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**THE PRIMARY SCHOOL FACTORS
THAT SHAPE THE ENVIRONMENTAL
KNOWLEDGE, ATTITUDES, AND BEHAVIOURS
OF CHILDREN**

A thesis
submitted in partial fulfilment
of the requirements for the degree of
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Abstract

As environmental issues continue to threaten the safety and longevity of the world we live in, we turn to today's children, handing the responsibility of the environment over to them in the hope that they will be better protectors of the environment than generations before them. But to ensure that children are capable of protecting the environment, it is vital to assess their environmental knowledge, attitudes, and behaviours, and the factors that influence these, so that adults can encourage children to be as sustainable as possible in an ever-polluted and degraded world. Humanity is accountable for an increasing number of environmental issues and disasters. We know about climate change, water and air pollution, plant and animal extinction, and the injustice and inequality that stem from these issues, yet we have not taken meaningful action. Why? Because the Western World is so dependent on their capitalist and consumeristic lifestyles, that any deviation from this is deemed unacceptable. We need to face the fact that lavish, materialistic lifestyles are not sustainable in a finite world. Our choices are either change our ways or doom the rest of humanity and the environment.

This thesis is based on research conducted in two primary schools in Hamilton, New Zealand, which aimed to explore the environmental knowledge, attitudes, and behaviours of children, and what factors in primary schools affect these.

Much literature exists on the relationship between children and the environment, yet literature lacks in areas pertaining to the influence of principals, school rules, extracurricular activities, and community resources. Existing literature looks at single influencing factors in isolation, while this research examines multiple factors to determine which ones are most important.

The research was organised under a case study design, with schools being the case studies. Within the schools, the research involved observation, interviews, and document analysis, all of which were examined using thematic analysis. The results showed that people, specifically passionate teachers and principals, were one of two most powerful influences on children's environmental knowledge, attitudes, and behaviours. Natural school grounds were the other most important factor, as they helped children to engage more deeply with nature, and make meaningful connections. School learning processes, rules and practices, extracurricular activities, and community resources also had significant effects on children's environmental knowledge, attitudes, and behaviours. Children were found to have environmental knowledge about ethical principles, environmental issues, environmental facts, and sustainable actions. Ecocentric attitudes were largely evident among the children, such as sadness, guilt, or disappointment, but a small number expressed anthropocentric attitudes, mainly indifference towards the environment. It was positive that a number of children carried out environmentally friendly behaviours, such as picking up rubbish, encouraging peers not to litter, and getting involved in optional environmental groups.

The main concluding recommendations were that schools should seek to employ teachers who are passionate about nature; school grounds should be natural and diverse wherever possible; children need to be empowered to act for the environment; and EnviroSchool participation should be compulsory for all schools.

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Chapter One – Introduction

If today is a typical day on planet earth, we will lose 116 square miles of rain forest, or about an acre a second. We will lose another 72 square miles to encroaching deserts, the results of human mismanagement and overpopulation. We will lose 40 to 250 species, and no one knows whether the number is 40 or 250...And today we will add 2,700 tons of chlorofluorocarbons and 15 million tons of carbon dioxide into the atmosphere. Tonight the earth will be a little hotter, its waters more acidic, and the fabric of life more threadbare. (Orr, 1994, p.7)

More than ever before, people are acknowledging the devastating and detrimental impacts that humans and their activities have had on the environment. The people of the 21st Century face an ever-growing collection of man-made threats, such as global warming, pollution, poor water and air quality, nuclear contamination, and species on the brink of extinction. We cannot feign ignorance or helplessness; for decades we have known the repercussions of humanity's actions on the environment, which have consisted of dominating, poisoning, and moulding nature to satisfy human narcissism. From the frightening reality of environmental disasters comes the hopeful realisation that while previous generations have failed the world, current generations could be the saviours. Today's children are the hope of the future, which places a huge amount of pressure and responsibility on their shoulders, but also puts obligations on parents, teachers, politicians, and everyday citizens to be positive environmental role models. As adults, we have a responsibility to ensure that children have the knowledge and skills able to effectively protect the environment. We need to pass on to children a passion for

nature, ecocentric attitudes and beliefs, and the ability and determination to act for the betterment of the environment.

Origins of this Research

My interest in environmental attitudes and behaviours has been lifelong. I have always loved nature, and enjoy the tranquillity and beauty of natural landscapes, from sunny beaches to snowy mountains. I have always had animals in my life; I have fond memories of waking up early on our farm to play with our puppy and chase the turkeys away from the cauliflower patch. I have endeavoured to look after the environment and animals through small actions such as being a vegetarian, recycling wherever possible, and adopting animals from shelters.

Despite my lifelong passion for nature, it was my younger siblings who inspired me to formally study sustainability and the environment. My five-year old brother and six-year old sister told me that they were learning about sustainability at school. I was so impressed that they could even say the word sustainability, let alone know what it meant. But my sister went on to tell me about reducing, reusing, and recycling, and different ways to look after the environment. This made me comprehend just how fundamental it is for children to generate positive environmental attitudes, value nature and, more importantly, to practise sustainable behaviours.

The Importance of Children

The future of the environment and humanity depends on the sustainable actions and mind-sets of today's children. We need to educate children about the danger and risks of current environmental practices which are destroying the environment, killing animals, and jeopardising the livelihoods of future

generations. Human production and consumption, as they exist now, are impossible to maintain, because of the finiteness of the natural resources on which they rely. If we want to protect the Earth for animals, ourselves, and future generations, there is no other option than to teach children about the benefits of sustainability in all areas of life, from transport and power, to food and clothing.

The Structure of this Research

This research investigates the factors in a primary school setting that affect the environmental knowledge, attitudes, and behaviours of children. The aim was to determine what factors are most influential when it comes to engendering positive environmental attitudes and practices in children, to help ensure that we raise a generation of environmental advocates and actors. The research was conducted through two case studies of primary schools in Hamilton, New Zealand. The two schools both had high decile ratings and were Enviroschools, but one school was large and urban, while the other was small and rural. One Year Six or Year Five and Six class in each school was the focus of study. Observation sessions were held, school documents were analysed, and semi-constructed interviews were conducted with children, teachers, and principals.

The two research questions which structured my study were:

1. What factors in the primary schools influence children's environmental knowledge, attitudes, and behaviours, and to what extent?
2. What environmental knowledge, attitudes, and behaviours do the children have?

Following this introduction chapter is the background chapter, providing preliminary information about the two case study schools, and the organisation

Enviroschools, which was a significant part of the case study schools and this research.

Subsequent to this is a literature review section. Defining sustainability and its many facets is vital for gaining a better understanding of what people need to know about the environment and sustainability. Specific topics include the ethical and financial aspects of sustainability, and different levels of sustainability. Literature on children and their relationship to the environment is then examined; the separation of children from nature, and conceptualisations of childhood are major features. Next, is a review of the literature on education, specifically pertaining to environmental education in New Zealand, and the importance of education in addressing environmental issues. Then, factors that affect children's environmental knowledge, attitudes, and behaviours are identified. Concluding the literature review section is small summary of communication, and its importance in relation to education and the environment, as well as a brief look at literature on methodological considerations.

The methodology chapter follows the literature review, acknowledging the pre-existing values, beliefs, and bias that I started this research with. It also looks at my research approach and design, how the data was analysed, the ethics of working with children, and limitations of the research.

After this are two results and discussion chapters, one for each research question. Chapter Five, on research question one, begins with profiles of the schools, children, and adults involved in the research. Then, the main factors that influenced the knowledge, attitudes, and behaviours of children are identified. This chapter is organised into six sections: people, learning processes, physical school environments, school rules and practices, extra-curricular activities, and

community resources. Chapter Six focuses on research question two, specifically looking at the children's environmental knowledge, emotions, and behaviours. Emotions and attitudes are separated in ecocentric and anthropocentric groupings.

Finally, Chapter Seven concludes the thesis, commenting on the importance of this research, and providing recommendations for future research and changes that schools can make for more effective environmental and sustainability education. References and appendices can be found at the end.

Chapter Two – Background

With proper support, children can acquire useful knowledge from participating in environmental activities and can contribute in a unique manner, with energy and vision, to finding solutions. (United Nations Environment Programme, United Nations Children's Fund & World Health Organisation, 2002, p.8)

This chapter provides some background information on the schools which acted as case studies for this research. Each school has been made anonymous and given a pseudonym to ensure the confidentiality of school documents and privacy of the children and adults who participated. Information about Enviroschools helps demonstrate how the organisation fits in with the schools' curriculums and cultures.

School A

School A is a co-educational, state, contributing school (a contributing school is a school that offers education for Years 1 – 6 and then the children move on to an intermediate, middle or high school) in Hamilton, New Zealand (Education Counts, 2015). It is a decile eight school with just over 600 students, 62 percent New Zealand European, 23 percent Asian, and 8 percent Māori. There is a fairly even spread of girls and boys – 48 percent and 52 percent, respectively (Education Review Office, 2014). A learner-centred approach is undertaken at the school, where children's learning needs are catered to differently, giving all children more of a chance to learn successfully. A team of 31 teachers, 4 leadership team members, 6 learning assistants, and 5 support staff run the school in 24 teaching rooms, and the school is well-resourced in terms of offices, halls, and other spaces (School A Website).

The school is in an urban area, situated next to a busy highway, and bordering a shopping centre and a suburb. The grounds of the school are dominated by buildings, but there are also several playgrounds, a substantial field, a swimming pool, a sandpit, netball and tennis courts, an Astroturf, gardens, and car parks. Many extracurricular opportunities are provided in the realms of music, culture, sport, and environment (School A Website). School A has been an Enviroschool for over 14 years and in 2014, they successfully renewed their status as an Enviro Green-Gold school – Green-Gold schools being the highest achieving Enviroschools (School A Enviro Website; The Enviroschools Foundation, 2015).

School B

School B is a co-educational, state, contributing school in rural Hamilton, New Zealand (Education Counts, 2015). It is a small country school with just under 130 students, 95% of whom are New Zealand European and the rest (5 percent) Māori. There are significantly more girls than boys – 56 percent are girls compared to 44 percent boys (Education Review Office, 2013). Being a small school, there are only seven teaching staff, one principal, one learning aide, and two support staff, and most teachers teach a mixture of year levels, for example, Years Two and Three or Years Four and Five (School B Information Booklet).

This decile 10 school is situated in a rural area in the outskirts of Hamilton (Education Counts, 2015), which is mostly comprised of farmland, lifestyle blocks, and agricultural organisations. The school is located off the road from a major rural road, but lower school speed limits have been imposed during drop-off and pick-up times. Apart from the noisy major road, the school enjoys a tranquil ambiance, with an abundance of trees, bush, and animals nearby. The

school grounds have quite a few buildings, but the relatively small number of children means that more of the grounds can be occupied for other uses. There are several playgrounds, a swimming pool, a sports court, gardens, a large field, a gully, and hundred-year old oak trees (School B Information Booklet). Overall, the school has a very natural feel, dominated by the environment which welcomingly intrudes wherever possible. This emphasis of nature works well with School B's environmental commitment as an Enviroschool – currently they are Bronze level (The Enviroschools Foundation, 2015).

Enviroschools

Enviroschools is a not-for-profit New Zealand organisation which aims to educate children about the environment, and support them to act with, in, and for nature to enhance and promote sustainability. This is achieved by taking the Enviroschools programme into schools. The Enviroschools philosophy is to encourage new generations of New Zealanders to value the environment and act sustainably, so that they will grow up to be more environmentally responsible than generations before (The Enviroschools Foundation, 2015). This is realised using a whole school approach, where all aspects of a school – physical environment, school management, curriculum, community, children, and staff – come together to make a sustainable learning environment, in theory and in practice (Ministry for the Environment, 2014; Waikato Regional Council, 2012). Enviroschools began in Hamilton in 1993 as a pilot study partnership between several schools, the Hamilton City Council, the Waikato Regional Council, and the Community Environmental Programme. Twelve years later, almost 1,000 New Zealand schools are Enviroschools, which means the organisation reaches about 250,000 children and teenagers nationwide. Primary schools have the highest rate of

participation, but all other levels of schooling are not far behind (The Enviroschools Foundation, 2015).

At a national level, Enviroschools is managed by the Toimata Foundation, an organisation which also manages Te Aho Tu Roa – a Māori programme embracing language and culture (Toimata Foundation, n.d.). Enviroschools was previously funded by the Ministry of Education, but the government cut its funding in 2009, claiming that Enviroschools did not fit with the national curriculum guidelines (Foy, 2009). Several years later, funding was reinstated, and it is now provided by the Ministry for the Environment. Entities, such as councils, organisations, charities, and businesses offer resources and funding opportunities for schools which are registered Enviroschools. Regional co-ordinators host events, help schools engage in the Enviroschools programme, and co-ordinate teacher training. Individual schools can take up the opportunity and challenge to become an Enviroschool, pledging commitment to the long-term goal of sustainability (The Enviroschools Foundation, 2015).

Chapter Three – Literature Review

Seasoned sailors avoid the clockwise vortex of calm winds and slow-moving currents of the North Pacific Gyre. And with good reason. Inside this dead zone is the Great Pacific Garbage Patch, where jellyfish ingest tiny plastic pellets in a floating graveyard of plastic at least twice the size of the US state of Texas. Here rests our empty plastic water bottles, lost footballs, and disposable cigarette lighters. (Dauvergne, 2015, p.218)

Why People Should Care about the Environment

Environmental issues and sustainable practices are relevant to everyone. No matter where we live, we cannot escape from the repercussions of human actions on the environment and we cannot excuse ourselves from practising sustainable behaviours. Arguably, children are the ones affected most by environmental issues; they are growing up in a poisoned and damaged world and they have been burdened with the responsibility of fixing the environment that generations before them have destroyed. This chapter looks at sustainability and children, and how the two intercept and rely on the other. It begins with an exploration into sustainability, looking at the current status of the environment, what sustainability is, and why it is essential. Following this, children's relationship with the environment is examined, specifically why nature is beneficial for children and how they have become alienated from it. Next, factors within primary schools that influence the environmental knowledge, attitudes, and behaviours of children are investigated, including teachers, principals, and school grounds, among others. Then, I look at the importance of communication and how it can be used for the good of the environment. Finally, literature on the methodological aspects of

ontology and human nature is investigated, as a starting point for the methodology chapter.

Critiquing Existing Literature

Before the in-depth examinations of literature and research begin, it is important to summarise the existing literature and identify gaps to establish what new areas can be researched and how the research can be done differently. As Alvesson and Sandberg (2011) assert, identifying new areas for research should not always be done by “gap-spotting” as this can solidify rather than challenge norms and assumptions in the literature (p.247). Guided by this, I have attempted to not only look for gaps that need to be filled, but also critically appraise the existing literature for strengths and weaknesses.

Critiquing past research, the majority of studies have focused on one or two factors that affect children’s environmental knowledge, attitudes, and behaviours, rather than focusing on the children themselves. Focusing on the children, like I have done in this research, allows for more insight into what factors affect individual children, and what factors are more or less influential than others.

Although there is a large base of previous research investigating children’s relationships with the environment, there were certain areas of research that were inadequate and incomplete. Scarce research exists looking at the effect of principals, extracurricular school activities, school rules and culture, and community resources. All of these elements affect children to varying degrees, but they have largely been overlooked in previous studies. Additionally, there is limited research relevant to New Zealand children, more of which would be

valuable to not only New Zealand academics, but government ministries, teachers, principals, parents, and children as well.

The Significance of Sustainability

Historically, there have been two strategies that people could adopt if they wanted to survive: compete against nature or work with it (Furze, Savy, Brym & Lie, 2008). Today, if people want to ensure the longevity and wellbeing of nature and humanity after all of the destruction and harm that has occurred, the only way forward is to co-operate with nature and “live” sustainability.

Defining sustainability. Sustainability has been acknowledged as a vague and complicated term, because it can be interpreted in so many different ways. Elusive and often hard to accurately define, some authors cynically question whether or not sustainability is indeed a real principle, likening it to a form of greenwash and calling it a “buzzword” (Prudham, 2009). In its most simplistic definition, sustainability is people living peacefully and interdependently with the environment (Dernbach, 2012). It involves using resources in a way which means that the needs of today’s people are satisfied, without jeopardising the resources for the needs of future people (Ministry for the Environment, 2014; Resource Management Act, 1991; United Nations, 2014; Merriam-Webster, 2014). New Zealand’s Resource Management Act 1991 goes slightly deeper in its definition of sustainability, alluding to the imperative of establishing harmony between the needs of present and future generations, and asserting a need to protect the natural environment while reversing and alleviating the damage done to it.

The future element of sustainability is particularly important; we must ensure that generations to come have a healthy and flourishing natural environment. This can be described as “intergenerational equity” (Dernbach,

2012, p.4). There are several aspects of sustainability which make it such a perplexing and problematic term. Three important elements form the three pillars of sustainability: environment, society, and economy. Only with careful balance and consideration can the three pillars exist in harmony (Littledyke, Taylor & Eames, 2009). These three features can also be thought of in terms of ecology/environment, economy/employment, and equity/equality (Edwards, 2005). Each depends on the others for wellbeing and success: the environment relies on society for care and protection, and funds from the economy in order to be protected; society depends on the environment for basic needs, and the economy for money and jobs in a capitalist world; finally, the economy relies on the environment for resources which make sellable products, and people to make those products. Dernbach (2012) argues that *peace and security* is a missing pillar of sustainability, as the environment, society, and the economy cannot function without some level of peace and harmony. Davis (2010), on the other hand, believes that *political* is the missing fourth pillar of sustainability.

An ethical issue. In addition to the three (or four) pillars that make up sustainability, there are ethical facets of the term which need to be considered. Focusing on environmental sustainability, the short-term competes with the long-term (Edwards, 2005; Dernbach, 2012). In other words, the needs and wants of today's people are competing with the needs of future people, as we use up the resources that future people will depend on, which makes sustainability an ethical issue. When it comes to nature, people need to think in terms of what is fair, right, and honourable. By betraying the environment, we are betraying our children, grandchildren, and great-grandchildren (O'Neill & Spash, 2000), all for personal, and often materialistic, gain.

Money matters. The opportunity for financial gain can also threaten environmental ethics (O’Neill & Spash, 2000). When people assess the value of the environment in terms of money and economic gain they weigh up the “value of some environmental good or the cost of some environmental harm” (O’Connor, 2000, p.6). Monetary figures make compelling arguments for why the environment should be disrupted or destroyed (O’Connor, 2000). In fact, the economy has been made more important than nature and people, despite the fact that those are the two things on which the economy relies (Baker, 2006). Harvey (1996) considers sustainability to be about sustaining Western values of materialism and consumerism, as opposed to sustaining the environment. It is essential that people look beyond environmental value solely in terms of money. Nature, animals, people, justice, experiences, health, and the future are all valuable as well – why are we unable to appreciate the sanctity and importance of these things over money? If the natural resources and environments that we rely on are damaged or depleted, the economy will inevitably deteriorate (Ekins, 1991).

More or less sustainable. An additional reason why sustainability is a complex concept, is because true and complete sustainability does not exist; we can simply either be *more* or *less* sustainable (Dernbach, 2012). Some people believe that sustainability is so popular because it is “non-committal” and very hard to measure (Leist & Holland, 2000, p.4). Milne, Kearins and Walton (2006) liken this to the ‘journey’ metaphor, whereby people commit to the journey of sustainability but not the destination, because the destination is significantly harder to arrive at. Indeed, sustainability is so hard to implement because global support is required in order for it to be as successful as possible (Goodall, 2012).

Not every place in the world is a site of environmental issues, but no place can escape from causing the issues or suffering from them (Adger & Jordan, 2009). Because of the sheer size and complexity of the task, governments are one of the only institutions capable of forcing people to stop environmental harm, and helping them to adopt sustainable practices. While governments are able to make good and bad environmental practices legal or illegal, everyone in society needs to act on these laws in order to achieve the goal of sustainability. Non-government organisations, industries, companies, education institutions, social welfare organisations – everyone at every level needs to accept responsibility for becoming *more* sustainable (Dernbach, 2012), even if *complete* sustainability does not exist.

The importance of being sustainable. Knowing that people need to adopt sustainable practices is one thing, but it is also important to know why we need to be sustainable in the first place. If we do not address the human behaviours causing environmental issues, then sustainable measures act as the ambulance at the bottom of the cliff. Reactive is good, but proactive is better.

The natural environment has a carrying capacity: resource limits that can only sustain a certain amount of human, animal, and plant life (Baker, 2006). Currently, people are living beyond this carrying capacity, consuming much more than they need for healthy lives – particularly in the Western World (Smart, 2010). Smart (2010) claims that when the population of the Earth was at 6.6 billion, the environment could only sustain 2 billion people enjoying the high standard of living that existed in Europe. Overall, people are living beyond nature's means; however, many are living in poverty while the rich use most of the resources.

Humans acknowledge the instrumental value of nature, but rarely the intrinsic value, because we have appointed ourselves superior to nature on the way to progress. We tailor the environment to meet our distinct needs, such as turning forests into farms, and waterways into electricity dams (Baker, 2006), with little consideration for the effects of these actions. But we cannot deny the consequences when evidence of environmental damage is everywhere (Adger & Jordan, 2009). We knowingly and willing (over)use nature's resources which is jeopardising people, animals, and the environment of the future, but we are shrugging these issues off for the next generation to deal with (Goodall, 2012). Humans can be perceived as part of nature, not distinct from it, and yet we destroy our own habitat (Sandler, 2005) – a dangerous and naive practice.

Sustainable development. Sustainable development is a branch of sustainability, specifically relating to industrial and urban development. This principle is best articulated in the Our Common Future Report, also known as the Bruntland Report, when the first definition of sustainable development was established: “development which meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p.41). It encompasses all of the principles of sustainability, but is focused more on industries, economies, buildings, and human “progress”. It is important for sustainable development to exist alongside everyday sustainable practices.

Environmental issues we face. It is no secret that the world is facing a series of current and impending environmental crises due to the destructive behaviour of humans. There are two main ways in which we affect the environment: by taking resources out of it, or by polluting into it (Furze et al.,

2008). Environmental issues are being created by the increase in the world's population and the pressure of supporting so many people (Ekins, 1991; Dernbach, 2012). Anthropogenic environmental issues include global warming due to greenhouse emissions, the extinction of plant and animal species, ever-accumulating waste, and the depletion of non-renewable resources due to a growing human population and increased consumption (Boyes, Skamp & Stannistreet, 2009; Coertjens, Boeve-De Pauw, De Maeyer & Van Petegem, 2010; Littledyke et al., 2009; Goodall, 2012).

New Zealand has its own specific problems that are jeopardising the country's "clean, green" image, such as polluted waterways, habitat protection, and the manipulation of natural land (Eames & Barker, 2011; Calik & Eames, 2012; Littledyke et al., 2009). These environmental issues, and the subsequent awareness that has been created, has led to sustainability being a prominent theme in legislation, policies, and initiatives. It is believed that if humans act sustainably, we can alleviate the pressure placed on the environment and, hopefully, reverse some of the damage. Technology has been hailed as the saviour that will ameliorate the damage we have done to the environment, but Smart (2010) asserts that we cannot rely solely on advancements in science and technology, because human apathy and endless consumption may jeopardise all of the good it does.

Conceptualising levels of sustainability. There are various ways of conceptualising sustainability; some of these are explored below.

Weak and strong sustainability. Sustainability can be thought of as a continuum, where people are more or less sustainable than others. One way of distinguishing between levels of sustainability is the weak versus strong dichotomy. This dichotomy focuses on the attitudes towards natural capital, which

includes the processes, goods, and services that the environment provides (de Groot et al., 2002, as cited in Ang & Van Passel, 2012). Weak sustainability considers that any decrease in natural capital can be easily replaced with man-made capital, and that the growth of the economy should be balanced with the protection of the environment (Leist & Holland, 2000; Kratena & Streicher, 2012). People who identify with this position are generally not concerned about the depletion and destruction of the natural environment (Ang & Van Passel, 2012). Conversely, strong sustainability considers it essential to keep natural capital maintained and never declining, with strong limits imposed on the use of natural resources (Leist & Holland, 2000; Kratena & Streicher, 2012; Ang & Van Passel, 2012).

Ecocentric versus anthropocentric. Another dichotomy measuring sustainable attitudes is the ecocentric-anthropocentric divide. Ecocentrism values nature intrinsically, acknowledging that it is special because of how it exists naturally (Leist & Holland, 2000; Thompson & Barton, 1994). People who are ecocentric will protect the environment even if it jeopardises human comfort and advantage, and reduces human materialism (Thompson & Barton, 1994). They consider humans to be part of nature, as opposed to separate and superior (Ekins, 1991). In stark contrast, anthropocentrists value nature only for what it can provide to humans, and do not see value in anything that does not benefit humans. Anthropocentric perceptions of the environment are human-focused and selfish, and people who align with this “will be less likely to act to protect the environment if other human-centred values such as material quality of life or the accumulation of wealth interfere” (Thompson & Barton, 1994, p.150). The rights of animals are not considered, or at best, are less important than human rights,

because humans are considered superior to all other species (Kopnina, 2014).

Deep and shallow ecology. One final distinction of levels of sustainability is shallow and deep ecology. (Diehm, 2014). Shallow ecology is a movement where people try to stop environmental damage and depletion for the good of humanity, and the sustaining of health and wealth. Essentially, shallow ecology is anthropocentric (Luke, 2002), only concerned for the environment because of human self-interest, to ensure human comfort, convenience, and lifestyle. Deep ecology, on the other hand, views nature and all living things as having intrinsic value, beyond the benefits they provide to humans. This philosophy considers all creatures to be equally deserving of life (Kopnina, 2012).

Environmental racism. An interesting area of academia which shows the importance of sustainability for humans as well as the environment, is environmental racism. Different environments and environmental issues have found to be associated with specific members of society. Often, deteriorated or poisoned environments end up near poor, lower class, or disadvantaged people (Furze et al., 2008), as the wealthy have the power to move the issue away or move themselves away from it. The Western World is responsible for not only destroying the environments they live in, but environments in developing countries as well (Baker, 2006). This serves to sustain their affluent, luxurious lifestyles while people in developing countries need to destroy their own environments just to survive (Ekins, 1991).

Cotton farming provides a good, but sad, example of environmental racism. Growing and farming cotton is an extremely damaging environmental activity. In Central Asia, the Aral Sea has been used for cotton farming for many years, and this has had a detrimental effect on the environment; the lake has

shrunk by 90 percent meaning fish cannot survive in the remaining salty water, and a lot of the area that was a lake is now a desert, suffering from toxic dusts. Environmental effects like these are predominantly felt in developing countries that grow cotton, yet rich countries consume four times the amount of cotton than poor ones. The wealthy world gets the benefit of the final product, while the developing world has to suffer the damage from creating that product (Goodall, 2012).

Linked to the concept of environmental racism are ecological refugees: people who have had to leave their homes because the environment has been so severely damaged it can no longer sustain them (Ekins, 1991). Frequently we see examples of this in developing countries while the Western World looks on.

The abundance of sustainable alternatives. With the environment severely damaged and depleted, sustainability is vital, and sustainable products, behaviours, and ways of life are everywhere – if we look for them. For example, in Hamilton, paper, glass, tin, and plastic recycling are all provided by the council, providing a cheap and easy way of being environmentally friendly. Buying or creating compost or worm bins to dispose of food scraps and plant waste, lessens the amount of rubbish going to landfills; currently, in Auckland, roadside rubbish is 50 percent organic matter (Zero Waste New Zealand, 2015). The utopian ideal would be a circular economy where almost everything is reused or recycled, meaning close to no waste is produced and no new resources need to be taken from the environment. Down-cycling is a less intense version of the circular economy, where products can be reused several times, not indefinitely (Goodall, 2012). Even in local supermarkets, sustainable alternatives are everywhere, from energy-saving lightbulbs, to cleaners with zero chemicals, to organic meats and

eggs. It is essential that people adopt sustainable alternatives, and that they do not remain niche products and services.

