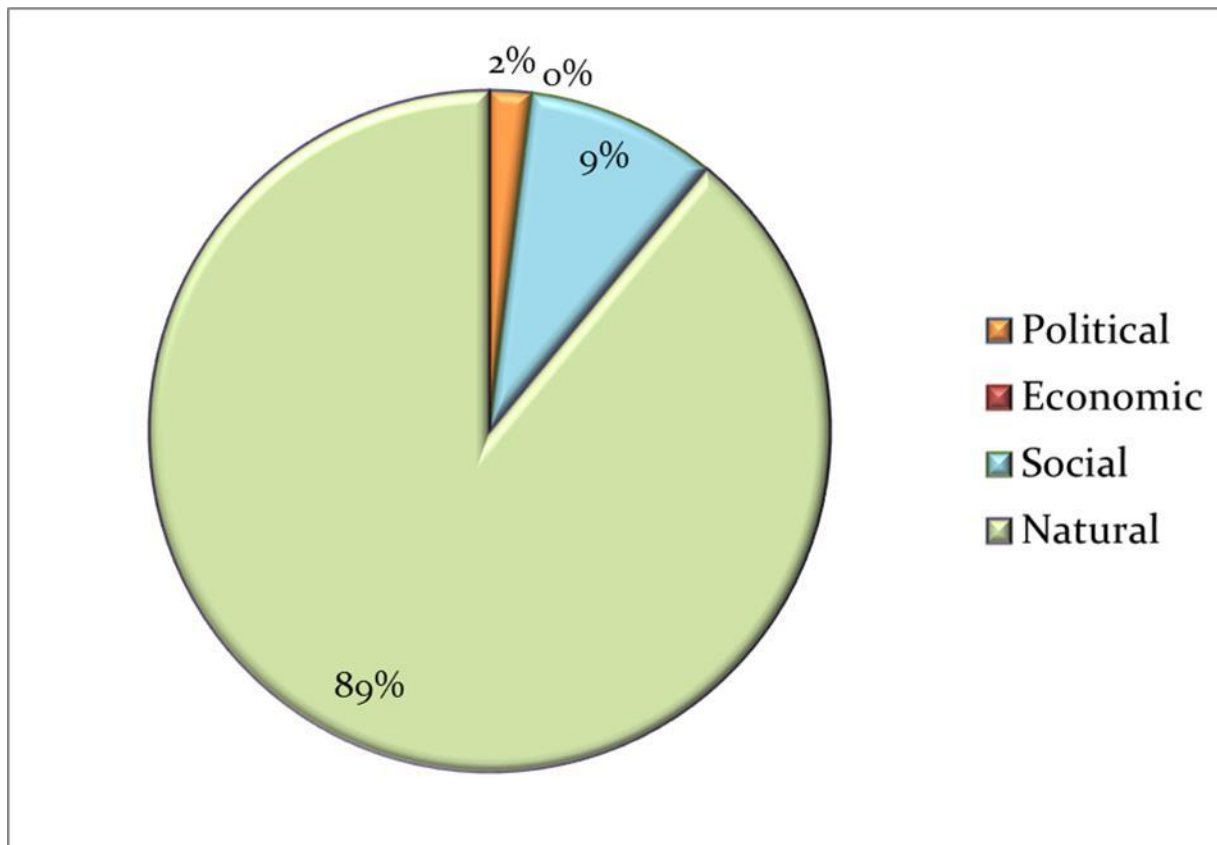
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Appendix A

Early Childhood Educators sustainability practices and initiatives as
Interpreted through UNESCO four pillars of sustainability



Percentage of participant responses by dimension

Appendix B

Scaling Categories and Criteria (Rule & Atkinson 1994)

1. Nature appreciation

Assesses the degree to which the book depicts beauty and harmony in nature.

2. Interrelatedness of nature

Demonstrates the need for people's cooperation with nature. Shows how actions of one living thing affect others.

3. Realistic ecology problem

Presents an ecology problem in a realistic manner, without oversimplification or exaggeration. The effect of human choice on the situation is clear.

4. Hope for a solution

Assesses to what degree books convey a feeling of hope for a viable solution to the problem.

5. Steps for a solution

Rates books on whether there were actions that help to solve the ecology problem, whether there were actions that could be taken immediately by the reader, and whether at least some of the solutions could be realistically implemented by children.

6. Positive tone

Emphasizes being effective in solving the problem rather than assigning blame or being "right." Positive and appropriate behaviors are emphasized, and the tone does not induce fear. Children are respectfully viewed as persons capable of thinking critically and logically.