Societal structures, processes, and ideologies that affect the environment. Structures and processes in society, such as capitalism, consumerism, and political systems of government, influence people's environmental attitudes and behaviours, including young children's. This section examines the societal structures that affect how people perceive and treat the environment.

Ecocentric influences. When comparing societal processes that encourage ecocentrism or anthropocentrism, there are far less that promote ecocentric attitudes and behaviours. The political system of social democracy is possibly the ideology most closely aligned with the values of ecocentrism. Social democracy, at a basic level, aims to achieve social change, due to capitalism creating societal inequality and injustices (Page, 2008; Cheyne, O'Brien & Belgrave, 2008). While social democracy does not aim to eliminate capitalism, as it acknowledges it does have benefits, it does aim to reduce the harmful impacts of capitalism. Social democracy implores a significant welfare state, provides social housing, and redistributes wealth (Cheyne et al., 2008). When it comes to environmental issues specifically, arguably the strongest link between socialism and anti-capitalism is eco-socialism, which blames capitalism for the environmental damage that has occurred (Cahill, 2008). In my view, the social democratic view of equality and justice is linked to ecocentrism, as it aligns with the ideal of justice for the environment as well as people, and that all people should contribute to the well-being of the environment. People need to consider themselves as members of nature as opposed to conquerors and owners of it (Sandler & Cafaro, 2005), and

realise that everyone has a role to play in helping to protect it.

Anthropocentric influences. Neo-liberalism is the political ideology that I consider to be most closely aligned to anthropocentrism because of two key features. First, neo-liberalism promotes individual responsibility, self-interest, and an “all for one” attitude, where the market provides people with all of the free will they need – to buy or sell whatever they like. Second, neo-liberalism heightens inequality by not valuing state intervention or welfare, and even sometimes by desiring inequality (Cheyne et al., 2008). Smart (2010) asserts that neo-liberalism has contributed to the wasteful, consumeristic society that exists today. The selfish and individualistic goals of neo-liberalism explain how some people can justify manipulating and destroying the environment to suit their own needs.

Capitalism and consumerism are closely linked to both neo-liberalism and anthropocentrism. Capitalism is private ownership “of the means of production”, where a person or people employ others to produce goods and services that are then sold (Lessnoff, 1979, p.594). Capitalism and the endless creation of products have severely harmed the environment, because constant manufacturing requires infinite resources in a finite world. It must be acknowledged that sustainability is not an attempt to stop capitalism (I honestly believe capitalism will never cease), but arguably, sustainability and capitalism can work together for the greater good under the ideal of green capitalism, where capitalism operates sustainably. In other words, green capitalism will be the end result of sustainable development, which allows capitalism to continue, but only in a sustainable way (Adger & Jordan, 2009). It is imperative that this occurs, because if humans can no longer harness the resources from nature, the economy will stutter and fail irreparably (Ekins, 1991).

Consumerism derives from capitalism, and both are now perceived as ideal ways of living which more and more people aspire to. Superficial and frivolous consumption is associated with status, and has connotations with wealth, mobility, and happiness, which is why an increasing amount of people consume unnecessarily. Children, in the Western World particularly, are learning from the adults around them that new is better and everything is disposable, meaning the current generation are growing up as experienced consumers, without considering the effect on the environment (Smart, 2010; Ekins, 1991). The word ‘consumption’ comes from the Latin word ‘consumere’, which means to waste or use up; this effectively sums up the notion of consumerism. The frightening thing about human consumption is that it is insatiable. There are always new things that people want (Smart, 2010). It is important that people consider the environmental and social impacts of the products they buy (Smart, 2010), and look for sustainable and ethical alternatives. To protect the environment, what is needed is “moral extensionism and human self-restraint” when it comes to consumerism (Sandler & Cafaro, 2005, p.33).

Sustainable practices are necessary and often easy to adopt, yet there is not always a large uptake of sustainable alternatives. Children could be the key to bridging the divide between positive environmental attitudes and positive environmental actions. The next section looks at the importance of involving children in discussions about the environment.

Children and the Environment: A Vital Relationship

Children are inextricably tied to environmental issues, whether they are contributing to the issues or working to ameliorate them. There are two main reasons why children should be involved in environmental decision-making. First,

children deserve a healthy and vibrant environment that they can live, grow, and flourish in; it is an issue of social justice because children of today are current citizens of the world and should be involved in decisions about their environment (United Nations, 1992; Hayward, 2012). Second, children can contribute authentic and creative perspectives, opinions, and ideas about the environment which can aide or revolutionise environmental practices and decision-making (United Nations, 1992; Hayward, 2012). This not only relates to natural environmental contexts, but social and economic contexts as well (United Nations, 1992).

Children also need to be considered when it comes to the environment because they are more vulnerable, are less equipped to deal with stress, and are heavily affected by the environments around them (Elliot, 2010). Additionally, it is imperative that children are involved in environmental decision-making, because when children are deemed old enough to contribute (as adults) the environment will be even more degraded, with water and air pollution increasing, animal and plant species disappearing, and natural resources diminishing everyday (Davis, 2010). In my opinion, waiting is not an option. It is important that adults think of children as “environmental stakeholders”, just like them (Davis, 2009, p.228), because children and nature have an interdependent relationship, with the health of each relying on the other (Freeman & Tranter, 2011).

Why children? Some people believe that adults are a lost cause, as many are so entrenched in their ways that they cannot or will not change (Boyle, 1999). Studies have shown that children are more likely to take action for the environment than older people, which is positive for the future of the environment (Torgler & Garcia-Valinas, 2007). In contrast, however, there is apparently panic

and concern about young people, with adults fearing that they are apathetic and will not act to save the environment (Hayward, 2012). Hayward (2012) believes that these worries are unfounded, saying “the energy of contemporary youth movements reminds us that a combination of youthful populations and frustration has been a key factor in revolutionary change for centuries” (p.10). She asserts that children and young people are the key to saving the environment.

Growing up distant from nature. There has been a shift in people’s engagement with nature, meaning that children today are growing up distant from nature. For children of the past, nature was something they grew up in and with; it was everywhere and always surrounding them, but as Louv (2010) claims, “for a new generation, nature is more abstraction than reality” (p.2). This quote starkly captures the sad reality we face: increasing numbers of children are growing up not knowing what nature is, or suffering from what Louv (2010) calls “nature-deficit disorder” (p.206).

Today, children are being raised indoors, with lives that are void of nature; they have become “containerized kids” (Louv, 2010, p.35). Research in the Netherlands concluded that compared to children in the 1950s and 1960s, early 2000s children played outside less often, for shorter amounts of time, and in smaller areas (Louv, 2010). This trend is intergenerational as well. In one study, despite the fact that 70 percent of surveyed mothers said they played outside daily when they were children, only 31 percent of their own children did the same (Freeman & Tranter, 2011). A similar study in the United Kingdom reported that 40 percent of parents played in woodlands and rural areas as children, but only 10 percent of their children did (Freeman & Tranter, 2011). Children have fewer outdoor areas available to explore at home, and indoor play spaces are valued by

parents because they allow for easier adult supervision. Children also grow up in car-dependent lives and societies, further separating them from the environment (Freeman & Tranter, 2011). These trends are concerning, because parents have previously played a stronger role in educating their children about the environment, teaching them to value its uniqueness, beauty and tranquillity, and the importance of protecting it.

Nature and schools. For some children, school provides the only location and time where they can play outside (Freeman & Tranter, 2011), so it is concerning that schools have looked to eliminate play time. In the United States nearly 40 percent of primary schools either considered or did erase recess, so as to provide more time for indoor, academic learning, and because of the feared dangers of outdoor play (Louv, 2010). Some teachers view recesses or lunchtimes as breaks for children between learning sessions, but playing outside in the environment provides children with different locations and resources for learning, as well as chances to experience and engage with nature (Freeman & Tranter, 2011). School environments can be particularly effective learning spaces, as children are familiar with the sites and know they are safe (Burley, Daunis, Walker, Shelton, Cuifi, Coleman & Matheu, 2012).

The vitality of nature. Natural environments provide many other benefits for children, other than enjoyment. Humans have developed in and with nature, making nature a part of humanity that cannot be lost otherwise we jeopardise our own existence. Louv (2010) believes that animals and the environment can act as a type of therapy, helping people in many different ways. People can benefit from nature on a much deeper level, remembering interactions with the environment as fond memories, because “nature does not steal time; it amplifies it” (Louv, 2010,

p.7). The natural environment has also been found to benefit the health of children, with interaction with nature being linked to lessening the symptoms of ADHD, advancing mental abilities, developing senses, and stopping mental conditions like stress, trauma, and depression (Louv, 2010; Freeman & Tranter, 2011). Playing in the environment also makes children more physically active (Louv, 2010), which is vital as more children are overweight, obese, and facing more weight-related health issues than ever before (Ministry of Health Manatū hauroa, 2014).

Conceptualisations of childhood. Adults view children in many different ways. In different parts of the world, children are considered burdens, accessories, or sources of income; although, the latter was outlawed in New Zealand in the early 20th Century. But in the Western World in particular there is a tendency for adults to perceive children as innocent, unable beings who need protecting. While protecting children is an important aspect of successfully raising a child, there is a concerning trend of extreme overprotection which is jeopardising children's engagement with and understanding of nature.

Fear society. Parents' protective actions are often fuelled by fear: fear of other people, fear of injury, fear of the outside world. While well-intentioned, parents are alienating their children from anything deemed to be dangerous, which includes nature and outside areas. Fear of nature is often a casualty of other fears, such as traffic danger, stranger danger, and criminality. "Daily life is coloured by fear" (Louv, 2010, p.126), but Louv (2010) asserts that this fear is "indoctrinated" by the media (p.125). Every time we open a newspaper, turn on the news or visit the *Stuff* website we are bombarded and overwhelmed with horror stories. It is easy to understand why parents are so paranoid and worried for their children, but

people need to accept that not all risk can be avoided, because danger exists in inside environments as well (Louv, 2010).

“Bubble-wrapping” children has become a popular parenting tool in the past few decades, as fear of the outside world frightens parents into keeping their children close and protected at all times (Malone, 2007; Furedi, 2002, as cited in Duhn, 2012). This sheltering of children goes beyond the physical, entering mental and emotional sheltering as people protect children from awareness of the world’s ever-growing and ever-dangerous environmental problems, due to the belief that childhood is a time of innocence. However, it may be detrimental to children’s futures if they are unable to comprehend important issues, as today’s children will grow up in an increasingly complex and uncertain world which they will know less about and be more at risk in (Duhn, 2012). It is important that adults prepare children for life in an unstable and unhealthy environment, and that we educate for sustainability, not consumerism (Freeman & Tranter, 2011).

In contrast to this protection of innocence, Freeman and Tranter (2011) claim there is a “disappearance of childhood”, with children – intentionally and unintentionally – being burdened with adult worries, such as world wars, disease, and environmental degradation (p.7). It is not always parents inducing fear into children’s lives; the media should be accountable for some of the blame as children witness their horror news stories as well. From my own experience of having younger siblings, it is often hard to know whether or not to educate children about environmental issues. On the one hand, it is imperative that they know about the environment and how to care for it, but on the other hand, I do not want to make them feel fearful, overwhelmed, or disempowered.

The fear that adults express influences children often making them, too,

fear nature and avoid it. Louv (2010) found in his research that “for many children, nature still offers wonder. But for many others, playing nature seemed so...Unproductive. Off-limits. Alien. Cute. Dangerous. Televised.” (p.10). Children have become so separated from nature that it has become an abstract concept, only seen in books, on the internet, and on television; they can see it, but not touch it (Louv, 2010). Sometimes adults keep children away from nature to protect animals and plants, especially native or endangered ones, but often children are kept inside due to adults’ preoccupation with tidiness and structure, or seemingly irrational fear of lawsuits and injuries (Louv, 2010).

The divide between children and nature. Connected to the concept of bubble-wrapping is the reality that children are becoming alienated and separated from nature as they grow up in largely urban environments and have less engagement with the outside, natural world. Freeman and Tranter (2011) call this environmental amnesia, where children suffer a lack of fun, exciting, and deep interactions with nature. Going further than a *disconnection* from nature is a *fear* of nature, which Wilson (1997, as cited in Prince, 2010) calls “biophobia”. It is deeply concerning that children are becoming so disengaged from nature, as it means they will be deficient in “environmental competence” (Malone, 2007, p.523), not only when it comes to understanding the outside world, but knowing how to look after it sustainably as well. Freeman and Tranter (2011) assert that “childhood experiences have shown to be key determinants of adults’ interest in nature” (p.161). If children are able to interact and engage with nature they can more deeply connect with it and “develop empathetic environmental values” (Aguirre-Bielschowsky, Freeman & Vass, 2012, p.93). These things are essential if we want children to protect the environment in the future. Integrating

sustainability further into the education sector is one way of sustaining and re-establishing children's relationships with the natural environment.

Education: The Link Between Children and Nature

Education has the potential to not only transfer knowledge, but to promote and inspire action as well. Being a basic human right (United Nations, 2014) and one that is increasingly accessible to more and more people, education is the perfect vehicle for engendering a sense of environmental responsibility and sustainable action in people, as education has the potential to change people's attitudes and behaviour, and make them more active citizens (United Nations, 1992; UNESCO, 2014; MacFarlane, 2011; Davis, 2010).

Education will contribute to the alleviation of environmental issues and the increased use of sustainable practices (Skamp et al., 2009; Calik & Eames, 2012; Aguirre-Bielschowsky et al., 2012; Taylor, Nathan & Coll, 2003). This is because "early investments in human capital offer significant returns to both individuals and to the wider community" (Davis, 2009, p.227). Early childhood is the time during which important human development occurs (Davis, 2009), and childhood interactions with nature can create passion for nature in later life (Freeman & Tranter, 2011). This contributes to what Louv (2010) believes: "environment-based education can surely be one of the antidotes to nature-deficit disorder" (p.206).

International research has highlighted the need for children to be involved in environmental decision-making, and education is one way that this can be achieved (United Nations, 1992), so that children not only understand environmental problems, but have the skills and knowledge necessary to be able to address them (United Nations Educational Scientific and Cultural Organisation,

2014; UNESCO, 1977). Agenda 21 states that education must be explicit in its teaching of sustainability, and countries should include the “concepts of environmental awareness and sustainable development throughout the curricula” (United Nations, 1992, p.276). Additionally, education should provide children and young people with opportunities to voice their opinions on environmental decisions (United Nations, 1992). Environmental education is no longer a nice option, but a necessity, an imperative for the longevity of nature and people (Boyle, 1999). When children are given a voice about environmental decisions, they may offer unique perspectives and solutions for environmental issues, because it is a way for them to feel empowered and included in an issue that is frighteningly large and intangible. The ins and outs of environmental education, with a particular focus on New Zealand, will be developed in the following section.

New Zealand’s neo-liberal education sector. According to many academics, education is used as a tool to propel capitalistic and consumerist agendas (Chapman, 2011), and this is evident in New Zealand’s education system which privileges economic outcomes of education. Numerous documents from the New Zealand Ministry of Education exemplify a devotion to the economy. One of the two main goals for the education system in 2012/2013 was to “[maximise] the contribution of education to the economy”, and this has been reiterated elsewhere: “the performance of our education system is critical to achieving a high-income, knowledge-based economy” (Ministry of Education, 2013, p.8; Ministry of Education, 2014).

The neo-liberal ideology – under which the current New Zealand government is run – has been criticised for viewing the education sector as a

money-making tool and a vehicle for controlling and socialising the future workers of the capitalist regime (Chapman, 2011; Chapman, Flaws & Le Heron, 2006; Duhn, 2012; Eames & Barker, 2011). Neo-liberalism has also been blamed for environmental and sustainability education not being adequately implemented in the education system. In fact, some say that sustainability is nothing more than a rhetorical concept in the New Zealand education system, and that any mention of sustainability is merely a façade, lacking any real depth. This is evident in numerous restructurings of the education system over the past few decades along neo-liberal principles, with environmental education and sustainability conspicuously absent from curriculum guidelines (Eames & Barker, 2011; Chapman et al., 2006; Chapman, 2011). Neo-liberal states are also amongst the most wasteful, clearly not aligning with sustainable goals (Hayward, 2012).

Sustainability in the New Zealand curriculum. The Ministry of Education's New Zealand Curriculum for English-medium teaching and learning in years 1 – 13, scarcely focuses on environmental and sustainability education. Sustainability – environmental, social, cultural, and economic – is mentioned in the visions and principles sections within the curriculum. Sustainability is also mentioned as a value “to be encouraged and modelled and to be explored by students” (Ministry of Education, 2007, p.37). This is the rhetoric that academics highlight, because in reality sustainability is mentioned in the learning structure for only one of the eight key learning areas – science (Littledyke et al., 2009; Eames, Hill, Barker & Mardon, 2011; Ministry of Education, 2007). There is weak commitment to the environment and sustainability.

Structured environmental learning. There are two main approaches to the way that children have been taught about environmental issues: environmental

education (EE), and education for sustainability (EfS) (throughout this thesis when I refer to environmental education, I am not referring to the EE approach, but rather education about the environment in general). Environmental education is learning about, in, and for the environment, providing children with knowledge, experience, and steps for practical action (Prince, 2010). It also involves teaching children how humans, culture, and the natural environment intersect (Aguirre-Bielschowsky et al., 2012). Education for sustainability on the other hand, recognises the complex relationships between the environment, society, and the economy, and acknowledges how essential sustainability is for current and future generations (Taylor, et al., 2003; Littleddyke et al., 2009). The inclusion of society and culture in environmental education is very important, and the Enviroschools Foundation epitomises this culture-nature relationship. Two of its five guiding principles acknowledge the importance of culture and people: Māori perspectives, and respect for diversity of people and cultures (The Enviroschools Foundation, 2008).

Effective environmental education. Nagra (2010) writes that “environmental education envisages the environmental approach to education and more so a way of learning rather than merely a subject of study” (p.153). Research has found that schools which focus heavily on the environment in their teaching, positively affect children in many different ways, and increase their grades in many different subject areas (Louv, 2010). Forest schools are creative educational alternatives which make forests a normal and routine part of school life (Freeman & Tranter, 2011). Research found that the Scottish Forest School affected children’s learning in areas of health, social, education, and environment (Borradaile, 2006, as cited in Davis, 2009). Another study found that active

learning about the environment, such as gardening, cleaning local environments, and general positive environmental actions, was the most effective way of changing children's environmental attitudes and behaviours for the better (Ballantyne et al., 2001, as cited in Burley et al., 2012). Shallcross, Loubser, Le Roux, O'Donoghue and Lupele (2006) back up this claim, asserting that helping children to focus on actions that can actually be done, reduces the feeling of powerlessness. They go on to say that if environmental learning is inextricably linked to environmental action, it strengthens children's relationships to the environment and means they are more likely to continue to act in sustainable ways (Shallcross et al., 2006).

Place-based education (or community-oriented schooling), which moves children outside to learn about the nature in their school grounds and local communities, is another way of integrating the environment into children's learning (Somerville & Green, 2011). It is valued by many educators because it enables children to better understand the cultural and natural features of their local area and develop meaningful relationships with nature, better understand the environment, and "[deepen] their empathetic connections to the earth" (Sobel, 2004; Thomashow, 2002, as cited in Somerville & Green, 2011, p.18). Samborski (2010) asserts that all school subjects can be moved outside to a natural environment, meaning there are endless opportunities for children to connect with nature across the curriculum.

The Arts, specifically, have been recognised as a powerful tool for engaging children more deeply in environmental learning and developing positive environmental attitudes in them as well. Art provides children with a way to link cognitive learning with emotional learning, connecting the head, the heart, and the

hand. Artistic and creative endeavours allow children to “explore issues, solve problems, collaborate and develop their ideas” (Littledyke et al., 2009, p.180), making them effective tools for environmental education.

Māori perceptions of nature. In New Zealand it is appropriate to acknowledge Māori views on the environment within environmental education, as they are the indigenous people of our country with the most historic knowledge of our local environment. Historically, Māori have had an intimate relationship with nature and, thus, they have accumulated ample environmental knowledge (King, Skipper & Tawhai, 2008). Māori people’s relationship with nature is largely spiritual, and includes legends, traditions, and beliefs about how the environment originated. In Māori belief, Ranginui e tu iho nei is the sky father and Papatūānuku is the earth mother. Together, they had many children, each of whom was given charge of part of the natural environment. Tāne Mahuta – god of the trees – was considered most important, but other gods took care of the sea, wind, animals, and food. Māori consider people to be children of the Earth, owing their lives and livelihoods to nature, and they feel an unbreakable connection between humans and nature (Roberts, Norman, Minhinnick, Wihongi & Kirkwood, 1995). In recent times, cultural homogenisation and a Western-instigated separation from nature has been detrimental to Māori (King et al., 2008), and the environment as well, as Māori value sustainability and recognise the intrinsic value of nature, which Western people less often acknowledge (Roberts et al., 1995).

The Enviroschools Foundation has done well incorporating Māori views into its environmental philosophies, and it encourages schools to acknowledge Māori perspectives and traditions in environmental and sustainability education

(The Enviroschools Foundation, 2008). I believe that if New Zealand politicians and citizens are serious about protecting the environment, an uptake of Māori environmental values is needed, as it would mean more respect for nature as a living, breathing creature, and less focus on the instrumental, economic values of nature.

Organisations promoting sustainability. While the curriculum fails to adequately acknowledge the issue of sustainability with neither EE nor EfS being mandatory (Eames & Barker, 2011), there are quite a number of New Zealand organisations which support and facilitate environmental and sustainability education in schools. Enviroschools is arguably the most successful environmental education initiative – a non-governmental, not-for-profit programme that educates and encourages children to be environmentally friendly citizens (The Enviroschools Foundation, 2014; Littleddyke et al., 2009; Eames & Barker, 2011; Calik & Eames, 2012). Currently, around 1,000 or approximately one-third of New Zealand schools are Enviroschools, with their students immersed in education that teaches them sustainable principles and actions, and engages them with nature (The Enviroschools Foundation, 2014). The fact that children are encouraged to actively participate in sustainable practices is important, as research has shown that children feel they learn better when actually doing things in practice as opposed to just partaking in classroom, theory-based learning (Eames, Cowie & Bolstad, 2008).

Other organisations that promote environmental education include the New Zealand Association for Environmental Education, which holds national conferences on environmental education, and hosts educational programmes and workshops (New Zealand Association for Environmental Education, 2015). There

is also the Environmental Education for Resource Sustainability Trust, which works with preschools, schools, and businesses, under three programmes: Paper 4 Trees, Water 4 Schools, and Energy 4 Schools (Environmental Education for Resource Sustainability Trust, 2015). It is great that there are organisations like this that exist, filling the environmental void in government-initiated curriculum.

Education the saviour of the environment. It is clear that education has a significant influence on the environmental understandings, attitudes, and behaviours of children. If the environment is a prominent or absent part of a child's education, it can affect children's environmental values for better or worse. Education is an important medium for communicating environmental knowledge and for encouraging sustainable practices. The next section looks at literature on aspects of education and primary schools, such as teachers, schools grounds, and curriculum, which influence children to varying degrees.

Factors that Affect Children's Environmental Knowledge, Attitudes, and Behaviours

It is important to look at what specific aspects of education influence children's environmental knowledge, attitudes, and behaviours to varying degrees. This section looks at the factors within primary schools which affect children in terms of their environmental knowledge, beliefs, and actions.

Recognising the value of teachers. It is imperative to consider how teachers influence the children they teach, because after parents and siblings, they are usually the people that children spend the most time with. Teachers have a powerful opportunity to promote positive environmental attitudes, and encourage sustainable behaviours in the children that enter their lives (Cutter & Smith, 2001); essentially, they can be influential role models for good causes, or "change

agents” (Shallcross et al., 2006, p.285). Studies have also shown that teachers may be “instrumental factors” in the development of their students’ environmental attitudes (Said et al., 2003, as cited in Kennelly, Taylor & Maxwell, 2008, p.142). However, the thorough environmental understanding of the teacher is paramount for these positive effects to occur (Nagra, 2010; Cotton, 2006). Evidence also suggests that teachers who have rich knowledge about the environment, who share their concern for the environment, and who practise environmentally friendly actions will influence children to be environmentally knowledgeable and aware themselves (Turner et al., 2009, as cited in Esa, 2010; Nagra, 2010). Similarly, student teachers’ opinions, experiences, and knowledge affect their perception of environmental education (Miles, Harrison & Cutter-Mackenzie, 2006), and thus, the way in which they teach about the environment, and the effect they have on their students. As Robottom, Malone and Walker (2000) say of committed and motivated teachers, “behind every successful environmental education program is a committed teacher” (p.157).

It is then concerning that some studies have reported teachers have a lack of environmental knowledge, and inadequate skills to teach environmental education effectively. Teachers who have less knowledge about certain subjects will often avoid teaching them altogether, which in the case of environmental education, would be detrimental to nature (Kennelly et al., 2008; Miles et al., 2006). One study reported that while almost half of the teachers surveyed had some understanding of sustainability, they had insufficient understanding of the term, its principles, and implications (Spiropoulou, Antonakaki, Kontaxaki & Bouras, 2007). In-depth knowledge about nature and sustainability is essential for environmental teaching that has a lasting impact on children. Teachers must also

have personal positive environmental values in order to successfully encourage children to act for the environment (Littledyke et al., 2009). It is important that children's environmental attitudes and behaviours "last a lifetime and operate unconsciously to direct adult behaviour and decision making" (Hart, 2003, p.2).

There is debate around exactly what teachers should be teaching children in environmental education – some argue that teachers should not promote personal worldviews and perspectives, and should instead be encouraging children to practice individual decision making. Some research shows that teachers do not impose their personal views on children, and instead offer a variety of viewpoints (Cotton, 2006). I argue that it is more important for teachers to promote environmentally friendly attitudes and practices instead of teaching children to develop their own opinions about the environment, because ultimately, we want children to act sustainably to have the best chance of saving the environment.

Principals as sustainability change agents. There is not a lot of literature on the importance of school principals in relation to the environmental knowledge, attitudes, and behaviours of the children in their schools, but what literature does exist asserts that principals have an important role to play in integrating sustainability in to school life and education. Principals are "one of the most important parameters for successful environmental education integration" (Kadji-Beltran et al., 2002, as cited in Zachariou & Kadji-Beltran, 2009, p.318), and schools which have the principal's support for environmental education will be more successful (Zachariou & Kadji-Beltran, 2009).

In regards to the environment, school principals have the ability to be "gatekeeper[s] of change" (Zachariou & Kadji-Beltran, 2009, p.316); they are the ones who can promote sustainability within the school. There are certain qualities

that sustainable school leaders have been found to possess, including a personal interest in sustainability, a belief in democratic participatory processes, and an interdependent relationship with the local community (Kadji-Beltran, Zachariou & Stevenson, 2013). Davies and Davies (2004) believe that principals are vital influencers because of their position and ability to turn plans into actions, and combine the efforts of people and organisations. Zachariou and Kadji-Beltran (2009) reaffirm this view, claiming that “a school which has the principal’s support for the promotion of environmental education will achieve a significant integration level” (p.319). Principals can facilitate teacher knowledge and learning about the environment, and act as positive leaders for change (Kadji-Beltran et al., 2013).

Peers influencing each other. There is not a lot of literature on peers as role models, concerning environmental attitudes and behaviours. However, research has shown that for young adults who identified as ecocentric, friends during childhood were important factors that contributed to their environmental attitudes and behaviours, because they supported them, made enviro tasks more fun, and introduced them to environmental groups (Arnold, Cohen & Warner, 2009). Regarding the negative influence of others, “having negative experiences of environmental destruction” can influence people to become environmental actors and leaders (Chawla, 1998; Palmer, 1993; Tanner, 1980, as cited in Arnold et al., 2009, p.28). This means that for some people, witnessing others carry out negative environmental behaviours can make them motivated to help the environment.

Passionate people. Where people are a primary influence, passion can be understood as a secondary influence which makes them act and teach for

sustainability. Passion is important, because “being passionate for an activity leads individuals to dedicate themselves fully to their activity, thereby allowing them to persist, even in the face of obstacles, and to eventually reach excellence” (Vallerand, Salvy, Mageau, Elliot, Denis, Grouzet & Blanchard, 2007, p.506). Teachers expressing their own passion for the environment have been seen to be an important influence which can develop positive environmental attitudes in children (Arnold et al., 2009). Therefore, passion is an important factor that influences teachers and other people to teach and embody sustainability.

Keeping school grounds alive. The grounds of a school, either natural or man-made, act as a hidden curriculum, communicating values and attitudes about the environment to children (Malinin & Parnell, 2012; Freeman & Tranter, 2011). More natural, diverse school grounds suggest a deeper appreciation and acceptance of nature, while man-made, sterile school grounds represent human domination and superiority over nature. A Canadian study looked at two schools – one with natural and diverse grounds and the other with a bland, barren environment. The children at the barren school identified 2 plant species, while the children at the more natural school identified a collective 79 plant species, as well as fivefold as many animals as children at the barren school did. Most important in the Canadian study was that the natural school children valued natural elements, such as flowers and the pond, more than man-made elements, even playgrounds (Samborski, 2010).

Natural school grounds can act as living, breathing environments that children can play and learn in (Malinin & Parnell, 2012; Edwards, 2005). While often school grounds are tailored to suit adults’ needs – being tidy, safe, and easy to keep (Samborski, 2010) – children enjoy having rough and unstructured natural

elements to explore, such as trees, dirt, leaves, flowers, rocks, and waterways. These features allow children to build, forage, burrow, and analyse, learning in different ways (Freeman & Tranter, 2011). Personal interactions and experiences with nature help children develop empathy and concern for the environment (Somerville & Green, 2011), so it is essential that schools provide natural areas for children to explore. Freeman and Tranter (2011) list four types of places that school environments should provide for children: doing places, thinking places, feeling places, and being places. School grounds can also be used as outside classes, providing more peaceful and genuine locations for children to engage in learning activities (Freeman & Tranter, 2011).

School grounds that are more natural also encourage children to interact with the opposite gender, different aged children, and children of different ethnicities and abilities, contributing to a more cohesive school society (Samborski, 2010).

Creative curricula beyond the national stipulations. As mentioned previously, the New Zealand curriculum provides little in the way of environmental education, neither stipulating it nor providing information on it. However, since schools can tailor their own curricula, there is still a lot of potential for integrating sustainability and environmental education into everyday learning. Eames et al. (2008) researched teachers and environmental education in New Zealand schools. What surprised the researchers was a genuine passion and interest in teaching children about sustainability, with nearly all teachers having good experiences delivering environmental education. This proves that despite the lack of environmental education guidance in the national curriculum, passionate teachers can teach children about nature by adding it into their own classroom

curriculums.

Cases of tailored school curriculums to include environmental and sustainability education are abundant. One New Zealand case study on environmental education involved the Kaikorai Stream Walk for Sustainable Living in Dunedin. The researchers focused on Kaikorai Valley College which participated in the stream walk, and was developing a new strategy for educating students on the environment. The objectives of the study were to identify the outcomes and success of a cross-curricular and multi-party approach in relation to environmental education, and to uncover how the participating students and teachers found the experience. The effect of the new environmental education programme was significant for both students and teachers. Eighty-one percent of students agreed that they should do more to enhance the environment within the school, and 74 percent said they wanted to contribute more to improving the environment (McMillan & Binns, 2011).

In Australia, some schools have developed environmental education programmes which children enjoy and which the community benefits from as well. A Tasmanian school created Landcare, a programme involving children doing environmental actions within the school and the wider community, such as building gardens, dealing with waste, and protecting wetlands (Somerville & Green, 2011). In Victoria, another school incorporated a nearby wetland as an integral part of the curriculum. Two community groups partnered with the school – Waterwatch and Frog Census – and families of the school children were invited to partake in the environmental activities, which included gathering environmental data for the community groups. This environmental education proved to be very successful and popular, having a lasting effect on children (Somerville & Green,

2011). Schools have the power to adapt and change their curriculums to include a huge variety of environmental learning activities, resources, and programmes, demonstrating that the stipulated curriculum does not have to limit sustainability education.

Utilising community resources. As evidenced in the previous section, community groups can provide useful environmental education resources for schools. Not a lot of literature exists on community groups and schools working together to deliver environmental education, so more research, in New Zealand in particular, would be beneficial. Combining the people, resources, and sites of schools and communities is powerful because together they “have the potential for achieving more transformative change through more authentic and transformative learning experiences in, about, and for the local environment” (Flowers & Chodkiewicz, 2009, p.71). There are several ways in which communities and schools can create environmental change, which are conservative, reformist, and transformative methods. The conservative method works to preserve the environment and stop any further harm from being inflicted. The reformist method looks at small, local changes that can be made to the environment, such as to cleaning up a waterway. Finally, there is the transformative method which aims to address the causes of environmental damage, and stop the behaviours that have negative repercussions (Flowers & Chodkiewicz, 2009).

Different types of community collaborations with schools can include parents, companies, councils, organisations, charities, and neighbourhoods. These partnerships and networks not only educate children, but they also educate and inform the teachers as well, giving them more ability and confidence when conducting environmental education without community support (Flowers &

Chodkiewicz, 2009).

Demographic factors influencing children. Demographic factors can be useful predictors of environmental attitudes and behaviours. Interestingly, some studies have found that girls are more ecocentric than boys (Shephard, Smith, Deaker, Harraway, Broughton-Ansin & Mann, 2011; Shephard et al., 2009; Boyes et al., 2009). Other research confirms this, asserting that females are more likely to be environmentally conscious than males, care more about the environment, and take environmental action (Torgler & Garcia-Valinas, 2007; Mobley, Vagias & DeWard, 2010; Stevenson, Peterson, Bondell, Mertig & Moore, 2013).

However, the influence of gender is contested in the literature as to whether or not it is an accurate predictor of environmental attitudes and behaviours, as some studies have found gender to play no part (Mobley et al., 2010; Lieflander & Bogner, 2014). Age is also an important factor, as younger children are more likely than older children to have higher environmental preservation and lower environmental utilisation preferences (Lieflander & Bogner, 2014), suggesting that it is more effective to teach children about the environment at as young an age as possible because they are more ecocentric.

The Importance of Communication

Communication is what underlies education, where not only the people, but the rules, processes, and environment communicate different ideas and values to children. For example, a teacher could tell children about endangered animals by telling a story and showing photographs, but other forms of communication could include written words, images, actions, facial expressions, body language, video, and sound.

At a much deeper and more symbolic level, the hidden curriculum in a

school communicates ideas to children about how people and nature are valued (Malinin & Parnell, 2012). If a school's grounds are consistently barren, bland and artificial, what message does this give to the children? Perhaps that nature is not welcome, that humans have moulded and tailored the environment to their needs, or that the environment is not worth learning about. Similarly, if children are not taught about sustainability, this may communicate to them that it is not worth learning about, and thus, unimportant.

Getting people to change their negative environmental behaviours, and instead engage in sustainable practices is the most vital outcome of communicating about the environment. Information campaigns have been used to try and encourage positive environmental behaviour, focusing on two specific angles: attitude-behaviour, and economic self-interest. The attitude-behaviour focus hopes that personal behavioural changes will occur in people when their knowledge and positive attitudes increase; however, studies have shown that having knowledge about environmental issues and having positive environmental attitudes, do not always mean a person will engage in sustainable behaviours. The economic self-interest angle tries to persuade people that it is financially smart to be sustainable (McKenzie-Mohr, 2011). This may get the desired effect, but it is anthropocentric, and engrains the idea of human superiority over nature. Adults have to be aware of how their words, actions, and environments affect children's environmental attitudes and behaviours, because they are extremely influential.

Theoretical Framework

Before the methodological considerations and design are explored, I felt it important to look at literature on different theoretical frameworks to gain a better understanding of my own paradigms.

Ontology. Ontological considerations relate to interpretations of reality.

The two polar opposites of the ontological continuum are first, that a true, objective, and measurable reality exists, and second, that reality is subjective and unique, experienced differently by each individual (Burrell & Morgan, 1979; Bryman & Bell, 2011). I identify with the idea that reality is subjective, which Burrell and Morgan (1979) call nominalism. This is because I believe that people construct their realities differently, and view, perceive, and interpret things in different ways. In regards to the environmental issues in particular, an issue can be considered a problem for one person, but not for another. People have differing views of the environment and nature as well; nature may mean wild bush and forests to one person, but grass and trees in a city park to another. Individual perceptions of people are important to consider, especially for my research.

Human nature. Human nature is about the relationship between people and the environment. The two extremes include voluntarism and determinism. Voluntarism is human dominance over nature, where humans exercise free will and are in control. The juxtaposing view, determinism, is the perspective that humans are controlled, manipulated, and limited by nature, acting in response to it (Burrell & Morgan, 1979).

I position myself somewhere in the middle, sitting on the fence between voluntarism and determinism. Humans determine what is natural and what is not. We affect the environment with our every action, either intentional or not; however, I question if this is enough to say that voluntarism is the absolute truth. After all, it was the natural environment that allowed for the creation of humanity. Swyngedouw (2011) talks about “the relatively stable and temperate climatic and environmental conditions that were conducive to the development of human

societies” (p.69) many years ago. Today, daily in the media we hear of Mother Nature inflicting her wrath on people, from hurricanes in the United States, to earthquakes in Japan, to droughts in New Zealand. Despite the control and manipulation that people have over nature, we are still at its mercy.

Chapter Summary

Because of numerous existing and impending environmental issues it is vital for people to not only care about sustainability, but practise it and understand it as well. This is made difficult because sustainability can be hard to define, but the general consensus is that it incorporates the three pillars of environment, society, and economy. Sustainability is an ethical issue, because at its core is thinking about future generations and ensuring that we leave them with a healthy, flourishing environment that they can survive in, without struggle. There are different ways of conceptualising levels of sustainability, but the most common ones are: weak and strong sustainability, ecocentric and anthropocentric, and deep and shallow ecology. While it is generally accepted that people should (or rather need to) be sustainable and ecocentric, this is made difficult by dominant social processes, such as capitalism and consumerism, promoting anthropocentric attitudes and behaviours.

People of the world need to change in order to protect the environment and ameliorate the damage already done, and it is hoped that children will be the environmental saviours. Children need to be involved in environmental decision making because they can contribute unique ideas and perspectives; however, this is jeopardised by children living indoor lives, being less connected to nature than ever before, and the fear society that adults raise children in.

Education is considered the greatest opportunity to develop ecocentric

attitudes and behaviours in children, because of its global reach and influence. New Zealand's curriculum is far from established in terms of environmental education, but this is mitigated to a large extent by organisations such as Enviroschools, which introduce environmental education and sustainable practices into schools.

Because education is so vital to the protection of the environment, it is important to consider which factors within schools (primary schools in this research) influence children's environmental knowledge, attitudes, and behaviours and to what extents. Ample literature exists on the important effects of teachers and natural school grounds, but less exists on principals and community resources, which are also very important. While national curricula have the power and ability to instigate environmental education, many teachers take it upon themselves to develop environmental and sustainability programmes within their own schools and classrooms.

Communication is what underpins all education; education simply cannot occur without it. Teachers can communicate to their students in many different ways and environmental education can feature in all of these, meaning there are ample opportunities for children to learn about the importance of nature and sustainability.

Ontology and human nature were explored as a starting point for my methodological considerations. Methodology, paradigmatic considerations, and research methods are explained in greater detail in the following chapter.

Chapter Four – Methodology and Methods of Data Collection

Although we may not extinguish ourselves, our actions are leading to a less interesting world and one less supportive of a human presence – let alone the presence of other species. (Larson, 2011, p.47)

In order to capture the intricacies of child and teacher knowledge, beliefs, and behaviours relating to the environment and sustainability, my research was based on a mixed method qualitative research design (Bryman, 2012). Developing a methodology and determining methods of data collection are important steps in the research process, as they justify the type of research being used and ensure it is a good match for the type of data sought. This section will first explain my methodological views as justification for my research design. After this, I explain the mixed method design, the use of case studies, and the research tools within this study: observation, interviews, and document analysis. Next, ethical considerations, specifically relating to research involving children, are highlighted. Finally, limitations of the research and possible future improvements are discussed.

Methodology and Research Design

I have chosen to work within an interpretivist paradigm for this research, as its focus on qualitative, subjective, and reflexive information aligns well with the investigation of environmental knowledge, attitudes, and behaviours.

Interpretivism works well when studying people, all of whom are subjective, and who report different results. Concerned with regulation, but subjective in nature, the interpretivist paradigm aims to understand reality as it is experienced subjectively by individual people, focused on “the participant as opposed to the

observer,” (Burrell & Morgan, 1979, p.28). Interpretivism considers the social world to be created by individuals, brought together by shared symbols of meaning and interpretation. This social world is seen as a continual process that is cohesive and integrated (Burrell & Morgan, 1979).

This paradigm is also concerned with understanding, as opposed to explaining, human behaviour, showing empathy and flexibility instead of hard, fast, and clinical categorisation (Bryman, 2012), which is why it is so appropriate for this social science research. The emotions and perspectives of the researcher are acknowledged in interpretivist research, as well as that of the participants, and this is particularly true in this research, where I am studying an area reflecting my own passion and interest.

Subjective, qualitative measures align well with my research which uses two case studies with observation and in-depth interviews to understand the opinions, values, and emotions of individual people. Accepting feelings, values, and other human characteristics is integral to social science research that seeks to examine emotion, humanity, and social aspects, rather than statistics, figures, and graphs.

My interpretivist position recognises that the values, emotions, and perspectives of the researcher are fundamentally inseparable from any research, and affect, for example, how the researcher structures the research questions, gathers the data, and interprets the results.

Researcher reflexivity. I have strong views about the environment and the importance of sustainability. I am particularly interested in how people treat the environment and why they treat it the way they do. Because I think everyone should protect nature, it intrigues me as to why some people do not. I do not think

that researchers can fully separate their own bias from their research; however, I can attempt to minimise it or channel it positively. This research aims to be reflexive; I began with some preconceived ideas about education and the environment, but I let the children, teachers, and principals guide me to results and new ways of thinking that I had not considered. Having a reflexive approach was useful, as it gave me starting points, but also allowed for deeper, richer data to emerge.

My mixed method research design, which aligns well with the interpretivist paradigm, is explained in detail in the next section.

Mixed Method

A mixed method research design can be used to describe an amalgamation of quantitative and qualitative research methods, but it can also be used to describe research that merges either multiple qualitative methods or multiple quantitative methods (Bryman, 2012). My research was based on a mixed method qualitative research design to provide data that was rich, in-depth, and expansive. Case studies were used as the starting point for the research, with document analysis, observation, and interviews used within each.

Case studies. Case studies allowed me to look beyond the opinions and influences of people, to the wider school grounds, processes, and culture. A case study is a research project which “investigates a phenomenon within its real-life context,” (Wilson, 2009, p.204). This is especially true when a case study is a school, because it provides the opportunity to witness school life, student life, and teacher life as it happens and where it happens. Children and education have often been researched with the use of case studies (Yin, 2003).

Interviews. Interviews are useful because of their versatility; from just a

few open-ended questions about predetermined topics, you can gather a lot of valuable information (Travers, 2001). Interviews are also beneficial because they can be adapted to suit different ages and engage with multiple topics.

Observations. Observations allowed me to see how teaching and learning about the environment actually occurred, as opposed to hearing it second-hand from teachers, principals, and children (Oakley, 2000). Observation can be naturalistic, meaning that the people being observed are in their natural environment during the sessions. Children will act more naturally and comfortably if they do not have to deal with forced or unfamiliar surroundings (Koocher & Keith-Spiegel, 1994). Additionally, observations are invaluable in school settings, as they allow the researcher to look at not only the content of the learning, but the interactions between people and places as well. Actions of people provide a wealth of information, which is positive as some people are too shy to express certain views verbally.

Document analysis. Document analysis was also involved in the case studies, providing deeper insight into the workings of the schools and the formal, planned ways in which the environment and sustainability were included.

Disadvantages of the research methods. There were limitations to the types of methods used in this research, but identifying them prior to beginning the research helped to lessen their negative effects. One weakness of observation was that the children may have acted differently when they knew I was watching them, but hopefully they should have been used to extra people in the classroom, such as student teachers, parents, and other guests. They also should have got used to my presence over time, meaning that if my presence did have an effect, it gradually diminished.

A limitation of my case studies, observation, and interviews is that they are difficult to generalise to wider populations, because the sample size was quite small and due to the qualitative nature of the data. I completed as many case studies and interviews as time, resources, and money permitted, meaning my data was as rich and comprehensive as possible.

Observations and interviews were difficult and time-consuming to transcribe and categorise, meaning less time was able to be spent on interviewing and observing more children. Another weakness of interviews and observation is that the actions and comments from participants require interpretation based on my own judgements, which means researcher bias will be present.

A disadvantage of observation is that ambiguous actions, emotions, and body language are judged and categorised, but interviewing the same people to discuss actions and ideas meant that the ambiguity was minimised. My interpretations were corroborated with the children and adults if possible, using active listening techniques, paraphrasing, and asking for further detail; however, some differences in understanding between myself and the interviewee were possible. Additionally with interviews, people can sometimes be wary about expressing opinions in such a formal setting.

The next sections explore each of the methods, their benefits, and how they were carried out, in detail.

Schools as case studies. Two case studies formed the basis of my research, with two primary schools being the units involved, and providing the boundary or definition of each case study (Greig, Taylor & MacKay, 2013). Schools are ideal sites to interact with children for research purposes, providing not only large groups of children, but safe and secure settings in which the

children feel comfortable and at ease. Using the case study method also works well with schools, because it is flexible and adaptable to better suit each individual school (Greig et al., 2013). My research was organised as a multiple case study design (Wilson, 2009), focusing on two primary schools in Hamilton, New Zealand. Hamilton was chosen because of its immediate proximity, the abundance of schools – Hamilton has around 50 schools with primary-aged children (Ministry of Education, 2014) – and the relationships I have with some of the schools in the area, which increased the likelihood of them supporting my research. Studying only two schools meant that, within the pragmatic limits of this Master’s study, I could conduct more interviews and field observations within each school context, and gain deeper, more specific understandings of what influenced the environmental attitudes and behaviours of children in each school (Wilson, 2009).

The two primary schools were similar in some aspects, but polar opposites in other respects. One school was a large, urban, high-decile Enviroschool and the other was a small, rural, high-decile Enviroschool. I analysed multiple elements of each school, from data sourced from the children, principals and teachers, as well as examinations of school contexts such as the school grounds, curriculum, and activities. Researching two schools meant that I could compare these different schools to see how their education, environment, and ethos differed. The schools were chosen for several reasons. First, having two Enviroschools ensured that there was substantial environmental and sustainability education going on in the schools. Second, having one small school and one large school enabled me to look at the environmental education resources and community knowledge connections in schools of different sizes. Third, studying one school that was rural and one that

was urban provided a great opportunity to look at how the location of a school affects the environment and environmental education that exists within each school. Both chosen schools happened to be high-decile, ten and eight respectively, but this was positive in that it ruled out too much difference in funding and resource availability.

The first step I took in organising the case study schools was to email the principal with a proposal for the research to be carried out in his/her specific school. I met with each of them to discuss in detail what the research would involve – document analysis, observation, and interviews – and who it would involve – the principal himself/herself, a classroom teacher, and his/her classroom of students. I provided the principals with an outline of the research project, the participant information sheet, and copies of the interview scripts, and they each signed a participation agreement on behalf of themselves and the school (see Appendices I, II and III for the ethics documents and interview scripts). Each principal then made arrangements with a Year Six or Year Five and Six teacher, whose class I could use for my observation sessions and interviews. The age of the children in the classes ranged from 9 to 11 years old.

I then met with the teachers to provide them with more information about what my research would involve, and to give them the chance to ask any questions. We discussed how I would interact with the children, what they would call me, what the children and their parents needed to know, and when the research would take place. The teachers also received copies of the research project outline, the participant information sheet, and the interview scripts, and they signed their own participation agreements.

During subsequent meetings with the teachers and principals I was able to

collect school documents for data analysis (I met with the principal of School A twice over one month, and met with the principal of School B twice over two months). These documents included school policies and procedures, school rules, environmental curriculum documents, and minutes from environmental education meetings (see Appendices IV and V for tables of the school documents analysed). From School A I was also able to view four Enviro scrapbooks. These were compiled each year by the children and their teachers, detailing all of the environmental and sustainable activities they had done throughout the year. Examples of activities included writing to the local council, creating artwork from recycled materials, working in the school gardens, and participating in Arbour Day (see Appendix VI for photos of some of the scrapbook entries).

Organising the case studies involved a lot of logistical work, but it also included ethical and legal research requirements. After getting permission from the principals to carry out research in the school and then getting consent from the teachers to do the research in their classrooms, I then had to get explicit, informed, written consent from the parents of the children in the classes. Each teacher first gave the children in the class some context: who I was, what I was doing, and how they could be involved. This informed the children about the research in an age-appropriate way. Then, each child was given an information sheet and a consent form to take home to their parents. If the parents approved of their children being involved in the research, the children brought the signed forms back to their teacher. I sought a minimum of 12 signed consent forms (and hence 12 participating children) to complete my research, and I was pleased to find that was easy to achieve, as there were ample children who were allowed and willing to participate. Once the logistical and ethical areas were complete, I was

then able to begin the observation and interview stages of my research.

Observing environmental education. In each case study I planned to use observation to witness environmental education in action, within the classroom, school grounds, or other locations. Unfortunately, since my research was carried out in Term Four of the school calendar, School B had already finished all of their environmental and sustainability education. This meant I only observed environmental education in School A, but I do not consider this a detriment; it was a great opportunity to actively see how School A conducts their environmental education, whereas with the School B teacher I was able to discuss how the teaching was carried out and look at some of the school work that accompanied the teaching. It was useful to hear about the education via different mediums.

Through observation I was also able to ascertain whether the learning was predominantly theory or practice based, if the lessons were teacher or student dominated, the use of classroom discussions, and what resources or fieldtrips supplemented the education. Additionally, observation proved to be the best way of determining how interested, excited, and inquisitive the children were when learning about the environment and sustainability. I was able to see whether children understood what they were being taught, or if confusion was more apparent. Observation also provided insights into the content of the environmental education – whether it was focused on informing the children about the environment and environmental problems, or whether it offered solutions to environmental problems and sustainable alternatives.

I used mainly non-participant observation during my three observation sessions with School A; however, in some circumstances I did ask the children a

few questions to find out more about what they were doing. Using non-participant observation meant that I was present in each situation, but was not actively participating or contributing (Bryman, 2012). Prior to completing the observation sessions I considered how my presence would affect the children, knowing that if the children were aware that they were being watched, it is possible they may have intentionally altered their behaviour. However, I also accepted that most children in New Zealand would be used to having people other than their teacher watching them learn, as parents, principals, and student teachers are common additions to classroom environments. During the sessions, where possible, I took a quiet, unobtrusive position in the room. I usually acted as a quiet observer, but occasionally the children would talk to me, so I interacted with them to find out more about what they were doing and what they knew about the environment. My presence did not seem to greatly affect the behaviour of the children; as might be expected, some children still misbehaved and others gave the teachers their devoted attention.

In total, there were three observation sessions with School A: one that took place in the classroom and the school vegetable garden, another in the school hall, and the last one at the Waikato Museum on a fieldtrip. Having more than one session meant that it was possible for me to identify if children had the same attitude and interest in each environmental lesson, or if their engagement with the discussions and activities changed over time (Oakley, 2000). Other features, such as boredom, excitement, interaction, or confusion were also able to be identified. The three sessions occurred in November and December, averaging one to two weeks apart, and varying from one hour to three hours in length. During each observation session I took notes and voice recordings for post-analysis.

Interviewing children, teachers, and principals. In-depth, semi-structured, one-on-one interviews were carried out with 12 children in each class, plus the classroom teacher and the principal in each school. In total, 28 interviews were completed, 14 at each school, which provided me with thorough, in-depth data (Weinberg, 1983, as cited in Travers, 2001). There were two different interview scripts: one for children, and one for teachers and principals, but both scripts covered the same topics, including environmental attitudes, school rules, the curriculum, outside groups and organisations, and school activities. The two scripts were designed to be appropriate for the different age levels (see Appendices II and III). The children's interview script contained questions that were worded simply and were based on more age-appropriate subjects. With the adults' interview script, I could ask slightly harder questions about more complex ideas, such as the national curriculum and environmental attitudes. Children were often asked closed questions to get a preliminary response, followed with an open-ended question if appropriate. In contrast, with the adults I asked mainly open-ended questions, as these generated the best, most detailed responses, but some closed questions were necessary at times. All interviews were voice recorded for subsequent transcribing and analysis, and notes were taken throughout.

Interviews with children. The aim of interviewing children was to determine what they understood about the environment, what factors influenced their environmental knowledge and attitudes, and how their school impacted on these. I also wanted to find out how they perceived their own treatment of the environment and what they thought they did that was environmentally friendly. The interviews were conducted in person, at school, during school time, ensuring

that the children felt safe, comfortable, and at ease. I did my best to ensure that children did not miss out on too much learning time, but taking up small parts of class time was often necessary. The interviews varied from 9 to 22 minutes in length, but averaged 12 or 13 minutes each.

Interviews with teachers and principals. In interviewing teachers my goal was to find out how they thought environmental education affected children, and what they considered to be the biggest influences on children's environmental attitudes. When interviewing teachers, more focus was placed on the curriculum, class-based learning, and place-based learning, as well as gauging the interest and passion that teachers see in their children. The aim of interviewing principals was a little different: by interviewing principals I hoped to not only find out their views on environmental education and the curriculum, but to also uncover what influence they thought the school environment, and school culture, rules, and values concerning the environment, had on children. Additionally, I hoped to get a holistic view of environmental education and practices throughout the entire school. Interviews with teachers and principals were conducted at the schools, at a time that best suited them (outside of teaching hours for the teachers). Their interviews were an average of 40 minutes long.

Document analysis. The school principals and teachers provided me with a range of documents in hard copies to analyse in relation to the environment and environmental education. The principal and teachers at School A provided me with many different documents, including minutes from meetings, environmental plans, school plans, and extracurricular activity documents, all relating to sustainable school practices and environmental education. The documents that the principal and teachers at School B provided were all generic school policies,

procedures, and guidelines, some pertaining to the environment, but only by a very tenuous link. It was my understanding that School B did not have a range of environmentally focused school documents and plans like School A (see Appendices IV and V).

Analysing the Data

The interviews which were all voice recorded, were subsequently transcribed into Microsoft Word documents. Following this, the transcriptions and the notes I made during the interviews, notes from observation sessions, and school documents were analysed using thematic analysis. Thematic analysis involves identifying themes or patterns which occur and reoccur in and between different data sets (Bryman, 2012; Braun & Clarke, 2006). Evidence of themes includes repetition of words, phrases or ideas; the way the person transitions from one topic to another; metaphors and analogies; connective or causal links (Ryan & Bernard, as cited in Bryman, 2012), as well as emotive words and phrases. Once themes were established, I was able to look deeper into my findings to make links with existing literature and identify new trends.