7. Non-stereotypic portrayals

Evaluates the degree to which stereotyping is avoided in treatment of either issues or characters.

8. Appropriate illustrations

Assesses the degree to which illustrations enhance the text.

9. Story appeal

Evaluates the characters, and indicates whether the story has appropriate action, suspense, pace, and outcome.

10. Developmental appropriateness

Rates books on the appropriateness of concepts, vocabulary, and sentence structure.

Appendix C

The Children the Tree and the Playground

Author Marnice Jones

The children on Rainbow Street had a favourite place to play. It was in the park behind their homes in the most magnificent tree you could ever imagine. They loved to climb and swing or just sit quietly on the branches of the tree that seemed to fit each one of them perfectly. Sometimes they would play on the teeter totter or small slide in the park but mostly they played on the tree.

Erin and Darrin were twins and they loved to climb to the high branches of the tree and look out over the whole neighbourhood. They could see Rebecca's house who lived next to the twins. Rebecca loved to play in the cool sand under the shade of the tree on hot summer days and watch the squirrels scamper up the trunk. If they looked further they could see Robbie's house. He loved to listen to the rustle of the leaves on windy days and jump in the gigantic piles of leaves in the fall. Shona lived next to Robbie. Her favourite thing to do was climbing tricks on the tree, like hanging upside down by her knees.

One day Rebecca, Erin, Darrin, Robbie and Shona were all playing on the tree in the park when they saw a truck drive up and stop. On the side of the truck it said "Parks Department". A man in a green uniform got out of the truck with a rolled up piece of paper in his hand and a measuring tape. The children watched with curiosity as he walked over to the small playground and began measuring this way and that way and writing the numbers on the piece of paper. Finally the man in the green uniform walked over to the tree where the children were watching him. He introduced himself as Mr. Smith and said he took care of the parks in the city. He unrolled the piece of paper and showed the children a plan for a brand new park. WOW! There were shiny swings, bright red monkey bars, a zippy zip line, a whirly merry go round, a long, twisty, speedy slide and so much more.

The children were excited to see all of the new play equipment, but then Robbie noticed that there was no tree in the plan. "Where is the tree?" "Oh we have to cut down the tree to make room for all of the new equipment" said Mr. Smith "But we love this tree" said Rebecca. "It is our favourite place to play" said Darrin. "The new play equipment will be lots of fun too" said Mr. Smith.

The children started to imagine how much fun the new park would be with the shiny swings, the red monkey bars, the zippy zip line, the whirly merry go round and the long, twisting, speedy slide. But then they began to imagine the park without their favourite tree. "We don't want you to cut down the tree", they all said at the same time.

Mr. Smith said "The old swings and teeter totter are not safe for children to play on anymore and we already have all of the workers from the Parks Department ready to build the playground. If we don't build the playground they won't have any work". The children didn't want to have

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unsafe playground equipment and they certainly didn't want the Parks Department workers not to have a job. But they loved their tree.

Mr. Smith saw how concerned the children were so he said "if you can give me good reasons why he shouldn't cut down the tree we might think again. I will be back next Friday and you can tell me why we shouldn't cut down the tree".

The children decided that they should all meet at Shona's house the next day and work together to discover why Mr. Smith shouldn't cut down the tree. Then they hurried home excited to tell their parents all about the new park, Mr. Smith and saving the tree.

Friday finally arrived and they all gathered at the tree. It was a hot day so the tree provided some welcome shade. Mr. Smith was ready with his notebook and pen. Who would like to tell me why I shouldn't cut down this tree.

Rebecca said Mr. Smith you shouldn't cut down the tree because trees give people and houses shade from the sun in the summer. If there were no trees it would get too hot to play outside in the summer sun. The trees protect us from the sun's ultra violet rays which are not good for our skin.

Also many animals like birds, squirrels, bugs, and mice would not have homes or food if there were no trees. They build their homes in the branches get most of their food from different parts of the tree like the bark, the leaves and sometimes nuts and fruit.

Mr. Smith was listening closely as he wrote in his notebook and watched a bird land in her nest on the tree branch above him.

Darrin said "Mr. Smith you shouldn't cut down the tree because trees help clean our air by taking the part of it humans can't breathe (carbon dioxide) and storing in their trunk, in their roots and in their leaves and then they use it to make their own food. As they do this, they make oxygen, which is the air we breathe. If there were no trees there would not be enough oxygen for us to breathe.

Mr. Smith took a deep breath of fresh air and wrote in his notebook.