Ethical Processes and Considerations

Before any primary research could begin, a thorough ethics process was undertaken, made more complex than usual because of the involvement of people, specifically children, as research participants (Wilson, 2009). Children, being more vulnerable and susceptible than adults, and being under the legal age of consent, means that more ethical considerations must be taken into account. To begin, appropriate documentation was completed, guided by stipulations on the Waikato Management School Ethics website. The documents required were an

outline of the research project, which included information about research goals, methods, consent, privacy, and me as a researcher; participant information sheets; consent forms; and copies of the interview scripts. These documents contained all of the information that research participants needed to know about the research, to ensure they were fully informed prior to consenting to being involved.

Of particular note to the ethics committee was the detail and consideration I had given to the sensitive task of conducting research with children; however, they made some suggestions regarding consent from the children, particularly relating to the option of getting agreement or assent from young children as opposed to signing a consent form. Acknowledging this, I decided to make sure the children and their parents were fully informed of the research, so that the children could give verbal assent and the parents could give written, signed consent. Also mentioned by the research committee was the potential difficulty in getting all parents in the classroom to give written, signed consent for their children to be observed. It is likely that some parents would never receive the forms or would forget to sign them, meaning it would be near impossible to get 100 percent consent from parents. This issue was overcome by talking to the principals of each school. By enrolling their children at the schools, the parents had already consented to other people, such as parents, student teachers, or other guests, observing their children. When I was in the classrooms this seemed to be standard practice for the children anyway, as there was already at least one person other than the teacher in the classroom whenever I was there.

Children as participants, not subjects. Adults are often guilty of silencing and ignoring children, and are good at talking *for* them, failing to see their unique experiences and contributions (Clark, 2011), so I feel it is necessary

to describe my approach and beliefs when working with children. Adult voices are evident in the hundreds of documents, legislations, and policies about children that are written by adults. It is true that children have limited knowledge and experience compared to adults, but the fact that they experience the world differently should not be discounted (Weithorn & Scherer, 1994). Children should have an equal, if not bigger say, when it comes to making decisions about themselves. Perhaps the tendency for adults to make decisions for children is indicative of the subordinate status of children, but really I think that society's perception of children as vulnerable, fragile, and innocent convinces adults that children are not capable of offering important viewpoints or making important decisions (Taylor, 2000). Throughout my research I considered the children to be research partners (Weithorn & Scherer, 1994) or active participants, as opposed to passive tools required to satisfy my research. They were positively encouraged to express all of their own ideas, opinions, and beliefs, and I constantly assured them that their contributions were valid and valuable. I completely accepted their decision if they did not want to answer a question, and if they wanted to bring up another topic of discussion I let them take the lead.

There are a lack of ethical regulations pertaining to children specifically in the ethics guidelines used by the University of Waikato Management School, so I made use of the well-accepted ethical research principles and adapted them for use with children. The major ethical principles I applied were autonomy, non-maleficence, beneficence, and justice. Autonomy relates to being free from controlling forces, having free will, and having access to all relevant information. Non-maleficence means doing no harm, working to “avoid causing pain, suffering, incapacitation, offense and death,” (Greig et al., 2013, p.247).

Beneficence requires the researcher to disclose all possible benefits and risks of participating in the study, and justice ensures that all participants are treated equally and fairly. These ethical principles were applied to all of my research participants, not just children (Greig et al., 2013).

Specifically pertaining to the involvement of children, there were a number of other considerations that helped to ensure my research was ethical. The level of interference in children's lives was considered – how much time my research would take up, and the cost of the school time that children would lose. While I did offer to interview children out of class time (at morning tea or lunch) the teachers (and children) were happy for me to conduct interviews during class time, knowing that the interviews were brief. Also, I considered it unjustifiable to exclude children with learning or physical disabilities from my research. These children's perspectives are as valid as any others, so even if a little more assistance was necessary, I wanted children with disabilities to be included (Greig et al., 2013). All children in the classes were welcome to participate in the interviews, as long as their parents had given consent.

Ethics in action. Such a rigorous ethical process is required when working with children in order to make them feel comfortable and to keep their information protected. To make the children feel safe and at ease I held all interviews at the schools – places that were familiar, comfortable, and safe. Making sure the children felt valued and respected was also very important in my research, as it was their unique and individual thoughts and opinions that were most valuable to me. To meet ethical considerations surrounding respect, I used Shier's (2001, as cited by Clark, 2011, p.31) five principles for engaging with children as research participants:

1. Children are listened to;
2. Children are supported in expressing their views;
3. Children's views are taken into account;
4. Children are involved in decision-making processes; and
5. Children share power and responsibility for decision making.

Following these five principles aided in making children feel respected and let them know that I was not passing judgement on them or their views.

To ensure that children and adults involved in my research were as informed as possible (so as to achieve informed consent), I disclosed what the study was about, what their participation would involve, what their information would be used for, and any publications that could result. I also mentioned that the participants and their information would remain anonymous and confidential, and they would be able to decline to participate or withdraw their participation at any time. I explained all of these details personally to the teachers, who then passed this information onto the children, as they were best suited to deliver it in a way that was appropriate for the children (Greig et al., 2013). Additionally, adults and children were given participant information sheets in case they wanted to know anything further about the research. The sheets were for the children to give to their parents as well.

Limitations of the Research

There were several limitations that impinged on my research. While I acknowledged many of these limitations prior to conducting the research and tried to mitigate some issues, some limitations were unavoidable, but not necessarily detrimental.

The timeframe for my Master's research was a major limitation, as it restricted how much time I had to carry out the research and the time available to analyse the data. More time would have meant I could have completed more case studies, more interviews, and more observation sessions, obtaining richer data. Money, resources, and personnel were also limited, meaning I could only complete so much research.

Challenges when working with children. Having children as my main research participants was not necessarily a limitation, but it did make the research more difficult. It is harder to get access to children for research, as the gatekeepers that are parents, caregivers, and teachers are, understandably, very protective of children. This meant that it would have been near impossible to get 100 percent of parents to sign a consent form (I chose to interview only 12 children in each class, so this issue was avoided). Another limitation of working with children was the language barrier – some concepts were hard to change into child-appropriate terminology, meaning the child was confused or misinterpreted the question. Words and terms that were particularly difficult for children to grasp included “environment” and “environmental issues”, as they are such broad and encompassing terms. I did my best to rephrase the questions that they found confusing.

Other limitations related to communicating with children. Some children were hard to understand because they mumbled, talked too fast, or could not easily articulate what they wanted to say. Some children were also easily distracted, meaning we got off topic or they forgot the question. The locations in which interviews took place were sometimes noisy (as is natural in an environment with lots of children), so in these cases it was not surprising that it

was hard to hear the children, or that they got distracted. When it came to transcribing the data, noise and difficulty in understanding the children were quite significant factors. The data was interpreted as best as possible, but there were some parts of the recordings that were difficult to follow. In each case the interviews were complemented with my field notes to ensure that the data was as rich and accurate as possible.

While there were a number of limitations, steps were taken whenever possible to mitigate the impact on the research.

Chapter Summary

Methodological considerations were important in order to identify the most appropriate paradigm and methods for this research. Interpretivism was the most suitable paradigm, working well with rich, in-depth data from subjective and qualitative research methods. Organised under a mixed method case study design, interviews, observation, and document analysis were used in two Hamilton primary schools. Children, teachers, and principals were involved in the research, which occurred within the schools, normally within school hours. Thematic analysis was used to examine and interpret the data, which was gained through field notes, recorded interviews, and school documents.

A thorough ethical process was required, made more difficult by the inclusion of children as research subjects, but all efforts were made to minimise negative effects on the children. Children's parents were informed of the research and were asked to complete a consent form if their child could participate.

While there were limitations of the research, including the inability to generalise the data and occasional communication difficulties with children, I endeavoured to minimise and eliminate these issues wherever possible. The data

from the research proved to be rich, interesting, and full of vibrant detail. The research results are explained and discussed in the following two chapters.

**Chapter Five – Findings and Discussion of Research Question One:
What Factors in the Primary Schools Influence Children's Environmental
Knowledge, Attitudes, and Behaviours, and to What Extent?**

We do not need all children of the world to become sophisticated ecologists or noisy environmental activists. We should aim, however, for all children in all cultures to become responsible and effective participants in the primary environmental care of their households and communities. (Satterthwaite, Hart, Levy, Mitlin, Ross, Smit & Stephens, 1996, p.246)

This chapter is the first of two which explore the findings of the case study research in the two primary schools. This chapter specifically focuses on the influencing factors within primary schools which affected children's environmental knowledge, attitudes, and behaviours. The children each had a different set of factors which affected them, empowered them, or dissuaded them, and they each formed their own unique views and actions towards the environment. However, there were some influencing factors more prominent than others.

This chapter is broken down into six sections – each one a different categorisation of influences that affected children's environmental attitudes and behaviours, and to a lesser extent, knowledge. The six sections are organised by the extent of their influence and prominence, and are as follows: people, learning processes, physical environments, rules and practices, extra-curricular activities, and community resources. It must be acknowledged that there are often two or more levels of influence that contribute to a certain attitude or behaviour. For example, the classroom teacher may be the first, most obvious influence, but

behind this are hidden levels made up of passion, knowledge, and experience. Each section looks at how and why the factor is so influential, any secondary levels of influence, and major discourses or theories that are pertinent. These findings also look at similarities and differences between the two case study schools.

Although care was taken to look only at school and educational factors, and to avoid factors outside of the school system, such as parents, home life, and religion, it was near impossible to fully exclude these things or the effects they had. However, this was important as it reaffirmed the huge and varied range of factors that affect and influence children's environmental attitudes and behaviours.

Prior to the discussion of the findings, profiles of the children, teachers, and principals who were interviewed are offered to provide context for the views that are presented.

Profiles of the Research Participants

In total, 24 children and 4 adults were interviewed: 12 children, 1 teacher, and 1 principal from each of the two schools. The children from School A were all from one class, with the exception of one boy who was from a different class. He was included because he was part of the enviro group run by the teacher of the main research class. The main class at School A was a Year Six only class, with a fairly even mixture of girls and boys. I had no control over the children who were interviewed; they were chosen by the teacher from the group of children whose parents had signed the consent forms. From School A, a total of six girls and six boys were interviewed, comprising six 10-year olds and six 11-year olds. At School A, the research classroom teacher, a female, was interviewed (Miss V), as

well as the school principal who was also a female (Miss C).

The children who were interviewed from School B were all from one classroom that was a mixture of boys and girls, and included both Year Five and Year Six students. Again, the teacher chose the children to be interviewed from the group whose parents had signed the consent forms. In this classroom, the mixture of boys and girls who were interviewed was uneven, but as this was out of my control and not a significant issue, I did not attempt to even up the gender ratio. Nine girls and three boys were interviewed, consisting of seven 10-year olds and five 11-year olds. Three children were Year Fives and the rest were Year Sixes. From School B, the research classroom teacher, a female, was interviewed (Miss N), along with the school principal who was a male (Mr B).

In the combined sample of all children, 37.5 percent were boys and the vast majority – 62.5 percent – were girls. While there were significantly more girls interviewed than boys, there were enough children of each gender to be able to identify themes or trends between boys and girls. The numbers of 10- and 11-year olds were relatively even: 54.2 percent and 45.8 percent respectively. However, the number of Year Sixes far outweighed the Year Fives: 87.5 percent, compared to 12.5 percent. The different ages and year levels were not too important, as it was never my intention to examine differences in either of these factors. Although the Year Six students have spent a whole year more at school than the Year Fives, all children had been in the same class for almost a whole year, with the same teacher, with the same learning resources, and studying the same topics; their knowledge base should have been relatively similar.

Each person involved in the research has been made anonymous and given a pseudonym to safeguard their privacy.

The Importance of People

Findings from the research suggest that people are the most influential factor that affects how children perceive and treat the environment. This is largely because if people are not the primary influence, they are often the secondary influence, making decisions about learning processes, rules, and resources. As primary influences though, people had a huge influence on the children. An example of the influence was when some children at School A were visited by Miss R of Environment Waikato, who took them to a nearby part of the river to look at water quality. When the children saw the state of the water and all of the litter in the area, they wrote letters to the Hamilton City Council, Environment Waikato, and local MP, David Bennett, urging them to put more rubbish bins by the waterways. Miss R was an important leader who taught the children about an environmental issue, and then supported them to take action and engage in community issues.

At each of the two case study schools, the teachers and principals were the most influential people, making decisions about sustainability and environmental education within the schools and then putting these into action. First, I look at the influence of the teachers and principals; following this, Mr Nature's influence is examined; and finally, the influence of peers is considered. Passion is acknowledged as an important secondary factor.

Teachers as environmental leaders. The teaching and leadership staff at both case study schools were an essential part of integrating sustainability into all areas of the schools. However, at School A, people were the single most important factor, and had more influence than the people at School B. At School A, Miss V was a powerful influence because of the extent to which she worked to bring environmental learning and sustainable behaviours into the curriculum, school

documents, extracurricular activities, and school rules and processes. Miss V was the head environment teacher of the school, and her overarching goal was to get children to be the best enviro-citizens they could be. Being such a well-known environmental advocate, and an expert on the environment and sustainability within the school, Miss V embodied the definition of opinion leader. Opinion leaders seek out and take in vast amounts of knowledge about specific areas, from a wide variety of sources (Katz & Lazarsfeld, 1955, as cited in Trepte & Scherer, 2010). They then pass this knowledge on to those who are either less able or less motivated to search for that information; in other words, they act as transmitters of information (Bo-Anderson & Melén, 1959; Lazarsfeld, Berelson & Gaudet, 1994, as cited in Trepte & Scherer, 2010). Miss V was very knowledgeable about nature and sustainability, and expressed enjoyment in learning even more about them. It was obvious that one of her passions was passing her sustainability knowledge and experience onto students, through a variety of different means.

There were many ways in which Miss V taught children about the environment and how to act sustainably. She ran the Enviroagents, which was a group of older students (Years 4 – 6) who were interested in being environmental role models and leaders. The Enviroagents were all assigned to one of six focused groups: Zero Waste, School Environment, Action Group, Cultural Diversity, Student Voice, and Community News. Miss V was also in the process of creating different tiers of Enviroagents. The Top Tuis would be Enviroagents who were the leaders, and the Clever Keas would be “apprentices” who would support the leaders.

As well as running the Enviroagents group, Miss V was also creating a programme for younger students (Years 0 – 3) called the Cheeky Little Fantails,

which was designed as a starting point for them to become Enviroagents. These initiatives alone would be great ways to inspire environmentally friendly actions and leadership, but Miss V wanted to go even further and get more children involved. For children who did not want to be a leader as such, but who wanted to be environmentally friendly, Miss V was creating the Cool Kiwis Passport (see Appendix VII). Children were urged to “take up the challenge”, and work to receive the three badges: bronze, silver, and gold. They could choose from a number of activities and complete them within a year to receive each badge. The Cool Kiwis Passport was due to begin in 2015, a wonderful initiative that I think will excite many children and inspire them to protect the environment.

Going beyond day-to-day teaching requirements, Miss V was also in charge of regular enviro meetings with the school principal and other teachers, to discuss education, projects, and the school environment. She also created an enviro plan for the year ahead with other teachers. Looking at the minutes of the enviro, science, and technology meeting of May 2014, a huge amount of environmental and sustainable learning activities were mentioned. There were field trips to the Hamilton Zoo and Lake Karapiro, educational guests from the Hamilton City Council, use of the *Lorax* movie to help teach the younger children about the interdependent relationship between humans and nature, and preparation for the renewal of the school’s Green-Gold Status. Environmental activities and projects in the school were endless and Miss V mentioned contributing to almost all of the projects in my discussions with her. Having regular enviro meetings and creating minutes from those meetings also shows the extent to which Miss V and School A worked to make the school a sustainable and environmentally friendly place.

At School B, teachers were also an important influence, but not to the extent that Miss V was in School A. Miss M and Miss L were the two teachers at School B who children talked about frequently in relation to environmental education:

SchoolB10 (girl) – I think they want to keep it [the environment] clean and stuff. Like Miss M, she's like the environment teacher. And this girl called this teacher called Miss L, she like plants daffodils and you go to this like daffodil place in the Hamilton Gardens.

Miss M and Miss L were mostly mentioned when I asked the children who taught them about the environment, and how they thought their teachers felt about the environment. These teachers were easily identified as being sources of environmental knowledge, which was very important, as it gave the children environmental leaders to look up to. Several children also said that both teachers cared about the environment, evident I assume, from the teachers openly expressing their passion and enthusiasm for nature. Positive role models, like Miss M and Miss L, are powerful motivators who can encourage children to be ecocentric (Arnold et al., 2009). It was interesting that most children mentioned both Miss M and Miss L as opposed to just one or the other; both teachers seemed to be equally identifiable with the enviro activities of the school. Children associated the teachers with the enviro group, gardening, and the daffodil club, as well as general environmental education. In addition to being the enviro teachers of the school, the children also considered them to be people who genuinely cared about the environment and had a passion for nature.

I consider Miss V at School A to be a greater influence than Miss M and

Miss L at School B because of the depth and breadth of her sustainability efforts. At School B there was environmental learning and enviro groups, but both of these were not as established and thorough as those at School A. Other possible issues at School B were that not many children were in the enviro group, and that the gardening group got so full that they had to turn children away.

Teachers are important, not only because of what they teach, but also because they can be powerful and influential role models for good causes (Shallcross et al., 2006). When teachers, like Miss V, Miss M, and Miss L, make themselves enviro leaders they can go a long way in promoting positive environmental attitudes and behaviours in the children they teach. It is important that most of the children associated Miss V with being the person who taught them most frequently about the environment; this means they recognised her as a useful and knowledgeable source of environmental learning: “Miss V is really really good at bringing in enviro into everything” (SchoolA7 – girl).

Passion is a secondary influence which drives teachers like Miss V to incorporate sustainability into the life of the school. It was very apparent that Miss V was a passionate, committed, and active environmental advocate:

SchoolAMissV (teacher) – It’s something that, especially in my role now I am judging myself all the time and I as I learn more and I want to learn more about it so it’s something that I actually enjoy learning more about because it is our one world and we’ve only got that one chance and I love working with the kids with that.

Miss V developed a love for animals and nature, partly due to her family: “We always used to go on walks, trampings and hikes with my parents, so umm

we grew up in small town rural where Karangahake Gorge my grandparents grew up there.”

Several reasons have been identified for educators advocating for environmental learning in classrooms, but one very pertinent reason, which Miss V seems to emulate, is a love or passion for nature, which stems from personal experiences and interests (Hart, 2003). Miss V spoke in detail about her love for the environment, and the passion which drove her to study, teach, and embody sustainability:

SchoolAMissV (teacher) – Our country it’s so precious and we need to look after it, but I don’t think it’s a value that’s innate, it needs to be taught. Especially the way that society is going with convenience and throw away.

It was clear that Miss V had taken it upon herself to educate children about the importance of nature and sustainability, but she seemed to thoroughly enjoy teaching children about it.

I never spoke to Miss M or Miss L so can only understand their environmental passion through what the children told me about them (I was unable to interview more than one teacher and one class at each school because of time constraints. I also wanted to focus on Year Five and Year Six children, but both Miss M and Miss L taught younger children).

The importance of teachers in developing environmental attitudes in their students is very much evident in literature and anecdotally. Hart’s (2003) study of teachers and their environmental teaching, revealed that many of today’s teachers have been motivated to teach children about the environment because their own

teachers inspired them when they were younger. I believe that Miss V will be one of those teachers that children will appreciate having had when they are older. While education in general is important for developing positive environmental attitudes (Spirpoulou, Antonakaki, Kontaxaki & Bouras, 2007), teachers can be particularly important in developing these in their students (Said et al., 2003, as cited in Kennelly et al., 2008). Miss V certainly displayed the traits of an educator who makes a lasting difference to their students.

Because of the lack of environmental education guidelines in the national curriculum, passionate teachers and educators at the schools were responsible for effective environmental and sustainability education:

SchoolAMissV (teacher) – That depends on the teachers in your school you know, not every teacher takes it up with as much gusto as you'd like.

It is hugely positive that teachers like Miss V go beyond the stipulations of the national curriculum, because they see the value in teaching children about the environment:

SchoolAMissV (teacher) – I showed them a video yesterday of these birds, it's an island somewhere in the Pacific Ocean...it's 10,000 miles away from any continent, close continent and it was masses of birds and all this squawking and they take you to this camera where there's these dead birds and they cut the birds open and they're just full of plastic and you know just showing them things like that and then getting them to come up with you know so what you know so getting them to think about that little piece of rubbish that they walk past well you're actually affecting something else...it's quite big for them to think outside themselves.

Teachers like Miss V should be recognised and praised for their dedication towards nature and sustainability, as they are having profound influences on the children they teach.

Principals making schools sustainable. School principals are the backbone of any school, not only being the face of leadership, but doing a lot of behind-the-scenes organisation and planning for the school. This includes developing and implementing sustainability within school life (Zachariou & Kadji-Beltran, 2009). School A and School B were no exceptions to this; the principal of each school did a lot of work on school policies, planning, and curriculum, and still managed to make sustainability a major focus.

Principal of School A, Miss C, considered the environment to be “vitally important” for children to learn about, and made the environment and sustainability core values of the school:

SchoolAMissC (principal) – It’s a fundamental platform for School A now. So we’ve got three platforms that we work off and one of them is enviro.

She thought that it was important that children learn about the environment because they were at a “formative stage” of their lives, where any attitudes and beliefs they formed had the possibility of being carried through to their adult years. She accepted that childhood is a very influential stage and that older people were more entrenched in their views, thus, children provided more of a hope in creating environmental change. Miss C also believed that children have a big part to play in the protection of nature and the amelioration of environmental issues:

SchoolAMissC (principal) – These children I believe have got a crucial role to play in a positive future for all of us living on this Earth...It's quite a big statement to put that on children, but I actually think that that's where we're at.

Having a school leader who is passionate about the environment is exponentially valuable, and in the case of School A it meant that practising sustainability and educating for sustainability were main foci of the school. Personal empathy and passion for the environment are qualities of a sustainable school leader (Jackson, 2007, as cited in Kadji-Beltran, Zachariou & Stevenson, 2013), both of which Miss C embodied. At a personal level, Miss C mentioned that the finiteness of nature was important, believed in not being wasteful, and wanted people to think beyond themselves – the latter being definitive of sustainability. She was critical of the throw-away lifestyle that people have adopted and the “built in redundancy” that capitalism and consumerism promotes. A vocal enviro leader like Miss C is an exponentially valuable resource for a school to have, as it makes it far more likely that sustainability permeates throughout the school life. This is nicely articulated by her comment: “you have to live it [sustainability]”. Miss V thought that Miss C was a critical part of integrating sustainability throughout the school:

SchoolAMissV (teacher) – If your head of the school has the expectation umm that that [environment] is a philosophy then it's much easier to implement.

It is positive that Miss C had the support of her teaching staff, as it makes it easier to implement sustainability with the co-operation of others.

As far as environmental activities were concerned, Miss C was involved in the yearly enviro planning of the school, as well as the regular enviro meetings, and she had a wealth of knowledge about the environmental education and activities that were happening at the school. Of important note, was her prioritisation of environment education and the way in which it was implemented into multiple aspects of school life:

SchoolAMissC (principal) – We've just redeveloped our science implementation plan and in every one of those areas for each team we've linked enviro objectives.

Her belief was that sustainability should be both overt and covert in the curriculum, and that even if the environment was not a primary theme of a learning area, it should not be excluded. This is similar to the idea of the hidden curriculum: subtle teachings which aim to create positive attitudes and behaviours less directly than structured, curriculum teachings (McCulloch, 1992). Miss C was well aware that the environment can be integrated into almost every compulsory curriculum subject (Littledyke et al., 2009). She acknowledged that although they had limited space and resources at the school, they were able to work into the community, in terms of places and people. This included picking up rubbish outside of the school, talking to local shops about sustainability, and going on walks to nearby parks. Extending environmental learning beyond school grounds is another trait of sustainable school leaders (Jackson, 2007, as cited in Kadji-Beltran et al., 2013).

Miss C formed relationships with many people and organisations in the community, to gather resources and knowledge to build on their environmental

education. For these partnerships to exist, leaders like Miss C need to form relationships and programmes in the community to support children's environmental learning.

A final example which proved the depth of environmental education and practice that Miss C instigated, were the school's enviro scrapbooks. Miss C explained that each year the children would document all the environmental learning and sustainable activities that had occurred in the school, amalgamating photos, artwork, letters, stories, articles, and poems into one big scrapbook (for photos of some of the scrapbook entries, see Appendix VI). She was proud to show me these scrapbooks and knew the details of every page – what the children had been doing, which places they had visited, and the special guests who taught them.

Like Miss C at School A, the principal of School B, Mr B, also considered teaching children about the environment to be of the "utmost importance". He spoke about teaching children what the environment is, how to look after it properly, and the consequences of inappropriate environmental management.

School B did not appear to have a structured environmental learning plan or regular meetings about environmental education. Therefore, it seems that Mr B was not as directly involved in the sustainable activities, education, and programmes that occurred within the school, neither in planning nor in implementation, as Miss C. While Miss C provided me with many documents detailing environmental planning, and the scrapbook documenting all the environmental learning and activities, Mr B did not have similar resources on hand. The principal of School B was not deeply involved in creating a sustainable

culture, or making it a top priority and value of the school. Instead, the environment was a theme that could be applied to different areas:

SchoolAMrB (principal) – We’ve got you know, respect, honesty, excellence....those sort of values ones that you use in all sorts of situations when people get together...you can apply them to the environment.

While his appreciation of nature and environmental education was pronounced, this had not translated into active environmental learning programmes within the school.

Principals have a significant role to play in instigating environmental education and sustainable practices within schools, as they have the means to create plans, and work with people, places, and resources to put those plans into action (Kadji-Betran et al., 2013). If school principals are passionate about the environment and are willing to work towards a sustainable school, they have the power to influence a lot of teachers and children, just like Miss C did.

Mr Nature: Hero of the environment. Schools have a variety of resources available to them, and Mr Nature was one local resource that was very successful at School B. When asking the children at School B about visitors or guests that taught them about the environment, Mr Nature was mentioned again and again, obviously being very memorable and important to the children. The following quotes nicely capture some of the qualities of Mr Nature:

SchoolB9 (girl) – Mr Nature, yeah he’s Mr Nature. And yeah he’s very funny and he like umm we had to bring a milk umm thing umm a milk carton to school and he would put worms in it and we had to look after it and everything and feed it.

SchoolB12 (girl) – This dude called Mr Nature comes in and he talked to us about recycling to help our environment and he told us how long it takes for things to just recycle if they were left out in like the grass.

Mr Nature is the persona of a man from the Xtreme Zero Waste recycling station in Raglan, New Zealand. In 2011 alone, Mr Nature visited 3,200 children and received great reviews for his sustainability education (Xtreme Zero Waste, 2014). When talking to the children from School B, Mr Nature and his teachings were mentioned frequently. The detail with which some children remembered what he had taught them shows the influence that he had on them, making him a very successful learning tool at School B. Miss N articulated some of the reasons why Mr Nature was so memorable to the children:

SchoolBMissN (teacher) – You know Mr Nature he lives it. You know his clothes, the bags he brings they are suitcases, they're old, his lunchboxes, everything's recycled, his shoes.

Mr Nature was an example of one type of educational environmental partnership with schools: people. Other partnerships can be developed with parents, businesses, local councils, and nearby communities. Partnerships are very successful when applied to environmental and sustainability education, as they provide access to more knowledge, more resources, and more educational sites and places. Not only do partnerships create more sustainable behaviours in those they reach, but they also enable the teacher to learn more about how they can continue and broaden environmental learning at school (Flowers & Chodkiewicz, 2009). School B used Mr Nature to great effect. Miss N, the teacher of the

children I interviewed at School B, had a lot of praise for Mr Nature, believing that he was great at educating and inspiring children:

SchoolBMissN (teacher) – Having people like Mr Nature come in is so fantastic is well he’s an expert in it, he lives it and he’s actually really inspiring and he really gets the message across to kids about umm you know the importance of what we do now.

Mr Nature did not visit School A, but there was a near equivalent: Matt and Andy were two guests who visited School A each year to teach the children about different environmental issues. They acted in a similar way to Mr Nature, by being exciting and interesting guests that were well-practiced in capturing the attention of children. Matt and Andy were not mentioned as often as Mr Nature, but they were still special because of how they taught children. Matt and Andy used entertainment and humour as a way of making learning fun. This is important because learning that is enjoyable has more of an effect on children. Several children talked about Matt and Andy:

SchoolA1 (girl) – It was Matt and Andy. It was about you can save money by turning everything off and about power bill and things...they were they had singing and they played the piano, part of it was funny.

SchoolA3 (girl) – They [Matt and Andy] make it really funny so that you can actually learn stuff.

Enviro leaders and educators that engage with children to make learning fun are powerful, as they are likely to be remembered for not only the fun, but the environmental messages they communicate as well. When passionate people from

outside the school are involved with environmental education, children can learn in different ways, and engage with new thinking and perspectives, which is important for catering to many different children (Somerville & Green, 2011).

The influence of peers. Friends, classmates, and other peers are essential parts of primary school life; they are children who affect other children for better or worse. Peers have a huge influence on children, as peer pressure, popularity, and “the norm” are unavoidable parts of childhood, driven by certain children in order to fit in or be “cool”. These aspects of primary school life can cause effects which last into adulthood for some people. In School A, peers were important for two reasons: one, they were positive role models; two, they were good examples of what not to do.

Peers as positive role models. Some children identified themselves or others as positive environmental role models:

SchoolA3 (girl) – I just really think that maybe I should try a bit better if everyone else is trying I should be really good.

SchoolA3 (girl) – If we do litter the juniors will follow, they think of us as role models.

SchoolA4 (girl) – We haven’t finished ours [pamphlets] yet, but probably like gonna, oh yes, we were gonna give them to the parents of the new entrants to say that we are like a Green-Gold school and to say that this is what you should do.

It is important that children identified those around them who were good environmental role models, and it was very positive when children considered

themselves to be positive role models, as they were likely to be more careful and intentional in their actions. In this way, peers are good influences that can make children act in more positive ways. Peers are also important when children work together; learning with classmates can be more powerful and successful than individual study, especially when children know that everyone needs to work together and contribute individually (Johnson & Johnson, 1987; Kagan, 1992, as cited in Littledyke et al., 2009; Burley et al., 2012). This is particularly true when it comes to environmental learning and action, as all of Earth's citizens need to contribute.

In the case of School A, Miss V encouraged older children to be positive environmental role models and leaders by creating information pamphlets for younger students in the school. I think this is a wonderful learning tool, as it provides younger children and their parents with important environmental information, and makes the older children realise that they have the potential to make a difference and influence others for the better.

Leadership of children was also evident during Observation Session Two, when the older Enviroagents who were leaving for Intermediate School the following year, were planning what knowledge to pass on to the younger Enviroagents. The children decided that they should inform the younger children about Zero Waste (Nude Food), environmental values, and most importantly, the guiding Enviroagents principles. These principles were learning for sustainability, sustainable communities, empowered students, respect for diversity, and Māori perspectives. It was uplifting to see children wanting to protect the environment that they had nourished for so long by passing their passion and knowledge onto younger children.

Peers as negative role models. Some children affected their peers by being bad role models for environmental behaviour. Ironically, this can be an effective deterrent of negative environmental practices, and provide examples of what not to do. Several children discussed peers that did not act positively for the environment:

SchoolA4 (girl) – Most of them say like aww yeah I'll do this and they kind of like want to look after it, but then they still bring like lots of wrappers in their lunch.

For some children, witnessing harmful environmental practices that hurt nature or animals makes them consider the importance of nature and looking after it. Children were affected by observing peers having little regard for the environment, for example, by not participating in environmental learning, blatantly littering, or harming plants. Witnessing these negative behaviours may be influential for some children, who are inspired to take positive action for the environment.

The power of passion. What drives many people who are involved in environmental education is passion, which entices them to be enviro leaders, teaching children how to be sustainable and to treat the environment in the best way possible. In the case of education, the principals, teachers, and leaders in this study were fuelled by enthusiasm and devotion towards nature, which made them want to teach others to respect and care for the environment in the same way that they did. Miss V was an excellent example of someone who was propelled by her passion for nature; she was upfront about her love of nature, and openly expressed

the desire to want to protect it and to pass her passion on to children through teaching.

Learning Processes within Schools

This section covers several different aspects of learning that affected children's environmental attitudes and behaviours. After people, learning processes were the most influential factor in School A; they were also significant at School B to a lesser extent. These processes tended to occur constantly, routinely, and had become normalised. First, how children learnt about the environment is examined; and second, how environmental learning was instigated within the schools is identified.

How children learn. How children learnt about the environment made a big impact on their attitudes towards learning about the environment, and their perspectives of nature. Trends in environmental learning were practical, hands-on learning; place-based education; combining art and crafts with sustainable education; special enviro-themed days or weeks; making learning fun; and using rubbish as a learning tool. These things were significant factors that made the children engage more deeply with the learning and made it more memorable as well.

Practical environmental learning. It is important that Miss C and the teachers at School A provided the children with chances to *act* sustainably. Miss C believed that children could be thought of in two ways: as protected beings, who are bubble wrapped and sheltered, or as thoughtful beings, who can challenge the norms of today and develop into environmentally responsible citizens. She acknowledged that children often suffer a feeling of hopelessness when it comes

to environmental action, but she focused on bringing it down to an individual level and teaching children small things that they were capable of doing:

SchoolAMissC (principal) – We used the *Lorax* as a catalyst for a whole interactive, integrative study and the children held different views because they knew they had to take social action and the social action they wanted to take they said they knew was way beyond them. So, at the end of the day, they had to settle for something that they could do and they could like provide a notice home umm they could plant and grow some seeds. They couldn't save the Earth, but it's like can you save this one thing, is it worthwhile?

This style of active teaching empowered children and, hopefully, enticed them to act in further ways for the environment. Miss V had similar views, believing that empowering children to act for the environment was the most important part of environmental education:

SchoolAMissV (teacher) – You've got empowered students that you're empowering, now that to me is the biggest one so you want to get students making actions and getting them to decision-making for themselves, not just following along and doing something and then not actually having passion for it.

Children were empowered by the environmental learning activities they did at school, because both schools provided opportunities for the children to interact with nature and help it. Teachers at both schools spoke about children's

love of practical learning (however, practical learning was much more evident at School A):

SchoolBMissN (teacher) – They love it when Mr Nature comes coz he does lots of hands-on stuff you see. They make compost and they get worms and they reuse stuff.

SchoolAMissV (teacher) – Hands-on is definitely a thing too, getting stuck in and doing it.

Hands-on activities, such as gardening and planting were frequently discussed by children at School A. They talked about the type of plants they were growing, how they planted them, how tall they were growing, and the weeding that was occurring in the vegetable garden:

SchoolA1 (girl) – In our class we've been planting seeds in nutrient pallets and put them in the hot house sort of little ones and yeah and they're like that big. We did sunflowers, beans and corn.

SchoolA8 (girl) – We did sketches of trees and poems about them, so you have to just involve nature more into our class and we just grew sunflower, beans and what is the other thing, corn.

This hands on learning seemed to be thoroughly enjoyed by the children, and they were passionate and proud of their own planting, as I observed in Observation Session One. During this observation session, Miss V poured some seeds onto a large piece of paper on the ground and the children were able to examine them and choose one. The seeds were corn, beans, and sunflowers. This

session was carried out in a 90 minute period in the classroom. In a relatively short amount of time, Miss V was able to use several different learning styles: visual – drawing on the board, sketching in their books, and researching on the tablets; verbal – writing in their books and researching on the tablets; and kinaesthetic – examining the seeds and planting them. Miss V catered to different learning styles and, therefore, gave the children the opportunity to learn in the way that suited them best, which made it more likely that the children would remember the information. The majority of these learning methods involved active learning on behalf of the children, as opposed to the teacher talking and the children listening, which is a comparatively passive way of learning.

Speaking of environmental learning activities, one girl specifically valued *outside* learning activities where she could interact with nature, as she found this a much better way of gaining knowledge and experience:

SchoolA8 (girl) – I'd prefer it to be more trips and more like you're getting out there to see what it is, not picture books and studies and pencils...coz I feel like that's a better way of almost communicating with it, instead of just flicking through a page.

This is a wise comment from a young person, and it shows how children learn from interactive, personal experiences. These interactions with nature are important, as they can be powerful forces that prompt environmental action and passion in individuals.

Additionally, with the use of practical learning, Miss V tried to use everyday situations to teach children about the environment, showing them common, simple actions that they could take to be more sustainable. This included

teaching them what to recycle and how, or how to reduce the amount of rubbish they used. In order for children to feel empowered and that they can make a difference, they need to start small, so Miss V's learning activities seemed to be very successful.

It is essential that children are empowered to act for the environment. Hands-on, active education is a way in which children can learn about the environment, and more importantly, it can teach children how to practice positive and repetitive environmental actions. Enabling children to help, even in small ways, contributes to their feeling of accomplishment and importance. Society is bombarded with global images of environmental cruelty and threats, so it is no wonder then that children feel disempowered and unable to affect any sort of change (Littledyke et al., 2009). Empowering children is an important step to prevent them from being paralysed by fear, and unable or unwilling to act. One of School A's guiding principles for being an Enviroschool was empowered students, and this was clear from the many opportunities that the school and teachers provided for children to get involved. Miss C said that very intelligent children in particular, suffered from feeling disempowered:

SchoolAMissC (principal) – For some children, especially clever children, get very disturbed because with the complexity of what they're trying to deal with, and they will try and construct something but they'll look at you and they'll know that this is actually hopeless coz the issue is this this big this is. And we have to say, yeah but so if we can't deal with that, what is it that we can do and the teachers have to bring it back to that safety zone for kids.

Existing literature does not adequately express the fear and anxiety that environmental issues bring to some children. It incapacitates them, makes them unable to act for fear of failure, or brings an overwhelming feeling of not knowing what to do. Miss C articulated this point very well, and it is something that needs to be considered more, in schools, curriculums, and the literature. Children need to be more than just educated; they need to be taught how to act.

Place-based environmental learning. During my interviews and observations at School A, it was clear that place-based education was definitely in effect, with children learning in the school gardens, out in the school grounds, by the local river, and on tree planting sites for Arbour Day. Place-based education has many positive effects, including enhancing children's understandings of and relationships with nature (Sobel, 2004; Thomashow, 2002, as cited in Somerville & Green, 2011).

During Observation Session Three, some students from Miss V's class and other classes, went on a field trip to the Waikato Museum, where there was an environmental exhibit called Planet Warriors. While this was not outdoor place-based education, it was still environmental learning in the local community outside the school. The aim of Planet Warriors was to teach children about how their everyday lives and actions affected the environment, and help them learn about small changes they could make to improve the health of the environment (Waikato Museum Te whare taonga o Waikato, 2015). Children relished the opportunity to go on a trip to learn more about sustainability and environmental issues, and were enthusiastic about all of the activities and learning they encountered. The exhibit included different stations, either action stations or fact stations, where children could cycle to create energy, time themselves while

turning lights off as fast as possible, and harvest vegetables from the garden. The children proved to be more excited and motivated to learn here than in the classroom, demonstrating how new environments and locations can recharge children, and develop interest and engagement.

Place-based education was also relevant at School B, as children spoke about trips to off-school sites. A field trip that one child mentioned was on Arbour Day, which is a great activity where children are not only learning, but helping the community. Another example of place-based learning was visiting the field of corn donated to School B:

School A Mr B (principal) – The contractors up the road planted some corn for us to sell in February, March next. All the children went up, they saw the tractor in action, saw the planting sequences, had the chance to ask the people that run the property some questions...we're very lucky that we can just go down the road, have a look.

Being a rural school, meant School B had more and different places that children could visit for environmental learning, and often these sites were easier to access, being in the countryside.

Combining art with environment. Art-based or craft-based environmental learning activities were also discussed by many children at School A, and a few at School B. The opportunity to get creative and work with different mediums resonated with a lot of children who listed a large number of environmental arts and crafts. Creative tasks were unique ways of expressing what children had learnt about the environment. Pamphlets were often created, masks were made out of recycled materials, and murals were constructed out of milk bottle lids:

SchoolA1 (girl) – Halfway through the year we did masks out of recycled materials. We weren't allowed to buy anything new, we had to use everything was old, except the paint.

SchoolA3 (girl) – We do quite a lot of activities like planning the gardens, writing about it, writing poems stuff like that.

SchoolA4 (girl) – Sometimes we do like pamphlets for the community to say like what the effects are of like pollution and how you can reuse stuff.

SchoolB12 (girl) – We did those bird paintings we all we all painted a bird on a draft and then paint it again and then we all had to paint it onto that tile.

Environmental activities at School A were endless and constant. When talking to Miss V and a student during an observation session, I was told about just some of the activities – both compulsory and optional – that the children had done. Children were given the chance to draw logos for new enviro groups and the best would be made into badges. To show that they were committed to being an Enviroagent, children had to submit a piece of artwork that showed how they cared about the environment. This artwork included drawings, photo collages, and endangered animals made out of recycled materials (these were particularly impressive!). All children were able to bring in milk bottle caps for the Māori mural, or seeds to fill up the school seed bank. Children were given numerous opportunities to get involved in environmental art-based activities, and it was great to see many children taking up those opportunities.

The Arts have been shown to be an effective way of connecting children

with nature on a deeper level (Littledyke, Taylor & Eames, 2009). Because the Arts are linked to imagination, they offer endless possibilities and ways in which children can develop knowledge, reaffirm their own knowledge, and show understanding (Department of Education, 2008, as cited in Littledyke et al., 2009).

Art and the environment were also combined at School B, but not to the extent that occurred at School A. Children at School B spoke about taking photographs of nature, an important activity for children, enabling them to be more appreciative of nature, and value its beauty and uniqueness. They also did native bird paintings, which were hung up around the school. Children respond more positively to environments that they have helped design and create (Burley et al., 2012), so it was great that School B showcased children's art on school buildings.

Enviro-themed events. Holding events such as themed enviro education days and weeks seemed to be a successful way of involving children with environmental activities in School B. Many children remembered these events and seemed quite excited about them. Children spoke about worm week, environment week, the daffodil show, and flower show day, often describing in great detail what the event included, like the children below:

SchoolB12 (girl) – We like daffodil day and we do ahh flower day and it's everybody brings their own flowers and vegetables or plants and stones, rocks and pebbles and we've got to like do heaps of different creations like you could do a vegetable creation which is like an animal out of vegetables, or a table posy, a flower arrangement, a miniature garden.

SchoolB7 (girl) – Every year we always have a daffodil show and then if we win we get a lot of environmental stuff, we've won I think two years in a row.

Mr B also spoke about the agricultural day that was held at the school each year:

SchoolBMrB (principal) – We still have an agricultural day and you know they look after animals for so many weeks and then they come and show them, that sort of all adds into appreciating the environment and what the environment means.

These themed days were effective ways of teaching children about the environment, as they acted as intensive workshops on certain topics. They seemed to work well in that they were memorable and enjoyable. Learning about the environment, or animals, or worms for a whole day or even a whole week, gives teachers plenty of opportunities to communicate sustainability principles and education to children. Repetition is a powerful tool that helps people, including children, commit knowledge to memory – in part, why these themed events were so effective.

Making environmental learning fun. Fun and enjoyment were significant factors that made the children engage more deeply with environmental learning:

SchoolA3 (girl) – We play actually quite fun games in the middle of it like that help us to learn, coz like if I was learning I'd probably want it to be fun when I was learning.

SchoolA5 (boy) – We try do it [environmental learning] kind of in exciting ways.

It is important for teachers and other educators to acknowledge that children appreciate when learning is designed to be fun and interesting, and that this type of learning makes children more likely to engage enthusiastically and remember key messages more. Research suggests that enjoyment and passion in learning makes children better learners. For example, students who enjoyed reading were found to be more likely to be good at reading (OECD, 2010, as cited in Lockwood, 2012). Another study found that finding science classes interesting was motivation for learning more about science (Agranovich & Assaraf, 2013). If teachers identify which elements of environmental learning children find fun, they can adapt their teaching and, hopefully, make learning more successful.

Rubbish as a learning tool. Several children at School A mentioned rubbish as a learning tool. Classroom rubbish acted as an environmental education resource with which they could learn about items that could and could not be recycled:

SchoolA6 (boy) – We were just looking through the rubbish bin over there and she [Miss V] was just looking through it and umm seeing putting the rubbish in the right rubbish into the right bins.

SchoolA11 (girl) – The other day we we Miss V looked through the bin and like we were looking about what number it had on the recycling little table ahh symbol, and like what number it had in it or and some of them said recycle carefully and but it didn't have a number so it couldn't really be recycled so it's just a waste. And like talking about how with yoghurt

like instead of getting the little ones you either get a big one or you make your own homemade yoghurt.

SchoolA8 (girl) – Sometimes Miss V empties the bin on the floor and we just look through, see what's in there.

This was an effective way of teaching children the consequences of using and disposing of rubbish. Additionally, it provided them with easy environmental actions they could undertake to contribute to them feeling empowered. Rubbish is free and a powerful visual tool, that was put to great effect in School A.

How environmental learning is implemented. Children are educated by a teacher or other educator whose teachings are being formed by the national curriculum or their own preferences. Here, I examine how the formal school curriculums influenced the children, and, also, what influenced the learning topics.

Who instigates environmental learning. Focusing on School A, it was apparent that most of the environmental education was prompted by Miss V and Miss C as opposed to the national curriculum. This is because the environment and sustainability have not been made compulsory learning topics in the national curriculum, rather they have been slotted into different subjects in small, random fragments. Miss V considered the curriculum to be weak in terms of environmental education:

SchoolAMissV (teacher) – It's all there in an indirect way, but it's not spelt out, so how widely that is being done depends on the interpretation of each school...I think it does need to be directly spelt out...it needs to be

assessed just like any other curriculum area, it needs to be an underpinning philosophy.

Snippets of sustainability and environmental learning feature in health and physical education, mathematics and statistics, science, social sciences, and technology, but there is no in depth environmental learning required to be taught (Ministry of Education, 2007; Littleddyke et al., 2009). Instead, organisations like Enviroschools, and passionate teachers are leading the integration of the environment and sustainability into the curriculum.

Miss V had a lot of influence in the environmental education that occurred at the school. She informed me that School A was rewriting the science curriculum for their own school, and she was doing the environmental aspects. She said each year would bring a different environmental focus, but they would slightly overlap to build on the previous year's learning. She appeared to disapprove of the lack of specific environmental learning standards in the national curriculum, saying that it was very broad and "a stark move away from the comprehensive science curriculum that existed before". Her goal was to combine the current curriculum with the old science curriculum and the Enviroschools kit:

SchoolAMissV (teacher) – We've just been through writing the science implementation plan for our school so we've been able to marry them up and put where the enviro links where to the science New Zealand curriculum.

It is great that Miss V took the time and effort to weave environmental education throughout the school curriculum, and Enviroschools was a large part of this.

Enviroschools contributing to the school curriculum. Enviroschools had a big impact on School A's environmental education; this was to be expected since School A is a Green-Gold level Enviroschool. Miss V said at the start of our interview: "I'm guided by the guiding principles by the Enviroschools which are those five principles". During Observation Session Two, when the Enviroagents were deciding what information to pass down to the younger students, the Enviroschools' guiding principles were determined to be the most important part. The influence of Enviroschools could also be seen in the school's planning documentation, specifically, the 2013 Focus Continuing a Sustainable Journey document. Environmental activities and targets were recorded, alongside what environmental principles guided them. Miss V believed that being an Enviroschool made a huge difference:

SchoolAMissV (teacher) – The difference between an Enviroschool and a non-Enviroschool is massive in regards to how you teach I think in enviro education, because most schools then will have, if you go to teach enviro education in a non-Enviroschool it will be done like ok this is a unit for three weeks, cool that's done and that's it, whereas ours is an ongoing philosophy.

Enviroschools not only has a big influence in School A, but many other schools in New Zealand, with one-third of the nation's schools involved in the programme (The Enviroschools Foundation, 2014). Organisations like this are powerful resources for educating teachers and school staff about sustainable principles, and how to permeate sustainable practices throughout the workings of the school. With a lack of environmental focus in the national curriculum,

Enviroschools is essential for educating current and future generations about the importance of caring for nature.

Physical School Environments

The physical school environment was the most important influencing factor at School B. School grounds are, effectively, living knowledge environments, that can act as relationship negotiators between children and nature (Malinin & Parnell, 2012). The following section looks at the importance of the school grounds in the case study schools, and how this relates to literature on learning in and from school grounds.

Natural versus man-made. The environment of School B was much more important and influential than the environment of School A. I believe this is because of the more diverse and natural school grounds that existed at School B. Since School B was located in a rural area, the children benefitted from being surrounded by a lot of nature, in the form of farmland, established trees, and a large gully. Also, being a small school meant that buildings and man-made structures dominated less of the space than that of a larger school. School B also had a large field and several gardens, which added more natural elements. In comparison, School A also had a large field, trees, and gardens, but the school grounds were dominated by buildings and were surrounded on every side by either houses, main roads, or shops. Miss C acknowledged the downfalls of having an urban school, but saw the ability to teach into the community to be very positive:

SchoolAMissC (principal) – We just don't have the ground to create an environmental island, we you have to work with what you've got, what we've got means that we work into our real community.

Comparatively, School B was more of an “environmental island”.

Children at School B spoke more favourably and affectionately about their school environment, and more frequently, than the children at School A. The most important part of School B seemed to be the gully, which children cherished as a valuable learning and leisure resource:

SchoolB8 (boy) – We care for our gully so like we don't like chuck any rotten thing down there. And we like put traps down there for like the possums and the stoats and stuff that are down there.

Children also expressed concern and annoyance at people who mistreated their gully:

SchoolB9 (girl) – There's some people dumping all their rubbish down in our gully. And like so there's like microwaves and everything.

SchoolB10 (girl) – In our gully once there was umm a clothes dryer in our gully...and like it's all like dirty and gross and like there's heaps of rubbish in there.

This shows that children had created a close connection with the school gully, owning it, protecting it, and being proud of it. It was used as a learning tool and a place for relaxation and fun, as well as a site where they could intimately

engage with nature. Miss N also appreciated the gully as a valuable school resource:

SchoolBMissN (teacher) – We've got you know something in our back yard that we can use that we don't have to travel to. You know we've got trees, we've got the stream...we are lucky to have it.

Gardens were also an important element of School B, with children able to describe the school's gardens in detail, and showing passion and concern for them:

SchoolB6 (girl) – Convolvulus strangles trees. So it's like evil...we have it growing in our school gardens so I pull it out.

SchoolB11 (boy) – We build murals and like walls and plant the walls with trees and and we plant plants and there's we have a garden area over there.

SchoolB12 (girl) – We've got them [vege gardens] out in our sensory garden and it's got like some nice chairs and flowers and like umm plants and it's got these two vege gardens and this area to play.

School B had several gardens around the school, most notably the daffodil garden and the sensory garden. One girl was only too happy to show me around the school gardens and take me to the office where the trophies for best daffodil sat, demonstrating her passion for the gardens.

School grounds with more natural features have been found to have very positive effects on children and be their preferred school environment. They are

ideal sites for place-based education (Somerville & Green, 2011), but also make great leisure environments for children to play and explore in (Samborski, 2010). Children at schools with more diverse, wild elements, tend to value natural features, such as flowers, ponds, and trees, more than the man-made structures, like playgrounds (Samborski, 2010).

Benefits of natural school grounds are in abundance – they increase social skills, support development, and educate children. Nature improves children’s motor skills and ability to focus, and has been linked with less illness (Rice & Torquati, 2013). School grounds that are more natural, also encourage children to interact with a diverse group of peers (Samborski, 2010). With such diverse and natural school grounds, it is no wonder that the children at School B were so passionate and knowledgeable about their school gully and gardens, being cherished features of the school.

Personal connections with school grounds. When children contribute to their environments, it also enhances their connections with nature. Burley et al. (2012) say that children may value and be more connected to environments which they have helped to design or create, as well as care more and feel more personal responsibility towards them. Also, as children spend more time in natural environments, they grow familiar with them, learn how to look after them, and become knowledgeable about the features and processes (Somerville & Green, 2011). I think this is particularly so when it is environments that children have contributed to. At both of the case study schools, children were given opportunities to contribute to the school environment. As well as beautifying the schools with artwork and tending to gardens, children at School A were also given the opportunity to design parts of the school:

SchoolA1 (girl) – We did some pattern of the garden, you did the plants that you gotta choose and the sculpture groups and so you gotta do a design a sculpture and my design got chosen, me and my friend's and so it's the one out there.

Children expressed a great deal of pride in any environment or area that they had contributed to, which hopefully meant they put more effort into looking after the school grounds. Miss C expressed the same view, discussing how children were involved in the design of the school's play areas:

SchoolAMissC (principal) – Our play areas have mostly been designed by children, and purposed by them and they're used by them...it's a sense of legacy...people come back coz they remember what they did.

Being involved in decision-making about the school environment empowers children and lets them engage with real-life environmental decisions. It is my view that the most valuable environmental education takes place outside of the classroom, among trees, animals, water, and fresh air, in both formal learning situations and unstructured play times.

School Rules and Practices

In my two case study schools, rules and common practices were found to be powerful promoters of sustainable behaviours. Because rules are constant, continual, and routine, the children became accustomed to taking part in environmentally friendly practices, such as putting rubbish in the bin, recycling, feeding food scraps to the worms, and using the GOOS box. This section looks briefly at the sustainable school rules at each school and the impact they had.

Rules and practices are instigated by people; in the case of schools, those people are principals, teachers, and other school staff. For example, at School A the caretaker was mentioned as a person in the school who enforced rubbish rules:

SchoolA8 (girl) – The caretaker Mr C sometimes comes in and grouches about umm there’s so much rubbish lying around and how he has to pick it up.

Again, passion and care for the environment influenced people to establish these rules in the first place. Having rules about caring for the environment means that the schools have a developed enviro culture, which not only features in the education of the schools, but in the school processes and practices as well.

The rules had an impact on the children in both schools because they were routine and the “norm”, as mentioned by a boy at School A:

SchoolA10 (boy) – We aren’t umm we’re not really allowed to chuck our rubbish on the ground but I don’t think all the little kids and the juniors and the Year 3s aren’t getting the message to them so they sneak their rubbish around the place which is bad.

The boy quoted, who was an older student, knew the school rules relating to rubbish, comparing himself to the younger children who had not yet made practicing the school rules routine. The normalisation of sustainable actions is essential, especially in childhood, so that the positive environmental actions stay with the children into adulthood and beyond. Miss C asserted that environmental education had to “be embedded as part of the way we are around here, the values of the school.” The common everyday practices and rules of the school were

actions stemming from this belief.