Erin said "Mr. Smith you shouldn't cut down the tree because when it rains really hard the tree roots and soil around the roots absorb the water which stops it from flooding. On mountains or hillsides the tree roots hold the soil in place and stop mudslides and landslides.

Mr. Smith stepped around a small puddle under the tree and wrote some more in his notebook.

Robbie said "Mr. Smith you shouldn't cut down the tree because they muffle the noise from the traffic on the nearby streets. On windy days they absorb the dust blowing around and they protect us from the wind which can really blow hard where we live.

Mr. Smith wrote in his book as he realized how quiet the park was even when there were busy streets close by.

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Shona said "Mr. Smith you shouldn't cut down the tree because we don't just love trees for all they do for us. Trees are also very beautiful. They are so tall they seem to touch the sky and so big around you can't even hug them. They also give places for and families to have picnics and children to play.

Mr. Smith wrote the last sentence in his book and then stared up into the luscious green tree above him and smiled. He waited a few minutes and finally said "these are good reasons to keep the tree. I will have to take them to the Mayor at City Hall and she will decide if the tree stays. Darrin said "what will happen to the workers if you don't cut down the tree?" I don't know said Mr. Smith, we will have to wait and see. The children felt glad the Mr. Smith listened to their reasons, but they also felt sad that some people might not have a job. Just before he left Shona slipped him a folded up piece of paper with the word "ideas" written on the outside.

The children waited a whole week, which seemed like a very loooong time before Mr. Smith returned to the park to talk to them. They were nervous and excited to hear what he had to say. Well, he said, I spoke to the Mayor and told her all the reasons you gave me about how important the tree was. She was happy that there are children who care so much about the trees, but she also was worried about the safety of the playground and the Parks Department workers. We spent some time looking at our plans for the playground and we came up with a new one. He slowly unrolled the piece of paper and showed it to the children. A big smile came across their faces when they looked at it. Erin and Darrin clapped their hands in delight, Shona and Rebecca jumped up and down with glee, and Robbie gave Mr. Smith a big hug.

Picture of the new park-The tree is in the middle with trees planted around the outside of the park. The playground equipment is more eco-friendly and natural. The playground incorporates ideas from the children's plan.

The children were proud as they knew they had saved the tree and it would be there for many years to come, providing shade and clean air for the children to breathe, homes for small animals, making sure the rain did not flood the park, blocking the noise from the cars on the street, protecting them from the wind and dust and giving children a favourite place to play and have picnics with their families.

Appendix D

B.C Ministry of Education K-3 Big Ideas Science and Social Studies

Big Ideas Science K-3	Big Ideas Social Studies K-3
Communities are made up of individuals from diverse cultural backgrounds and traditions.	Indigenous cultures have developed a variety of systems to organize and govern themselves.
The past can be viewed through the stories of significant people, places, events, and objects.	Communities are interconnected with their natural environment.
Individuals and families must make choices about how to use their limited resources to meet their needs and wants.	Living things and their environment are interdependent.
Local actions have global consequences, and global actions have local consequences.	Water is a vital resource that cycles through the environment.
The local environment affects how a community meets its needs and wants.	Living things have features and behaviours that help them survive.
The basic needs of plants and animals are observable through their features.	Observable patterns and cycles occur in the sky and landscape.
Daily and seasonal changes affect daily life.	<i>Province of British Columbia, 2013</i>

Appendix E

Children's books that address the topic of sustainability

Title	Author	Year	Description
Beatrice's Goat	Paige McBrier	2001	A best-selling children's book that successfully addresses key components of sustainability. It tells the story of Beatrice, a young Ugandan girl, who finds a sustainable way to earn enough money so that she can attend school.
One Hen: How One Small Loan Made a Big Difference	Katie Smith Milway	2008	A true story of a young Ghanaian boy who raises poultry. Focuses heavily on the economic aspects of sustainability.
Planting the Trees of Kenya: The Story of Wangari Maathai	Claire A. Nivola	2008	Chronicles the efforts of Nobel Peace Prize-winner Wangari Maathai as she helps restore the Kenyan landscape to an environmentally healthy state.
Fernando's Gift <i>El Regalo de Fernando</i>	Douglas Keister	2001	A realistic photography selection about a boy whose family seeks to live a balanced, sustainable lifestyle in the Costa Rican rainforest. The book contains text in both English and Spanish.
Isabel's House of Butterflies	Tony Johnston	2001	This is about a young girl in Mexico whose family may have to cut down her favorite, butterfly-filled tree in order to survive. The book poses a difficult question: What happens if you cannot figure out a way to balance out concerns for the environment, economy, and culture?