Rubbish rules and beyond. The most frequently cited school rule in both schools was no littering, and the follow through of this: putting rubbish in the bin. Children spoke about how they always put their rubbish in the bin, how they picked up other people's rubbish, and how they encouraged other children to not litter. About 90 percent of the children I interviewed mentioned no littering, proving that this rule had been adopted as common practice by almost all the school children at both schools. Recycling was another rule that was mentioned by many children, but mostly from School A. Recycling bins in the classrooms helped familiarise children with the different types of rubbish, and what rubbish was reusable or recyclable. Many children spoke about how rubbish was organised in their school:

SchoolA11 (girl) – We have two bins in the classroom, one for recycling and one for rubbish and and Mr C, he's the caretaker, he has a big paper bin and bigger rubbish bins so they get taken by the rubbish truck.

SchoolB2 (girl) – For the class we have lots of little rubbish bins and each classroom has recycling and I'm one of the recycling people that takes all the paper and stuff down to the end of the driveway and the rubbish people come and get it.

This is evidence of the school rules and practices influencing children, as they are deeply embedded within the children's environmental knowledge and understandings.

School A's environmental rules went further than those of School B, as they also focused on reusing paper within the classroom, the benefit of food

scraps, and participating in Nude Food. Children talked about the GOOS box at School A – the box that held paper which was good on one side. This provided another opportunity for children to learn about reusing and being less wasteful. Reusing food scraps was another well-established practice that many children at School A spoke about. Worm bins were bought out into the courtyards at lunchtimes, so that children could give their leftover food to the worms to make compost. The children mentioned an important sub-rule: no citrus is allowed in the worm bin, because worms cannot digest it. The depth of knowledge and familiarity that some children had with the worm bin demonstrated how normalised the activity of reusing food scraps had become.

Nude Food was the last major environmental practice that the children engaged in at School A:

SchoolA10 (boy) – We've done Nude Food which is like we don't have any packaging and no rubbish or no nothing just plastic bags or we can reuse so we don't have to keep chucking it all away which is also good for the environment.

Nude Food was not a rule, as it was not compulsory, but it was a heavily encouraged and publicised activity, incentivised by house points. Nude Food is a brand of lunchboxes that has been developed into an anti-rubbish programme. The lunchboxes are designed so that no food packaging is required, thus cutting down on rubbish (Nude Food Movers, 2015). At School A, children were encouraged to partake in Nude Food and bring no GladWrap, packets, or plastic in their lunchboxes. Miss V mentioned that because children could not always choose to get the Nude Food branded lunchboxes, she would be changing the name of the

programme to Zero Waste, to ensure that children did not feel alienated if they had alternative lunchboxes. The principle would remain the same – no non-reusable or non-recyclable rubbish in your lunchbox.

At School B, children talked about the school rule of taking your lunch rubbish home or putting it in the bin. This rule did not seem to serve to reduce the amount of rubbish and packaging used, but rather just reduced the amount of rubbish in the school. Adopting a Nude Food attitude in School B would solve both of these issues.

Making simple rules and activities that are easy to follow is beneficial for the environment, but also for children, as it makes them feel empowered by contributing to the protection of the environment.

Rubbish pick-ups. Picking up rubbish was often cited as an environmental activity that was done within each school. Many children expressed that an abundance of rubbish was found in school grounds, often hidden in gardens and bushes. Some children did not seem to mind picking up litter, but others showed annoyance or boredom with the activity. Of important note, was that School A often did rubbish pickups in the community as well, showing that the school cared about their local neighbourhoods:

SchoolA8 (girl) – The only thing we really do that I can't think of is pick up rubbish which we do in groups of two, but that's not really an activity that's fun.

SchoolA11 (girl) – Last term we went on a rubbish hunt and like we have big we had two big black bags, rubbish bags, and we went out just outside the school and inside the school and we filled both of them up.

SchoolA4 (girl) – Sometimes we have a rubbish day where we go and like pick up rubbish and at like cross country when we go to a park we sometimes on the way back the teachers bring rubbish bags and we have to pick up rubbish on the way back to school.

SchoolB1 (girl) – We do like stuff like activities around the school so like pick up rubbish.

Even though picking up rubbish is not voluntary on behalf of the children, it is still a valuable activity, because it will hopefully teach children the value of picking up rubbish, and how easy and effortless it is. Community rubbish pick-ups were also important, as they enabled the children to contribute towards the well-being of their community and create a feeling of societal cohesion.

For many of the children, the school rules and policies that they followed seemed to define and shape their views of the good that they did for the environment. In other words, the schools were giving children the knowledge, resources, and encouragement to be able to take action for the environment.

A whole school approach. What was evident in School A, much more so than in School B, was a whole school approach to environmental learning and sustainability. A whole school approach includes incorporating sustainable and environmental learning across the whole curriculum and instilling sustainable practices into school management, practices, and all other areas (Littledyke et al., 2009). Essentially, it is schools practising what they preach in terms of sustainability (Shallcross et al., 2006).

In the Enviroschools programme, whole school approaches underpin everything. According to the Enviroschools Handbook, whole school approaches

capture four main areas of a school: place, practices, programmes, and people (The Enviroschools Foundation, 2008). This means that sustainable attitudes and behaviours are communicated to children via all aspects of the school, in both formal and hidden curricula. The formal curriculum covers environmental teaching across subject areas and specific studies, and the hidden curriculum sends significant messages to children about sustainable resource management, green buildings, and environmentally friendly actions by observing the people, places, and facilities within the school (The Enviroschools Foundation, 2008). Historically, hidden curricula in educational institutions have reiterated human domination over the environment, as people have moulded and destroyed the environment for their own benefit. However, learning environments can express a healthy interdependent relationship between humans and the environment instead (Reynolds, Brondizio, Robinson, Karpa & Gross, 2010), as asserted by the Enviroschools Foundation.

The depth and thoroughness with which School A children abided by environmental policies on a daily basis could be largely attributed to the sustainability focus which underpinned all aspects of the school. When I met with the principal of School A, she provided me with dozens of documents that stipulated the environmental planning and teaching within the school. One document was a 2013 plan focusing on continuing a sustainable journey, enacted by both staff and students, and divided into specific sections: place, people and participation, practices, and programmes – just like the whole school approach defined in the Enviroschools Handbook (The Enviroschools Foundation, 2008).

Place included the school gardens, the wormery, seating areas, play areas, artwork, bush areas, and the Garden to Table programme (where children cooked

the food that they grew in Vege Village). People and participation identified ways in which the children could take on environmental leadership roles, as part of the Enviro Kids Forum, in the Enviroagents, in the Worm Team, and so on. Practices stipulated sustainable actions and focuses for the school, for example, rubbish, recycling, paper, compost, gardens, and transport. Finally, programmes were education based topics to be taught throughout the year, including water for life, biodiversity, interdependence, energy, and living landscapes. These areas were linked by the philosophy: “as an Enviro Green Gold school we lead with pride, lead with vision, lead with greatness, lead with integrity” (School A Document: Enviroschools – A Whole School Approach). It is obvious that sustainable practices and education were paramount to School A, not only in what they taught, but also how they operated the school.

In addition to all of the documents outlining sustainable practices and education, enviro meetings were held every few months with the head enviro teacher (Miss V), the school principal, and supporting teachers. These meetings covered progress on sustainable initiatives; environmental learning units; environmental arts, crafts, and sales; cleanliness of the school grounds; and the development of an enviro website, among many other things. The enviro leaders of the school worked constantly to embed and promote sustainability in every aspect of the school, truly exemplifying the whole school approach.

Extracurricular Environmental Activities

Environmental activities outside of class time were more important at School A, due to the activities and groups being more established and well-known. The children in the envirogroups at School A were encouraged to be very active enviro citizens. In fact, they were so active that they documented their environmental

efforts on their own website. The enviro website was created by the children themselves, with the support of Miss V. A statement on the home page said:

We have created this website in groups (with each group looking after a page). We have had to research and interview in order to track our journey from where we have come from since obtaining Green-Gold Status in 2011. We have tried to highlight how we have grown and outline our the schools future goals under the enviro principles [sic].

It is apparent that the children took their roles as Enviroagents very seriously, given all of the effort that went into the website. The website explained the environmental goals of the school, from Zero Waste and Nude Food, to Garden to Table, to beautifying the school. There were also pages dedicated to the Enviroschools guiding principles, the Cool Kiwis Programme, and ongoing environmental projects within the school (School A Enviro Website).

There was an enviro group at School B; however, not many children mentioned it and those that did, did not know much about it. Again, it is positive that such a group exists, but it was not as structured and well-promoted as the enviro group at School A, which was well-developed and publicised to the school community. School B did provide the daffodil club for children, which did not exist at School A. The daffodil club was an important group for one girl in particular, who was delighted that School B's daffodils had won awards:

SchoolB6 (girl) – We make daffodils and other schools come over and put our daffodils there and we've got trophies.

Both schools had gardening groups, but it was disappointing to hear from one girl at School B that she could not join because the group was full. It is important for adults to encourage children to be involved in extracurricular environmental activities while they have an interest, otherwise the exclusion may act as an accidental deterrent.

Overall, School A's environmental groups and activities were more developed, accessible to more children, and more well-known, meaning that more children were involved.

Community Resources: People and Organisations

In this section, the resources discussed are people and organisations, either from the local community or the wider region. Interaction with community members is valuable, as they provide children with different and unique perspectives and ideas (Somerville & Green, 2011). When schools collaborate with other people and groups they can do more than educate children; they can help children take positive action for the environment as well. The teachers and principals from both case study schools mentioned the importance of partnerships and collaborations with people and places who contributed to environmental education.

Being a rural school, School B was more easily able to incorporate farming and agricultural aspects into its curriculum, such as farm visits and agricultural days (Wright, 2003), and the field of corn that was donated to the school. Other people and organisations to support School B were Hamilton City Council and parents, many of the latter working at nearby science and agricultural companies.

Miss C, principal of School A, listed a number of people and organisations which donated resources, knowledge, and time to the school, to teach children

about the environment or enhance the sustainability of the school. School A worked mainly with Environment Waikato and Enviroschools, but other organisations included the Hamilton Gardens, the Hamilton Museum, Maungatautari, and local marae. Miss V also worked with the Department of Conservation, Paper 4 Trees, and a garden society. Some of these organisations also allowed the school children to visit their sites, providing new and exciting opportunities for children to interact with nature.

Chapter Summary

Six major factors that influenced the environmental knowledge, attitudes, and behaviours of children were evident in this research. People were the most important factor, because passionate teachers, principals, and other educational people – particularly at School A – had the ability to inspire and motivate children to be positive environmental citizens. People were also important because they helped create and instigate the other influencing factors: learning processes, physical school environments, school rules, environmental activities, and community resources.

Learning processes were more influential at School A than School B, because of the structure and thorough development of environmental education that had been established. Children learned about the environment in specific ways, including hands-on learning, art, enviro days or events, and place-based learning. In School A, the teacher and principal went beyond the stipulations of the national curriculum to implement sustainability into all parts of school life. Enviroschools was a big part in this sustainability focus.

School grounds were the most important influence at School B, because the grounds were more natural, diverse, and wild, which helped children create

deeper connections with nature. Children had personal connections with the school grounds at both schools, with teachers and principals making an effort to include the children in the design and creation of the school environments.

School rules and practices were highly developed at School A, with environmental rules made routine and normal in everyday school life. Rubbish collection and recycling were significant at both schools, but School A went further with its worm bins, GOOS box, and Nude Food programme.

Extracurricular environmental activities were also more developed at School A; however, both schools provided children with opportunities to be involved in gardening groups and enviro clubs.

Community resources were the last influencing factor, apparent at both schools. School B benefitted from being in close proximity to rural places and people, but School A still engaged with many community groups, either in urban settings or travelling further to natural sites.

This discussion sets the scene for in-depth illustrations of the children's environmental knowledge, attitudes, and behaviours which result from these influencing factors.

Chapter Six – Findings and Discussion of Research Question Two:

What Environmental Knowledge, Attitudes, and Behaviours do Children Demonstrate?

How the young respond to nature, and how they raise their own children, will shape the configurations and conditions of our cities, homes and daily lives.

(Louv, 2010, p.4)

This chapter presents the findings from the thematic analysis of interviews with children at the two case study schools, specifically focusing on children's environmental knowledge, attitudes, and behaviours. First, children's environmental knowledge and understandings are examined, by way of looking at the content of their environmental education. Next, their environmental attitudes and emotions are detailed, along the ecocentric-anthropocentric dichotomy. Following this, children's environmental behaviours are examined within the school setting.

Environmental Knowledge and Understandings

Children showed evidence of environmental knowledge by explaining in great detail what they had learnt about the environment, what environmental issues they were aware of, and what sustainable behaviours they knew. This section captures areas of knowledge which were mentioned multiple times throughout the interviews with children.

What children learn. What children learned about was significant, particularly when it came to affecting children on an emotional level, and developing environmental morals. When they learned about topics of concern or interest to them, it seemed to resonate with their views and deepen them. Several

children mentioned vital guiding principles relating to how all people should think about and treat nature:

SchoolA2 (boy) – I've learnt that just to respect the environment, care for it, nurture it.

SchoolA2 (boy) – It may look nice but really there's a lot to do with, it's not just plant a tree it will grow, sometimes it can die.

SchoolA4 (girl) – It's really helped...well it's normally when I look at a flower it's just a flower that's pretty, but now I like I kind of know lots of the stuff inside and how it grows.

SchoolA2 (boy) – Respect for the environment...oh and aroha...unconditional love for the environment.

This learning was positive, as it aimed to create ecocentric attitudes, positively affecting how children perceived and treated nature. Other education covered basic environmental knowledge, such as facts about nature, sustainability, how humans use nature, and environmental issues:

SchoolA4 (girl) – Like we have to like have reusable stuff and not use plastics much. Cause then we'll like use the Earth's supply and then next we'll run out.

SchoolA4 (girl) – We like learn about like the growth of flowers and sometimes we like plant trees and sometimes we like, well picking up rubbish and lots of stuff about composting.

SchoolA5 (boy) – We've learnt about how we can keep it sustained and like umm keep it nice for ever.

Rubbish was also a topic that children knew a lot about. Many children were aware of rubbish as a global issue, but few brought it down to a local level:

SchoolA5 (boy) – There's lots of rubbish in landfills and then when the landfills gets filled up, what are we gonna do then? Were gonna have to make more landfills. And then maybe the Earth one day will just turn into a massive landfill.

SchoolB7 (girl) – A lot of people are just dropping rubbish everywhere and it's not it's just not a good thing.

SchoolB12 (girl) – Pollution in other countries, there isn't much in New Zealand, but I know about in other countries and just like there's heaps of big factories and stuff that makes it like hard for the environment to breathe through all the pollution.

As well as broad, global environmental issues and solutions, it was great that Miss V also taught her students about small, local, personal things they could do to protect nature and lessen their effect on the environment:

SchoolA7 (girl) – Like we Nude Food lunchboxes, like I've got one in my bag umm and she's trying to teach us to use like for chips, you just get a whole big bag and not the big ones with little packets in them. And like you instead of buying yoghurt tubs, buying bigger yoghurt tubs so you can put them into containers.

SchoolA8 (girl) – We've been learning conservation and how pollution has affect the Earth. And basically just measures we can take, coz earlier in the year we did research on pollution and ways you, simple ways you can help.

Learning basic sustainability principles and actions is very positive at such a young age and, it was obvious that Miss V's teaching had an effect on the children. When Miss V was given disposable plates and presented them to the class, she was almost chastised by the children who knew better than to use plates that could not be recycled. Children were able to apply their learning in real life situations.

Thinking about future generations. Several children knew about the future-proofing aspect of sustainability as well. Although only one child used the word "sustained" specifically, they all knew of the importance. Getting beyond the here and now, and focusing on the future is at the core of sustainability, so it was encouraging that children knew of the imperative of conserving and future-proofing nature:

SchoolA3 (girl) – For generations to come, maybe one day there might be too much rubbish that we can't live on Earth and we'll be wearing gasmasks and I don't want maybe my great grandchildren to or great-great-great grandchildren to maybe have a gasmask on.

SchoolA11 (girl) – What the Earth is gonna be like when like in like a million years if it's still gonna be here or if it's not gonna be here.

SchoolA8 (girl) – Because in the future it will help you protect and in the future if we don't really look after it now there might not be any environment.

SchoolA5 (boy) – So that we know how to keep it clean and keep it sustained so it will last longer for us not just for our generation, but for generations to come.

It shows a deep level of understanding that these children can look beyond themselves and the world as they currently exist, and think about how their actions will affect people in the future. What we use and destroy now, we are borrowing or stealing from the people and animals of the future. Several children also recognised the importance of learning about the environment so that they could act more sustainably in the future:

SchoolB12 (girl) – When we get older we can help it more.

SchoolA11 (girl) – So like you know when you're grown up not to just like don't care about the Earth so you know that if you protect it now you're going to have a good life when you grow up.

SchoolA7 (girl) – It'd be good to learn about it younger so you can be able to stop it as you get older.

SchoolA1 (girl) – In maybe 20 years it might like the world might be full of rubbish and we might be able to change it, by knowing what to do.

These comments indicate that age is a barrier. The children talked about being able to help the environment when they are adults. Perhaps this is indicative

of children being disempowered in terms of environmental decision making, or maybe they do not realise the power they have to enact change, even now.

Critiquing human behaviour. Being critical of how humans perceive and treat the environment is vital, as change can only occur when we acknowledge that it needs to occur. Total human participation is required to save the environment, but obsessions such as power, money, and materialism only serve to motivate people to use and destroy the environment, not protect it. Some children were able to conceptualise things that even adults struggle with: issues such as human superiority, consumerism, and human apathy:

SchoolA5 (boy) – Humans are like a the most harmful species on Earth and they've caused the worst because other animals don't use as much, like they don't use rubbish, they just eat like actual food and they don't make houses out of brick and all this stuff and use all these gases.

SchoolB6 (girl) – If we don't save it then we won't survive and also animals need to survive and they're going extinct because we keep destroying it for ourselves, so we're like vain.

SchoolA4 (girl) – We still expect stuff but we destroy the environment.

SchoolB6 (girl) – Some people are like power-hungry and if they are put in charge they can do bad things to the environment. We need good people in charge. But if we were equal we wouldn't need people in charge we could just live happily.

SchoolB6 (girl) – I don't like being superior over everything else, coz if we weren't superior and we were equal to nature well then it'd be a better

balance, but we've chosen to be superior which I don't think is a very good choice.

The children touched on many important issues, from the sheer idiocy of people in the way that they depend on the environment, but then destroy it, to how the creatures that humans share the earth with are far less harmful. One girl spoke eloquently about the power relations between humans and nature, discussing how we raise people up to power who then manipulate and annihilate the environment for economic and materialistic gain. She said we have the opportunity to be equal with nature, but humans will never relinquish control. The same girl also spoke of the vanity and selfishness of people. We have chosen to use the environment to serve us, and satisfy, not just our needs, but our wants. We value ourselves over all other living things as if we have more of a right to live than them.

Children were also critical of the way the environment is treated, reproachful of the terrible things that people do to the environment:

SchoolB6 (girl) – I try to not waste a lot of things that people cut down trees for. I think it's rather cruel when we could just recycle the stuff we've already got. We don't have to go cutting down other things for more.

SchoolA2 (boy) – So they're killing a bunch of animals and taking them out of their homes just so they can plant a few palm trees.

Here, the children strongly critiqued the way in which humans choose to be wasteful when there are sustainable alternatives. Apathy is evident in humanity because we choose to satisfy our own wants with little regard for the animal and

plant lives that we affect. Despite the negative tone of the discussions, it was positive to see children thinking critically and sceptically about how humans treat the environment, as they could prove to be the successful environmental advocates and leaders that nature needs.

Another area of humanity that some children acknowledged was the disparity between people's environmental attitudes and their environmental actions; they commit to sustainable actions which never eventuate:

SchoolA2 (boy) – Can't just say 'I'm going to do this' and think it's going to get better.

SchoolA8 (girl) – I feel like even though people care about the Earth, no one's really doing anything about it.

Humans are contradictory: they say one thing and then do another. And humans are lazy. Perhaps we can attribute the eras of industrialisation and technology to human laziness, as we have always tried to find easier and faster ways of doing things with minimal effort. Perhaps then it is no surprise that even children are aware that people claim to care about the environment, but then act in contradictory ways.

There are many barriers to people behaving in environmentally friendly ways; some I am more understanding of than others. For instance, I can relate to people who find sustainable alternatives too costly and time consuming, or who have little ability or say in what environmental actions are taken (children fall into this group). Society needs to work on making environmentally friendly solutions simpler and more economically viable. On the other hand, people who think that sustainable actions require too much effort, are too lazy to change their habits, or

who simply cannot be bothered to do anything are contributing to the degradation of the environment. Sustainable options should be the only options so that people cannot choose “no”.

An abundance or lack of environmental learning. Overall, children from School A recalled many different environmental topics that they had learnt at school, including general ethical principles, environmental issues, sustainability, and environmental actions. In comparison, Children at School B did not recall nearly as many environmental learning topics and activities; in fact, many children reported that they did not do much environmental education at all. When asked “what have you learnt about the environment at school” or “do you feel you learn about the environment a lot?” some negative responses were:

SchoolB2 (girl) – Not very much.

SchoolB7 (girl) – We learn about it like every year, but not we haven’t learned about it heaps this year.

SchoolB8 (boy) – Nothing I guess.

This is worrying to hear from so many children, but it is possible that some children do not associate certain learning topics with the environment, for example, they may consider trees and water cycles to be science topics instead. The teacher of the children I interviewed in School B – Miss N – spoke about some environmental learning topics that had been taught: “the different types of energy...the different impacts...renewable energy”, but perhaps if they were taught early in the year, the children could not remember learning about them. Environmental education needs to be constant and repetitive to be effective.

Moving beyond knowledge and understandings, environmental attitudes and emotions of the children are examined in the next section.

Environmental Emotions and Attitudes

This section looks at the environmental emotions and attitudes that were identified within the children. This includes both ecocentric and anthropocentric beliefs and feelings. It was positive to note that positive environmental attitudes outnumbered negative environmental ones. There were no notable differences in attitudes of children at the different schools, but there were differences between genders.

Ecocentric feelings and beliefs. Emotions and attitudes that are ecocentric are feelings that demonstrate the children identify with or are empathetic towards the environment. They include emotions such as sadness at the harm that comes to the environment, disappointment in the way in which people treat nature, and guilt at being associated with humans who have relentlessly exploited the environment.

Feelings of sadness. Sadness was the most common emotion that boys and girls alike displayed, at both schools. Often the sadness was related to animals being hurt as a consequence of human actions, and perhaps a fear that their own actions would directly hurt an animal:

SchoolA10 (boy) – It makes me feel a little umm sad actually, because some sometimes if sometimes when I think that for some reason I think that my rubbish that I throw away ends up somehow in the sea.

SchoolB11 (boy) – Hmm sad. Because umm if the rubbish there won't be any umm like the animals might eat it and they could die.

Another child displayed sadness in the lack of action that people take to help the environment, including herself:

SchoolA3 (girl) – I feel really sad that people aren't actually taking action to do it, including myself.

While some children were very upset at the thought of the environment being harmed, others took it with a grain of salt and saw environmental harm as a necessary evil, like the girl quoted below:

SchoolA8 (girl) – Ahh sad, but there's only some so far you can take it. Like we'd prefer to be alive than sacrificing our lives for the animals.

This girl was very pragmatic in her view of the environment, also saying: "I try treating it the best I can but sometimes you've got to do stuff that you're not very happy with, like cutting down trees coz it could damage or blow over during severe wind storms" (SchoolA8 – girl). While she wanted the best outcome and treatment of the environment, she readily admitted that when it came to nature's needs versus human's needs, human needs would win as we hold all the power and want what is best and most convenient for us.

Guilt for being human. The next most common emotion was guilt, which was openly expressed by the children as either guilt on a personal level, or guilt for being a human and having to be associated with the inhumane way in which we treat nature:

SchoolA4 (girl) – They make me feel kinda sad and kinda guilty...like, I don't really do it, but like our like, our species, human species do it.

SchoolA7 (girl) – I feel really bad because it's happening almost all over the world and it's getting really really really bad.

SchoolA10 (boy) – For some reason I think that my rubbish that I throw away ends up somehow in the sea and I feel a little guilty so I feel really bad for the sea life as well.

It is hard to say whether it is good or bad that children feel guilty about the way the environment is treated. On one hand, if children feel guilty they will hopefully feel compelled to act for the environment, to save it and care for it. But on the other hand, it is sad that today's children feel bad and ashamed for the destruction and lack of compassion that adults before them have unleashed on the environment. The adults of today and previous generations should feel ashamed that their children and grandchildren are now bearing the burden of guilt for environmental crimes that they did not commit.

Children feeling disempowered. One girl expressed a sense of disempowerment, because she was too young to join the environmental groups that she wanted:

SchoolB6 (girl) – I'm not old enough to join clubs that help internationally...so I have to wait 'til I'm 16...it's very irritating that I'm not old enough to be actually doing anything like big. So I have to start small.

It is disappointing that age is the only thing limiting intelligent and motivated children like her from participating and making a difference. This is especially disappointing because of the all the international documents which

assert that children should be involved in environmental decision making, as it affects their future more than adults' futures. I also fear that if children are unable to participate in environmental groups at a young age, this will lessen their passion for nature and deter them from trying to help the environment in the future.

Frustration with humanity. For other children, environmental problems and destruction made them mad, and rightly so!

SchoolB8 (boy) – Quite angry, coz it's kinda sad and bad for the environment.

SchoolB9 (girl) – Angry...yeah all of us are not happy...yeah coz sometimes I walk down there with my dog and see heaps of rubbish.

SchoolA6 (boy) – Why would people dump on the, dump rubbish and why would they do it, why can't they just put it in the rubbish and hold on to it?

The girl (SchoolB9) quoted above was specifically speaking of her anger at the large amounts of rubbish found in the school gully, including glasses and microwaves. The gully is accessible by a local walking track and she said many people dump rubbish in there. It is no surprise that this littering made her mad, with the connection that School B children had to their gully.

Feeling disappointed. For young children to express disappointment in the negative environmental actions of others, it shows they have strong moral and ethical standards. It is good to know that children have an understanding of what is good or bad for the environment:

SchoolA3 (girl) – I reckon they feel the same as me, very disappointed.

This girl was speaking about how she thought her classmates felt about the environment: disappointed, particularly when they saw others littering. It is easy to feel disappointed with how people treat the environment, because despite your own great attempts to do the right thing and look after nature, there are always other people who act in their own selfish interests, to the detriment and destruction of the environment. It is good that she had ideas of what is right and wrong so that she can hopefully transmit her views to others.

A desire to help nature. Some children expressed an active desire to look after the environment and the animals within it:

SchoolA4 (girl) – I think about how like I can protect it.

SchoolB5 (girl) – I think that everyone should save it.

SchoolB6 (girl) – Saving it, making sure it's ok and helping the animals live there.

Children showed a lot of concern for nature and animals, positioning themselves as the positive enviro-leaders that the world needs. It is a very ecocentric position to think about how people can help the environment, as opposed to the historical perspective of how the environment can be exploited, manipulated, and destroyed to serve people.

Other children, who also wanted to help nature, thought about the environmentally unfriendly materials that are used by people, and what sustainable alternatives they could use. This showed great initiative:

SchoolA5 (boy) – Instead of using like rubbish that doesn't get recycled and goes in the landfill use umm like cardboard or plastic that can be recycled, because then if everyone does that it will help a lot.

SchoolA7 (girl) – I think of environmentally friendly ways to use stuff instead of using plastic or instead of using paper.

People will never stop needing things, especially things that are made out of paper or plastic, but if these items can be recycled successfully or if environmentally safe alternatives could be found, it would have a huge impact on the health and longevity of the environment. It is important to have children seeing the necessity of sustainable alternatives, because they will grow up to be the positive environmental decision makers of the future.

A desire to learn about the environment. Many children showed an eagerness to learn more about the environment. To me, this was evidence of interest or passion for the environment, which are ecocentric attitudes. A high level of knowledge about nature or environmental issues, beyond what was taught at school, also indicated passion or interest in the environment. Several children had an abundance of knowledge about environmental issues:

SchoolB6 (girl) – I did my speech on why should we save the honey bees because they're going extinct actually. When I researched it they're actually some beekeepers are losing 90-100% of their bees a year.

SchoolA7 (girl) – People are like using heaps of smoke and polluting the air which is destroying the ozone layer, and then soon if the ozone layer

disappears ahh it'll just get really really hot and we won't be able to live on Earth.

SchoolA2 (boy) – I know that farmers are starting to fence off the waterways that go in the Waikato River.

This level of knowledge and awareness of environmental issues is great, as before someone can *act* on an issue, they must *know* about that issue. No matter where this knowledge comes from, it is essential that it exists. Other children were interested in learning more about certain aspects of nature:

SchoolA11 (girl) – Like to learn about plants and like...like soil and trees cause it's what it interests me that stuff.

SchoolA1 (girl) – I like learning about the effects of animals, effects the rubbish on...the effects on animals.

SchoolA3 (girl) – I would like to learn like how much people have like disturbed the environment from when they started to, we started to disturb it, how much animals died and stuff like that and how much animals somewhere around there and if and what could we do to stop it really.

It is vital that children are interested in environmental education otherwise it is unlikely that they will ever develop a connection with or compassion for nature. This could result in children never feeling compelled to act in environmentally friendly or sustainable ways in the future.

Humans cannot own nature. When asked who they thought nature belonged to, many children expressed ecocentric attitudes, believing that humans

could not claim the environment as their own. Some children believed that the environment belonged to animals:

SchoolB11 (boy) – The animals' habitats and stuff like that mmm...and like the birds need their trees and forests...some people as well, like when they get the land and when they're living on farms...and they have to look after it.

SchoolB9 (girl) – Birds and animals and things. And people who like nature and who care about nature.

SchoolA2 (boy) – Mainly us coz we're the ones here to look after it. And the animals that live here, not just us, but the animals like the fish and other things.

It is interesting that each of these children also thought that it belonged to people as well – either people who treated the environment with care and respect, people who literally owned the land legally, or people who looked after the environment. These children are ecocentric in that they all acknowledge that the environment does belong to living beings like animals and plants. The fact that they think it also belongs to humans is not anthropocentric, rather I think they acknowledge that all living things on Earth should claim nature and protect it.

A couple of children were strongly ecocentric in their views, believing that nature is its own and cannot be possessed by humans:

SchoolB6 (girl) – Well nature doesn't belong to us. It belongs to itself.

SchoolA8 (girl) – The Earth...like there are Māori beliefs like Tāne Mahuta, the goddess the god of the trees. But I think it actually belongs to the Earth.

SchoolA10 (boy) – No one actually because ahh nature is just everywhere, nobody can own it really. It's Mother Nature who owns it, so yeah, nobody owns it.

SchoolA4 (girl) – Well it belongs to the Earth.

The age old myth of Mother Nature seems to strike a chord with ecocentrism, as does the Māori belief of Tāne Mahuta. Mother Nature and Tāne Mahuta represent humble, spiritual beings who control and care for the environment. And because they are (arguably) not real, they represent nature belonging to itself, like the girls above proclaimed so boldly. Another boy mentioned Mother Nature after saying the environment belonged to people: “Everyone. And Mother Nature” (SchoolB8 – boy), but he seemed more hesitant than sure. It is still important that some children associate Mother Nature with the environment as it represents the belief of environmental autonomy, rather than human domination.

One other trend that came up in the discussions of who nature belonged to was religion. A few children mentioned that they thought the environment belonged to God:

SchoolB7 (girl) – I think well it's it belongs to everyone, but it mostly belongs to God.

SchoolB12 (girl) – God...the world...I don't know.

While this is not as explicitly ecocentric as some of the other comments, it is similar to the Mother Nature idea – that there is a higher being that protects the environment. This may not convey deep concern for or connections with the environment, but instead a respect for God, and the belief that nature belongs to him.

Deep relationships with nature. Some children seemed to have deep connections with nature, acknowledging the intrinsic value of nature, and appreciating its raw, natural simplicity:

SchoolA12 (boy) – Bush like you go deep into the forest when you're alone.

SchoolA6 (boy) – I quite like the trees like Tāne Mahuta and yeah I like looking at going to like what you see and what it looked like before.

SchoolA8 (girl) – I quite like just the bush part of things coz it's like natural and quiet. You can hear animals kinda.

While deep connections with nature are technically anthropocentric because they focus on human-oriented value, the aspects that they are appreciating are more of the intrinsic, meaningful aspects that only nature has: the peacefulness, the tranquillity, and purity, which are important for people to acknowledge and see the value in.

Anthropocentric feelings and beliefs. While there was evidence of attitudes which were anthropocentric in nature, I am pleased to say that there were not many. Interestingly, all of these negative perceptions were expressed by boys. Negative emotions show a deeper sense of apathy towards nature, and it is

concerning that they exist since environmental change is easier to achieve with more people supporting and working towards it.

Indifference towards the environment. When asked how he felt about environmental issues, one boy from School A was indifferent and uncaring:

SchoolA9 (boy) – I don't really mind at the moment, but if it kept on happening like lots I think I would mind a bit more.

Other children, who were largely ecocentric themselves, spoke about children that they knew did not care about the environment, specifically, because they littered:

SchoolA3 (girl) – If they are littering maybe they don't really feel anything.

SchoolB5 (girl) – Some people just leave them [pieces of rubbish] and then walk past them...doesn't care.

Since environmental issues have been occurring for years and getting increasingly worse in their effect on the environment, it is concerning that some children do not care. It is possible that some children do not realise the true extent of environmental damage – a very hard concept for children to get their heads around. Since the boy quoted above (SchoolA9) knew about environmental issues (he mentioned littering, wasting paper, and cutting down trees), yet did not care about them, it showed that he had no emotional attachment to nature in general. Interestingly, he did show more ecocentric emotion when he spoke about his sunflower that he grew at school. He became more animated when talking about his sunflower, displayed a sense of pride, and said that he even talks about it with

his friends. Still it was a narrow and rather selfish way of valuing the environment, and it was disappointing that he expressed apathy towards major environmental issues. Another boy expressed indifference by way of having no idea how environmental issues made him feel: “No idea” (SchoolB3 – boy); another example of human apathy towards nature.

While only two boys expressed great indifference towards the environment, this is significant, as I only interviewed nine boys in total. Compare this to girls, where 0 out of 13 expressed indifference, and it suggests that boys cared less about the environment than girls did at these case study schools.

Boredom and annoyance. One boy expressed negative anthropocentric attitudes towards the environment and environmental education:

SchoolB3 (boy) – It’s a boring subject.

SchoolB3 (boy) – At school what I’ve learnt, umm basically just annoying lectures from teachers about how much how many straws and bits of plastic and milk things there are around school.

This boy seems to have no indication of why it is important to learn about the environment, and if he did, then he does not care to learn about it because it is not interesting. This is where fun and enjoyment in environmental learning may be very important, as perhaps fun activities could help change his negative attitudes.

Nature belongs to humans. Quite a number of children, both boys and girls, indicated that they thought the environment belonged to people. While this does not mean that the children considered humans to be dominant and superior to

nature, it does indicate that they thought anthropocentrically in terms of who was responsible for the environment:

SchoolB5 (girl) – Everyone...coz no only one person can take care of it.

SchoolA7 (girl) – I usually think that it kinda belongs to us, because we look after it and we also destroy it at the same time, so yeah.

SchoolB7 (girl) – Right now it belongs it belongs to us because and it's our fault this is happening coz were doing all the bad things to it.

SchoolA3 (girl) – I just reckon it belongs to everyone, we should all have a go at looking after it.

It is apparent from some of these quotes that the children were thinking of the environment in terms of who looks after it, not who owns it. They focused on a two-way, interdependent relationship between people and the environment, which, in all actuality, is the best chance at having a healthy population and a sustainable environment. It is impressive that they acknowledged that if people use and abuse the environment, they also need to be responsible for its care and longevity.

Other children focused less on the responsibility of humans to look after the environment, and were more direct in their views that humans own and control nature. In response to the question of who owns nature, some children said:

SchoolB8 (boy) – Everyone.

SchoolB10 (girl) – Everyone...like you can have like your own paddock and stuff.

For these children, the idea that people own the environment seemed to be a given. It was an automatic response that prompted no argument.

Human benefit. Another way in which children showed anthropocentric attitudes was the human-oriented focus of how the environment benefitted people. Children appreciated many different aspects of the environment, but it was a human-oriented appreciation as opposed to intrinsic:

SchoolB3 (boy) – My favourite type of the environment like the physical environment... as long as it houses dangerous things, dangerous things, deadly things and that.

SchoolA2 (boy) – Fruit trees, food, vegetable trees, well vegetables, umm I kind of like the food side of things.

SchoolB8 (boy) – I like trees coz they like give oxygen and stuff for people to breathe and umm animals like farm animals coz you can get like milk and meat and stuff.

The above quotes portray views that are connected to human-domination and exploitation of the environment. Food was mentioned several times as a part of the environment that children liked, but this was pragmatic, no passion or empathetic environmental relationships were evident. They did not seem to grasp the idea that nature is not just humanity's source of food. The child who spoke of danger did not care about the environment, but rather was intrigued by the danger and adventures that nature could provide.

Other children appreciated nature more, but still for human-oriented

reasons. It is positive that they liked nature and animals, as this could develop into care and empathy, but it was still shallow appreciation:

SchoolB10 (girl) – I like the trees and stuff, like climbing trees and running on grass.

SchoolA4 (girl) – I like the flowers and the trees and mostly the baby animals. They're really cute.

While it is ok for people to appreciate these parts of nature – food and recreation – it is important for children to relate to nature on a deeper level and realise that the environment should be appreciated for just being.

Focusing on looks. The last major form of human-oriented value was aesthetics. The physical appearance of the environment was important to some children because they did not like rubbish. Many children thought that keeping the environment looking nice was the main reason for picking up rubbish. While this is definitely an important reason, the main idea is to protect the environment and animals from being poisoned, suffocated, and killed by human rubbish. The following few quotes focus solely on environmental aesthetics:

SchoolB1 (girl) – To keep like clean so it don't look like a rubbish smell. Keep not smelling yucky.

SchoolB7 (girl) – I don't like rubbish lying on the ground coz it's not very nice to step over.

SchoolB10 (girl) – Not like having litter everywhere and stuff and like not always having it dirty and leaving stuff on the ground so that it's nice and clean.

Focusing only on physical aspects is typical of humanity; we often value beauty and appearance before anything else. Valuing the aesthetical part of nature is not necessarily bad, but when it is the main or only thing that is valued it is evidence of the vain and materialistic attitudes of society. Children need to learn to go deeper than appearance, and instead value nature because it is unique, special, and the way the earth was supposed to be – natural, flourishing, and alive.

Unlike emotions and attitudes, the environmental behaviours discussed were almost all positive and ecocentric.

Environmental Behaviours

Actually engaging in environmentally friendly and sustainable practices shows that people have a true dedication to the environment. It is easy to have ecocentric attitudes, but harder to carry out ecocentric behaviours. Children at both schools carried out environmental behaviours under two categories: rules and practices, and extracurricular activities.

Environmental rules and practices. Several school rules and practices relating to the environment were mentioned by children. The dominant feature was rubbish, relating to the school rule of no littering, and the practice of picking up rubbish.

Rubbish rules. Rubbish and littering was a major theme mentioned by children in both schools. For some children it was one of the first things that they thought of when we started the interview.

When asked how they treated the environment, many children said they treated it well because they did not litter or because they picked up other people's rubbish. Picking up other people's rubbish is a big indicator of true care for the environment, as it is easy to adopt an individualistic attitude, and believe that other people's rubbish is not your responsibility. It was impressive the number of children who reported actively picking up other people's rubbish:

SchoolA1 (girl) – If I see a piece of rubbish I pick it up.

SchoolB1 (girl) – I pick up rubbish...sometimes when we go for a car drive and we see rubbish we have to pick it up.

SchoolB5 (girl) – When I see some rubbish on the ground I would pick it up and put it in the rubbish. I would either take it my rubbish home or put it away.

SchoolB8 (boy) – If I see rubbish on the ground I'll pick it up and put it in the bin.

Not littering and picking up rubbish were positive and helpful actions, but for some children this was all they mentioned, showing quite a narrow understanding of positive environmental behaviours.

Other children went beyond just picking up rubbish, saying that they discussed littering with their friends and showed disappointment towards those people who did litter. A small group of children tried to encourage others to stop littering and pick up the rubbish they had dropped:

SchoolA2 (boy) – I try pick up rubbish that I see and try stop others from littering.

SchoolB7 (girl) – If umm someone's rubbish if they've just chucked it on the ground I'd go and tell them to pick it up.

SchoolB9 (girl) – If I see someone drop their rubbish I go and tell them to put it in the bin.

These children who tried to educate other children about not littering were acting as self-appointed environmental leaders who were passionate about nature and not afraid to voice their beliefs. Disappointingly, however, the children who asked others to pick up their own rubbish said they were often ignored.

Recycling, worm bins, Nude Food and the GOOS box. School rules and actions, other than rubbish, were so ingrained within the children that many cited them with no difficulty or forethought at all; they had become normalised and routine. Sustainable and environmental rules and policies that children spoke of were using the recycling bins, putting the correct food scraps in the worm bins, saving paper that was good on one side with the GOOS box, and participating in Nude Food:

SchoolA1 (girl) – We have a worm bin well we have a bucket about that size and put it around every like area where the children eat and you put the rubbish in and its normally right next to the rubbish bins sort of and we have signs on them saying no citrus.

SchoolA1 (girl) – In our school we've been doing Nude Food which is a packet free lunch and you and we have a lot of people with house points...when you have a rubbish free lunch.

SchoolA4 (girl) – We're supposed to put like your fruit and veges like apart from citrus in the wormbin.

SchoolA5 (boy) – We do a Nude Food competition every once in a while...and that encourages people to not bring so much packaging to school.

SchoolA5 (boy) – Most classes have a GOOS box which is the paper that's say like a worksheet that hasn't been that's still on one side but it's fine on the other side, so that you don't using as much paper.

These activities provided many different ways for children to not only be engaged in environmental action, but learn more about sustainable practices as well.

Extracurricular activities. I defined enviro activities as at-school activities that were optional, voluntary, and usually extracurricular. They included things such as the enviro groups or gardening clubs. Involvement in optional, extracurricular activities demonstrates a passion and interest in the environment, as they are not compulsory activities, and they take up personal time that children could otherwise spend playing. A lot of children expressed enjoyment in gardening, so it is wonderful that the schools provided opportunities for children to work in the gardens:

SchoolA1 (girl) – All the students in the class do gardening and we normally have options if you didn't want to do gardening or if you want to stay inside and do work and everyone normally goes outside.

SchoolB6 (girl) – When I was old enough I started doing gardening with the sensory garden. I started with Miss L in the daffodil club, and then I did the gardening club.

SchoolB9 (girl) – We do have gardening club where we umm where they umm garden the weeds and everything and pull out the weeds and everything. And we've also got daffodil club where we plant daffodils and yeah then you go in competitions.

Other children mentioned being part of the Enviroagents or Actionators: groups at School A which promoted environmentally friendly behaviours, and got children involved in projects to improve the man-made and natural appearances of the school. While there was an enviro group at School B, few children were in it or knew much about it. Children at School A expressed a lot of enthusiasm for the enviro groups:

SchoolA2 (boy) – This is the first time I've ever been in any enviro thing. Umm which I'm enjoying it, it's a lot of fun.

SchoolA5 (boy) – Every year we go to, we the Enviroagents go to and some other people go to umm the Arbour Day.

SchoolA7 (girl) – We've been learning enviro the whole way throughout the year. It's been really cool, we've got the Envirogroup, the Actionators

and we're bringing in more groups for the middle school when they come into next year.

A common factor across the children who did extracurricular enviro activities, was that the activities and events were fun. This is a good incentive for children to join these optional groups, as they can be assured that it is not a boring burden, but an enjoyable activity.

During Observation Session One, children had the opportunity to go out to Vege Village to do some gardening; this was an optional activity – they did not have to do it. Around a dozen children were eager to get outside to the garden, both boys and girls, accompanied by a student teacher. It was great to see the children having fun, genuinely enjoying getting their hands dirty. Several spoke animatedly to me about what type of plants there were, what they were pulling out, and what they were going to grow. Vege Village was a garden for the whole school where they planted vegetables and fruit. School A had just begun an initiative called Garden to Table; it had recently got an approved food grade kitchen where the children would have the opportunity to cook the food that they grew in the garden. The children were excited about what they might grow – raspberries and passionfruit in particular – and they were excited to eat the food from the garden.

From the short amount of time that I spent with the children in Vege Village, it was clear that many had a real passion for the environment and were keen to put in the effort to look after it. Children who choose to join optional groups such as the Enviroagents and the daffodil group, or who participate in voluntary gardening, demonstrate a genuine enjoyment and passion for the environment, which is essential for the well-being of nature.

Gender Differences in Environmental Attitudes and Behaviours

Some disparities in environmental attitudes and behaviours were observed between genders. I did not prompt the children to talk about boys or girls specifically, so it is interesting that it was brought up by children in both schools:

SchoolA10 (boy) – I know that all the most of the girls all care about the environment because they are very strict about that as well, but most of the boys I'm not so sure they really care about it that much, I think a few boys care, so not many boys, but most of the girls.

SchoolB1 (girl) – Some people don't care, the boys don't care...they don't really listen much. Some boys do, but not very much.

SchoolB7 (girl) – Some people think it's boring and some people think it's fun but umm I think there it's probably the boys that go ugh and the girls are just be quiet and just listen.

SchoolB12 (girl) – I like the environment but sometimes boys can be a bit silly to it and they're not as mature...the boys sometimes can just not really care for it.

It is rather meaningful that young children recognise differences in environmental attitudes and behaviours between boys and girls, because it shows that gender disparities begin at a young age. The literature provides evidence of females being more environmentally aware than males, even among children; studies have found that girls are more environmentally aware and active than boys (Shephard et al., 2011; Torgler & Garcia-Valinas, 2007; Mobley et al., 2010; Stevenson, Peterson, Bondell, Mertig & Moore, 2013). However, it is concerning

that this theme was so evident in my research, because ultimately, the environment needs the support and protection of all people. While most children were concerned about the environment and generally ecocentric, boys were more likely to be apathetic or uncaring towards the environment than girls were. Impressively, even some boys acknowledged this.

Chapter Summary

There were several themes evident in the environmental knowledge that children possessed. Many children knew about environmental ethics, facts about nature, environmental issues, and sustainable practices. Other important areas of knowledge were future generations, and being critical of humans actions on the environment. There was more environmental learning that occurred at School A, with several children at School B saying that they had not learnt anything about the environment.

Children at both schools had generally positive environmental attitudes and emotions, with many expressing that they felt sad and guilty about humanity's treatment of the environment. This treatment also made them disappointed and angry. Many children expressed a desire to help and learn more about nature, and believed that nature did not belong to humans. There were only a few children who expressed negative environmental attitudes, and these were mainly boys. Anthropocentric attitudes included feeling indifferent towards the environment, not wanting to learn about it, believing that nature belonged to humans, and focusing on the human benefit that the environment provides.

Environmental behaviours were categorised into rules and practices, and extracurricular activities. Children at both schools spoke about taking care of the environment by following school rules, mainly relating to rubbish, while others

spoke about engaging in environmental activities, such as enviro groups or gardening clubs.

It was interesting to note that even amongst these young children, there were differences between genders. Boys were more likely to be anthropocentric than girls, and this was backed up by quotes from the children themselves.

A lot of rich and valuable information has been gained from this research, detailing exactly what children understand about the environment, and their environmental attitudes and behaviours. The following concluding chapter summarises the most interesting and significant findings of the research, and offers recommendations to improve environmental education in primary schools.

Chapter Seven – Conclusion and Recommendations

Progress does not have to be patented to be worthwhile. Progress can also be measured by our interactions with nature and its preservation. (Louv, 2010, p.136)

This research has investigated the environmental knowledge, attitudes, and behaviours of primary school children in Hamilton, New Zealand. But more importantly, it has identified the influencing factors within a primary school setting which affect children's knowledge, attitudes, and behaviours to varying degrees. Since children spend a large proportion of their lives at school, it is imperative that we better understand the school factors that make children more ecocentric in their beliefs and practices, so that the trust we put in children to protect the environment is not in vain.

Previous research has tended to focus on one influencing factor at a time, for example, teachers or school environments. Instead, I examined a large range of predetermined factors, as well as giving children, teachers, and principals the opportunity to identify alternative influences. With my research I was able to amalgamate and connect the ideas that individual academics have investigated separately. The result was a more in-depth and holistic view of the current status of children's environmental knowledge, attitudes, and behaviours, and how schools affect these.

Before any research could begin, I undertook a thorough ethics process, largely because of the inclusion of children as research participants. I started this research with certain preconceived ideas about how children feel about the environment and how they treat it, as well as factors that I believed would

influence their attitudes and behaviours. I identified most closely with interpretivism for this research, and used a mixed method case study design. Observing environmental classroom learning sessions and field trips, as well as interviewing children, teachers, and principals about nature and sustainability, provided further insights into exactly how environmental education is carried out, as well as previously unforeseen factors that affect how children perceive and treat the environment. Documents provided by the schools, also helped me better understand some of these factors. Through thematic analysis, I was able to identify certain trends and ideas that emerged in the research data.

Environmental knowledge of children could be grouped into several specific categories, which included environmental facts, environmental issues, ethical principles to do with nature, and sustainable actions. Other themes found in the knowledge of children were concern for future generations, and critical appraisals of humanity's treatment of nature.

It was encouraging to find that the majority of children expressed ecocentric attitudes, while only a few showed evidence of being anthropocentric. Ecocentric attitudes were sadness, guilt, anger, and disappointment towards how humans treat nature, as well as a feeling of disempowerment, since environmental issues are inconceivably large, intangible, overwhelming. Additional ecocentric attitudes were a desire to help nature, a desire to learn more about the environment, and the belief that nature does not belong to people, but rather to the environment itself, Mother Nature, or Tāne Mahuta.

As far as anthropocentric attitudes were concerned, they were expressed through indifference towards the environment, and boredom or annoyance towards environmental learning. Some children also focused on the human-

oriented benefits of the environment, believed that nature belonged to people, and appreciated the aesthetic side of nature, as opposed to its intrinsic value. This included focusing on things such as cute animals, trees to climb, or food to eat, all of which benefit people, while the environment gets nothing in return.

Interestingly, boys were more likely to be anthropocentric or apathetic towards the environment than girls, despite the fact that I interviewed more girls than boys.

When it came to identifying the elements that influenced children's environmental knowledge, attitudes, and behaviours, different factors affected different children to varying degrees, but there were common factors and ones that were more influential than others. Factors in the primary school setting which made a difference to children's environmental knowledge, attitudes, and behaviours were people, learning processes, physical school environments, school rules and practices, extracurricular environmental activities, and community resources. The most influential factor at School A was the people - specifically, Miss V and Miss C. Their passion and dedication towards sustainable lifestyles was very apparent to me and the children alike, meaning they had a lot of power and opportunity to encourage children to be ecocentric. Miss V was able to communicate her passion for nature and sustainability in the classroom, in her enviro groups, through re-designing the curriculum, and by helping design the physical school grounds as well.

The physical school environment was the most important aspect of School B, most of all the school gully, which children loved to play and learn in. They also felt protective towards it as well, with several children expressing disappointment at people who dumped rubbish in their gully from the nearby walkway. Having natural elements which children can engage with on an (almost)

daily basis, provides them with a valuable chance to form relationships and empathy for the environment.

Learning processes were more important at School A than School B, as there were more environmental learning activities that were more structured and comprehensive. Combining environmental learning with art; practical, hands-on learning; place-based education; enviro-themed days and weeks; and fun, enjoyable learning were key factors that affected how children learned, and helped to ensure that the educational messages were easily remembered.

School rules and practices affected children at both schools, with rubbish and recycling two activities that had become normalised and routine. However, children at School A mentioned more environmental rules and practices, namely putting food scraps in the worm bin, using the GOOS box, and partaking in Nude Food, all to eliminate the amount of rubbish generated in the school. Having more rules meant that the children at School A had more opportunities to help the environment and practice sustainable behaviour, and it was great that a significant number of children carried out these practices.

Extracurricular environmental activities made a difference at both schools, with an enviro group, a gardening group and a daffodil club at School B, and several enviro groups and a gardening group at School A. These activities were much more established at School A and seemed to have a lot more uptake.

The last factor, community resources, was in evidence at both schools. Community resources mainly utilised were community organisations and places, such as the Hamilton Gardens, the Waikato Museum, Maungatautari, and local marae. More community resources were implemented into School A's environmental education; however, School B benefited from close access to rural

resources.

Ultimately, this research shows that children are usually ecocentric, girls are more ecocentric than boys, and teachers and school environments are the most important individual factors that affect how children perceive and treat nature. These findings are very encouraging, as they demonstrate that school decile ratings and funding do not have to affect the environmental and sustainability education that children receive. Even in lower socio-economic schools, passionate educators, and natural, diverse school grounds can still influence children to be ecocentric and sustainable. Teachers and school grounds do not necessarily require large amounts of funding, meaning that these positive influences can reach children in high and low decile schools alike.

While this research has produced some interesting results, there are limitations of this research which make it hard to generalise to other schools throughout New Zealand or other countries. As with most qualitative research, it is difficult to generalise the findings of this study, but particularly so in this case because of the small size of the study. With just two schools examined as case studies, it is difficult to attribute these findings to other schools, even in New Zealand. Furthermore, this research was limited by time, money, and resources. A study of more schools throughout the country would provide results that could reaffirm the most influential factors that affect children's environmental knowledge, attitudes, and behaviours. Another limitation was that at School A, the teacher of the class I studied was the enviro teacher of the school, while at School B, the teacher I interviewed was not. This was pure chance and coincidence, but it may be beneficial in future research to examine environment-focused teachers specifically, to determine whether they are all as influential as Miss V.

Working with children always presents difficulties, especially when it comes to interpreting children's opinions and behaviours. While I endeavoured wherever possible to make this research as valid and reliable as possible, it is impossible to be 100 percent sure. There are not many solutions for overcoming the difficulties of working with children, but I attempted to make the research as simple and seamless as possible.

With environmental issues jeopardising animals, plants, ecosystems, and people on a daily basis, it is important that the results of this research are implemented in schools sooner rather than later. I believe the following recommendations would enhance the ecocentric attitudes of children and increase their sustainable behaviours. Additionally, there are suggestions for areas of future research:

1. Schools should seek to employ passionate teachers who embody the principles of sustainability. Teachers have the potential to greatly influence children's minds for the better, but I believe this is underestimated, and the importance of teachers is undervalued. Passionate educators have the power to develop positive environmental attitudes in children, and teach them how to act for the good of the environment, which makes them extremely powerful and positive leaders. Schools could also provide existing teachers with the opportunity to undertake environmental education courses, so that they see the necessity and benefits of teaching sustainability, and successfully implement it into their teaching.
2. Natural school grounds should be promoted and sustained in schools, so that children have safe and secure places where they can experience,

interact with, and learn more about nature. Having natural, diverse, and wild school grounds are less costly than having man-made playgrounds and sports court dominate the school, and provide children with a place where they can intimately engage with nature. As our societies become more urbanised, for some children schools are the only places where they can interact with the natural environment, so it is important that schools encourage and facilitate this.

3. Children need to be empowered to act by teachers and schools, because if children feel overwhelmed about the enormity of environmental issues they could be paralysed by fear. Teachers can help children take small, but meaningful actions to ensure they feel empowered and motivated.

Encouraging children to act sustainably at an early age makes it more likely that they will continue ecocentric behaviours in later life.

4. Enviroschools participation should be compulsory in all schools, to ensure that no children miss out on environmental education, and so that sustainability learning is sustained throughout all levels of schooling.

Enviroschools provides invaluable resources to schools, making it simple and enjoyable to implement sustainability into the curriculum and the culture of the school. Every school should be part of the Enviroschools programme to increase the level and quality of environmental education that children receive.

5. An interesting area of future study would be identifying how children of different ages and at different levels of schooling differ in their environmental knowledge, attitudes, and behaviours. Early childhood education centres, intermediate schools, and high schools have different

priorities and ways of teaching, so it would be beneficial to see what factors influence children at these levels. Also, more research on passionate teachers and principals would be valuable to determine the extent to which they integrate environmental education and sustainable practices into their classes and schools.

While I hope that my research will be valued by parents, teachers, principals, academics, and governments alike, if even one child picks up a piece of rubbish or saves a sapling from being trampled as a result of this research, I will consider this study a success. Small actions can have a big influence, and if everyone adopted this attitude in relation to the environment and realised the benefits of sustainable actions, what a difference that would make to the world.

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Appendix I: Ethics Documents

Outline of Research Project

Waikato Management School
Te Raupapa



1. IDENTIFY THE PROJECT.

1.1 Title of Project:

The Primary School Factors that Shape the Environmental Attitudes and Behaviours of Children

1.2 Researcher(s) name and contact information

Name: Kendall McEwen
Phone: 027 864 2646
Email: kendallecewen@gmail.com
Address: Waikato Management School
University of Waikato
Private Bag 3105
Hamilton 3240

1.3 Supervisor's name and contact information (if relevant)

Name: Alison Henderson
Phone: 07 838 4141
Email: alison@waikato.ac.nz
Address: C/- Department of Management Communication
Waikato Management School
University of Waikato
Private Bag 3105
Hamilton 3240

1.4 Anticipated date to begin data collection

20th October, 2014

2. DESCRIBE THE RESEARCH.

2.1 Briefly outline what the project is about including your research goals and anticipated benefits. Include links with a research programme, if relevant.

My research will look at how primary school children's environmental attitudes and behaviours are shaped at school – specifically the factors such as curriculum, peers, teachers, school facilities and school environments that influence how children learn about the environment and what they learn about it. I will also attempt to determine which schooling factors influence/affect children's environmental attitudes and behaviours the most or the least. This research will be beneficial as it will give teachers, principals, parents and academics greater insight into how children's environmental attitudes and behaviours can be shaped in positive ways, making children realise the value of the environment and inspiring them to want to take action to protect it.

2.2 Briefly outline your method.

My research is centred around a multiple case study method – two Hamilton primary schools will be my case studies. The methods I will be using within each case study are document analysis, observation and interviewing. Document analysis will involve a large literature review of relevant studies, statistics and data from both New Zealand and the rest of the world. The studies and data will focus on New Zealand schools, the education system, and the environmental beliefs, attitudes, behaviours and intentions of children. Additionally, school documents such as curriculums and teaching resources will be examined.

I will also seek permission from the school principals to use non-participant observation to witness children learning about the environment at school, either in the classroom or in the school grounds. One classroom from each school will be observed three times within several weeks. As a non-participant observer I will be situated in a non-obtrusive position, sitting quietly to watch and listen to the conversations that occur between the teachers, other adults and children. I will tape record the conversations so that I can listen to them once the research has finished. Each period of observation should be about 30 to 60 minutes long.

Semi-structured interviews will be used as my main source of primary data. I will seek the permission of parents and teachers to interview 12 children from each school, making a total of 24 interviews with children. Each interview will be conducted at the school, either in the classroom or in the school grounds, where ever the child feels most comfortable. The interviews should take 45-60 minutes each, but will be shorter if I notice the child getting bored or distracted. The topics investigated in the interviews with children will be the environmental beliefs, attitudes, behaviours and intentions of the children and the ways in which children learn about the environment. I will also interview two teachers from each school to get their perspectives on how children develop their environmental attitudes and what shapes their behaviours. The interviews with teachers will be a maximum of 60 minutes long. Additionally, principals will be interviewed – the principal at each of the two schools. These interviews will cover topics such as the environmental education resources in the school, the school culture, facilities and the environmental attitudes and behaviours of children in school grounds. Each child, teacher and principal will be interviewed once.

Participants will be contacted through the schools. I will contact the schools, providing them with all of the information about the research. The school is then able to contact the parents of children, asking them for permission for their children to participate. Once the parents have approved, I will then talk to the children, providing them with information about the research and making sure they want to participate. Children will be selected to participate in the study on a first come first served basis. However, if the first 12 children at each school is not a fairly even mixture of boys and girls, I will seek either boys or girls to even out the numbers.

2.3 Describe plans to give participants information about the research goals.

I will first approach the principals at the participating schools to seek permission, before providing information to parents and children. All participants will be given information about the research and the research goals prior to participating in the research. Information sheets will be supplied to all participants – one for children with simple, easy-to-understand language, and one for adults. The goals of the research are to examine what New Zealand primary school children in Years 5 and 6 think about the environment (attitudes), how they treat the environment (behaviours) and what factors shape their environmental attitudes and behaviours and to what degree. If I sense that the children's parents would like more information about the research, I may hold an information session that parents are welcome to attend. Here, they will be able to ask any questions about the research that they like.

2.4 Identify the expected outputs of this research (e.g., reports, publications, presentations), including who is likely to see or hear the reports or presentations on this research

As a result of this research, a report in the form of a Master's thesis will be written. Journal articles may also be published in academic journals as a result of the research. It is possible that the research results will also be presented at academic conferences. A summary of the results will be given to the participating principals, teachers, and parents of the children participating in the research on request.

Transcripts and field observations and notes will only be shared with Alison Henderson, my supervisor. All data, notes, recordings and transcripts will be stored in a locked office that only Alison and I can access. All data – physical and electronic – will be destroyed on completion of the project.

2.5 Identify the physical location(s) for the research, the group or community to which your potential participants belong, and any private data or documents you will seek to access. Describe how you have access to the site, participants and data/documents. Identify how you obtain(ed) permission from relevant authorities/gatekeepers if appropriate and any conditions associated with access.

All of the research will be carried out at the schools, either in classrooms or outside in the school grounds. Research participants will be from several different groups – primary school teachers, primary school principals and primary school children in Years 5 and 6. All participants will live in Hamilton, New Zealand. I will not seek to access any personal or private data from individuals involved in the research; however I will request

that I have access to school documents. Access to the schools, students and school documents will be at the discretion of the schools. All information obtained from schools about the schools, children and parents will be kept completely confidential, only viewed by me and by Alison Henderson.

3. OBTAIN PARTICIPANTS' INFORMED CONSENT, WITHOUT COERCION.

3.1 Describe how you will select participants (e.g., special criteria or characteristics) and how many will be involved.

I will select participants using purposive sampling. Principals of primary schools will be asked to participate. Teachers of Year 5 and 6 students will also be asked to participate. Primary school children in Years 5 and 6 will be the main research participants. All principals, teachers and children that participate can be any gender and any ethnicity. While male primary school principals and teachers may be harder to find, the children participating will hopefully be an even mix of girls and boys. The children in Years 5 and 6 should all be between 9 and 11 years old.

Two school principals (one from each school), four teachers (two from each school) and 24 children (12 from each school) will be asked to participate in my research. Each person will be interviewed once and each classroom will be observed three times.

3.2 Describe how you will invite them to participate.

I will contact schools directly to ask the principal (or another relevant person) if they would like to participate in my research, and to ensure that the principals and teachers are happy to be interviewed and let me observe classroom sessions. I will supply the school with information sheets about my research that the children can give to their parents. These sheets will include a consent form that the parents can sign if they are happy for their children to be included in the study. I will also request that information about my research be put on the school websites and in the school newsletters, so that parents are well aware of my research intentions.

3.3 Show how you provide prospective participants with all information relevant to their decision to participate. Attach your information sheet, cover letter, or introduction script. See document on informed consent for recommended content. Information should include, but is not limited to:

- **what you will ask them to do;**
- **how to refuse to answer any particular question, or withdraw any information they have provided at any time before completion of data collection;**
- **how and when to ask any further questions about the study or get more information.**
- **the form in which the findings will be disseminated and how participants can access a summary of the findings from the study when it is concluded.**

The information sheet and consent forms that parents, children, teachers and principals will be given (attached) will include:

- What their participation will involve

- How they can refuse to answer any question
- How they can withdraw information at any time before data collection is completed
- How they can ask for further information about the research
- Who will be able to access the data findings and how they will be kept safe
- Privacy and confidentiality
- The form in which findings will be published and disseminated
- How participants can obtain results of the research

3.4 Describe how you get their consent. (Attach a consent form if you use one.)

Parents will give consent on behalf of their children by signing the form I mentioned above. Children will also sign a consent form, to ensure that they feel they can say yes or no to participating (after their parents have signed it). Principals and teachers will give verbal and written (signed) consent outlining their willingness to participate.

3.5 Explain incentives and/or compulsion for participants to be involved in this study, including monetary payment, prizes, goods, services, or favours, either directly or indirectly.

No person will feel obliged or forced to participate in this study. No incentives will be used to entice people to be involved.

4. MINIMISE DECEPTION.

4.1 If your research involves deception – this includes incomplete information to participants -- explain the rationale. Describe how and when you will provide full information or reveal the complete truth about the research including reasons for the deception.

I will not use deception in any form in my research. I will provide information to participants prior to them agreeing to participate, during the research process and at the end of the research as well. Participants will be able to ask any questions of me at any time during the research process and I will answer honestly and fully.

5. RESPECT PRIVACY AND CONFIDENTIALITY

5.1 Explain how any publications and/or reports will have the participants' consent.

Participants will be made fully aware of possible publications and reports resulting from the research, prior to consenting to their participation.

5.2 Explain how you will protect participants' identities (or why you will not).

Participants' names will not be disclosed in any of the reports, publications or presentations, ensuring their involvement remains confidential. I will also ensure that no person will be identifiable in the reports or publications, with aliases used if necessary. The schools acting as case studies in my research will not be named so as to further ensure the anonymity of participants and the confidentiality of school documents.

5.3 Describe who will have access to the information/data collected from participants. Explain how you will protect or secure confidential information.

Only me and my supervisor, Dr Alison Henderson, will have access to the primary data, interview transcripts and observation records. All confidential primary data will be locked in a room, only accessible by me and by Alison.

6. MINIMISE RISK TO PARTICIPANTS.

'Risk' includes physical injury, economic injury (i.e. insurability, credibility), social risk (i.e. working relationships), psychological risk, pain, stress, emotional distress, fatigue, embarrassment, and cultural dissonance and exploitation.

6.1 Where participants risk change from participating in this research compared to their daily lives, identify that risk and explain how your procedures minimize the consequences.

This research will involve a slight deviation from the children's', teachers' and principals' normal school days. My being present as an observer in the classroom may be a slight distraction for the children, but if I sit quietly in an unobtrusive position at the back of the classroom my presence will hopefully be unnoticeable. Interviewing children during school time may mean they lose a small amount of learning time, but I will endeavour to interview children at lunchtimes where possible.

The questions I will ask of participants will be basic demographic questions and questions about their environmental attitudes and behaviours. They should not cause any sort of emotional distress or embarrassment. If I see the participants becoming distressed, upset or agitated at all I will remind them they do not have to answer the questions if they are uncomfortable.

Teachers involved in the study may fear social risks in the form of working relationships between staff, children and their parents if I was to question or critique their teaching methods, style or ability. I will assure teachers that I am not seeking to examine or comment on their teaching at all. Nor will I pass judgement about what their pupils know or do not know about the environment.

6.2 Describe any way you are associated with participants that might influence the ethical appropriateness of you conducting this research – either favourably (e.g., same language or culture) or unfavourably (e.g., dependent relationships such as employer/employee, supervisor/worker, lecturer/student). As appropriate, describe the steps you will take to protect the participants.

Participants in the research will not be associated with me where ever possible, to ensure ethical appropriateness of the research. I will not allow any family members, close friends, or colleagues to be involved as participants. It is possible that I may know of some of the children that participate or their parents, but I will avoid this where possible. I will also make sure that I develop no close friendships with any of the participants, so as not to break any ethical principles – all relationships with participants will remain strictly professional and will not continue past the end of the research.

6.3 Describe any possible conflicts of interest and explain how you will protect participants' interests and maintain your objectivity.

I do not expect there to be any conflicts of interest in my research. It is possible that my research participants may disagree with my views and vice versa, but I will remain objective and not let my views and opinions bias my judgment.

7. EXERCISE SOCIAL AND CULTURAL SENSITIVITY.

7.1 Identify any areas in your research that are potentially sensitive, especially from participants' perspectives. Explain what you do to ensure your research procedures are sensitive (unlikely to be insensitive). Demonstrate familiarity with the culture as appropriate.

It is possible that issues of culture and religion could arise in the interviews with participants, as culture and religion may shape and influence some people's environmental attitudes, beliefs and behaviours. I do not intend to ask any questions about culture or religion as they are sensitive issues, but if the participants wish to discuss them I will respect their decision and acknowledge their beliefs. The schools in Hamilton that I will choose to study will have English as the main language, so this is the language I will use to converse with participants.

7.2 If the participants as a group differ from the researcher in ways relevant to the research, describe your procedures to ensure the research is culturally safe and non offensive for the participants.

Participants may differ in culture, ethnicity or religious beliefs, but I am not seeking to discuss those matters and will only talk about them if they mention it themselves. If I notice or understand that any topic is offending the participants I will assure them that they do not have to discuss that topic. Differences between me and the participants will not be substantial in ways that will affect the research.

Consent Form for Participants - Children

Waikato Management School
Te Raupapa



THE PRIMARY SCHOOL FACTORS THAT SHAPE THE ENVIRONMENTAL ATTITUDES AND BEHAVIOURS OF CHILDREN

Consent Form for Participants

I have read the **Information Sheet** for this study and have had the details of the study explained to me. My questions about the study have been answered, and I am happy with these answers, and I understand that I may ask further questions at any time.

I also understand that my child is free to stop being part of the study at any time up until 19th December, 2014, or to choose not to answer any particular questions in the study. I allow my child to talk to the researchers with the conditions of confidentiality set out on the **Information Sheet**.

I allow my child to take part in this study with the conditions set out in the **Information Sheet** and I agree to their interviews and/or observation sessions being tape recorded.

Consent from Parent/Caregiver

Signed: _____

Name: _____

Date: _____

Consent from Child

Signed: _____

Name: _____

Date: _____

Researcher's name and contact information:

Name: Kendall McEwen
Phone: 027 864 2646
Email: kendallemcewen@gmail.com
Address: Waikato Management School
University of Waikato
Private Bag 3105
Hamilton 3240

Supervisor's name and contact information:

Name: Alison Henderson
Phone: 07 838 4141
Email: alison@waikato.ac.nz
Address: C/- Department of Management
Communication
Waikato Management School
University of Waikato
Private Bag 3105
Hamilton 3240

Consent Form for Participants - Adults

Waikato Management School
Te Raupapa



THE PRIMARY SCHOOL FACTORS THAT SHAPE THE ENVIRONMENTAL ATTITUDES AND BEHAVIOURS OF CHILDREN

Consent Form for Participants

I have read the **Information Sheet for Participants** for this study and have had the details of the study explained to me. My questions about the study have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I also understand that I am free to withdraw from the study at any time up until 19th December, 2014, or to decline to answer any particular questions in the study. I agree to provide information to the researchers under the conditions of confidentiality set out on the **Information Sheet**.

I agree to participate in this study under the conditions set out in the **Information Sheet** and I consent to my interviews and/or observation sessions being tape recorded.

Signed: _____

Name: _____

Date: _____

Researcher's name and contact information:

Name: Kendall McEwen
Phone: 027 864 2646
Email: kendallemcewen@gmail.com
Address: Waikato Management School
University of Waikato
Private Bag 3105
Hamilton 3240

Supervisor's name and contact information:

Name: Alison Henderson
Phone: 07 838 4141
Email: alison@waikato.ac.nz
Address: C/- Department of Management
Communication
Waikato Management School
University of Waikato
Private Bag 3105
Hamilton 3240

The Primary School Factors that Shape the Environmental Attitudes and Behaviours of Children
Participant Information Sheet - Children

Waikato Management School
Te Raupapa



What is research? What is this research about?

My name is Kendall McEwen and I am a student from the University of Waikato. I am doing a research project – a research project is when someone studies a certain topic to find out as much information as they can. My research project will look at how primary school children – like you – learn about the environment at school. I would also like to find out how children feel about the environment – do they like it or not, and how do they look after the environment?

You have been invited to join in my research because you are in Year 5 or Year 6 at a primary school in Hamilton. The information that you give me will help me understand more about how children learn about the environment at primary school. Hopefully you will enjoy telling me your ideas and opinions about the environment.

Who is involved in the research?

I am completing this research project with Dr Alison Henderson, a teacher at the University of Waikato. Only Alison and I will know the information that you give to me. If you have any questions about the research at any time, you or your parents or teachers can contact me on 027 864 2646 or at kendallemcwen@gmail.com. The University of Waikato has given me some money, called a scholarship, to help pay for my research costs.

What will you have to do and how long will it take?

I will ask you to do an interview with me – an interview is where I ask you questions and you tell me your thoughts and ideas. The interview will be between 30 and 40 minutes long and will take place at your school – either in your classroom or out in the school grounds. I will be asking you questions about how you learn about the environment at school, how you like the environment and how you treat the environment. If it is ok with you I will use a voice recorder to record our conversations in the interview, so that I can listen to them again later.

I will also observe your class learning about the environment. Observing means watching, so I will sit in your classroom watching and listening to your teacher teaching you about the environment. Three times – once every week or so – I will observe you learning about the environment, either in your classroom, outside in the school grounds, or on field trips. I will not join in your conversations, but I will use my voice recorder to record the conversations.

What will happen to the information you give me?

The information that you give me will be used to write a long report called a thesis. This report is like homework that I have to complete for my university. Using the information that you give me, I may also write articles in journals or make speeches at university meetings. Everyone who joins in the research will remain anonymous, meaning that no one will know what you told me or that you were involved in the research. Your school, classroom and name will not appear in any of the reports that I write. I will make sure that all of the information that you give me is protected by being kept in a locked room. Only Alison and I will be able to listen to the recordings of your interview and the observation sessions – no one else will hear them.

My promise to you:

Even once you have agreed to join in the research, you have the right to stop being part of the research any time before the 19th December, 2014 – simply contact me if you would like to opt out. If you do not want to answer any of the questions I ask you, you do not have to. You can also ask me any questions about the research whenever you like.

The Primary School Factors that Shape the Environmental Attitudes and Behaviours of Children
Participant Information Sheet - Adults

Waikato Management School
Te Raupapa



The Research: My name is Kendall McEwen and I am a Master's student from the Management School at the University of Waikato. I am completing a research project called: The Primary School Factors that Shape the Environmental Attitudes and Behaviours of Children. My research will look at how primary school children's environmental attitudes and behaviours are shaped at primary school – specifically the factors such as curriculum, peers, teachers, school facilities and school environments that influence how children learn about the environment and what they learn about it. I will also attempt to determine which schooling factors influence/affect children's environmental attitudes and behaviours the most or the least.

You have been invited to participate in my research because of your expertise in children's education and the environmental education that is carried out at your school. The information that you provide will be extremely valuable and will give greater insight into how children's environmental attitudes and behaviours can be shaped in positive ways. Hopefully you will enjoy sharing your insights and expertise in this research.

Who is Involved: This study is led by me and my supervisor, Dr Alison Henderson, a Senior Lecturer in the Management Communication Department at the University of Waikato. Only Alison and I will have access to the information and data gained in my research. If you have any questions about the research at any time, please feel free to contact me on 027 864 2646 or at kendallemcewen@gmail.com. I have been given a Master's Research Scholarship from the University of Waikato to help with my research costs.

Participant Involvement: It would be greatly appreciated if you could participate in my research by way of an interview and observation. The interview will be one-on-one with me and will last between 30 and 60 minutes. I will ask you questions about environmental education at your school, how you teach your pupils about the environment, the reception of your pupils to learning about the environment and your views and opinions on how best to educate children about the environment. With your permission, the interview will be recorded with a voice recorder so that I can transcribe the conversations at a later date.

I would also like to observe your pupils learning about environmental education. On three different occasions I would like to quietly observe you or other teachers teaching your class about environmental education, either located in the classroom or out in the school grounds. With your permission I would like to be a non-participant observer, using a voice recorder to capture the conversations that take place during lessons of environmental education.

The Data: The information obtained in this research will be used to write a Master's thesis – the interviews will be transcribed and analysed using thematic analysis to identify major ideas and themes around environmental education and to identify the factors that most influence the environmental attitudes and behaviours of children. This

research may also be presented at conferences and in academic journals as well. All participants involved in the study will retain anonymity and full confidentiality will be given to all information they provide. All data will be protected by being kept in a locked room which only Alison and I can access. Only Alison and I will be able to listen to the audio recordings of the interviews and observation sessions.

Declaration to Participants: Participants have the right to opt out of the research any time before the 19th December, 2014 – simply contact me if you would like to opt out. Participants have the right to decline to answer any question at any time throughout the interviews. They can also feel free to ask me any questions or obtain further information about the research whenever they wish. If you would like transcripts of your interview or access to a summary of the final research reports, you are welcome to ask for these as well.

Appendix II: Interview Script for Children

The Environment

1. What thoughts or ideas come to mind when I mention the environment?
2. Why do you think it might be important to learn about the environment?
3. What parts of nature/the environment do you like?
4. How do you treat the environment?
5. What are some environmental issues that you know about?
6. How do you feel about these environmental issues?
7. Who do you think nature belongs to? Can you explain why?

Classroom

8. What have you learnt about the environment at school?
9. What sorts of things do you do when learning about the environment?
10. Do you feel that you learn about the environment a lot? Can you explain why?
11. What other things would you like to learn about the environment?
12. What things do you do in your classroom or school that help look after the environment?
13. Are there any people or groups that visit your school to teach you about the environment?

School

14. Can you tell me about your school? What does it look like inside buildings and outside?
15. What activities do you do at school in relation to the environment?
16. Is your school an Enviroschool? What does this mean?
17. What groups, clubs or activities can you do at school?

Teachers

18. How do you think your teachers feel about the environment?
19. Do you think your teachers enjoy teaching children about the environment?
20. Who teaches you about the environment at school?

Peers

21. How do you think your classmates feel about the environment? How do you know this?
22. Do you ever talk about the environment with your friends?

Closing Questions

23. Have you got any other comments or thoughts about the environment?

Appendix III: Interview Script for Teachers and Principals

The Environment

1. How important do you think it is for children to learn about the environment? Why?
2. How do you feel about the environment? Is it something you are passionate about?

Classroom

3. What are the most important principles that you wish to teach your pupils about the environment?
4. What have you found to be the most effective ways of teaching children about the environment?
5. How interested/eager are children to learn about the environment?
6. What more about the environment do you think children should learn?

Curriculum

7. How does environmental education feature in the national curriculum – how effective do you think this is?
8. What do you or the school include in the way of extra environmental education over and above the curriculum requirements?
9. How important is it that your school is an Enviroschool? Why?

Groups/Organisations

10. What groups/organisations help your school or you teach children about the environment?
11. How do these groups support you?
12. What facilities or resources do you have at hand?

School

13. Does the school hold the environment as a value or a special principle? Can you explain how?
14. How does the school promote environmentally friendly actions amongst children and teachers?
15. What more could the school do to promote environmental friendliness?

**Appendix IV: Table of School Documents and Websites
that were Analysed from School A**

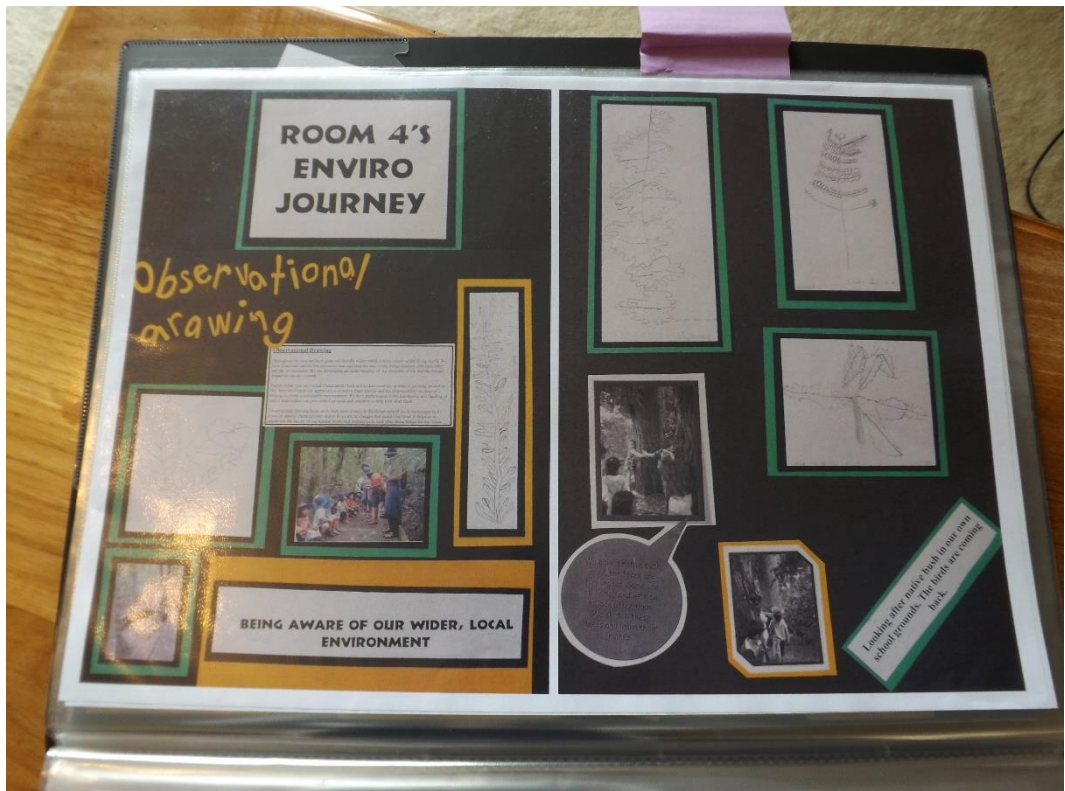
Document Name	Type of Document	Date	Access Provided By	Date Accessed
Friday 31 May – Arbor Day is an Enviro Day at School A	Letter	31 st May	Miss C	6 th November 2015
Minutes of Enviro, Science and Technology Meeting – Thursday, May 22nd 2014	Meeting minutes	22 nd May 2014	Miss C	6 th November 2015
Minutes of Enviro, Science and Technology Meeting – August 2014	Meeting minutes	August 2014	Miss C	6 th November 2015
Minutes of Enviro Meeting held on Thursday, August 15th 2013	Meeting minutes	15 th August 2013	Miss C	6 th November 2015
Enviro Planning Overview – Examples of Implementation Ideas	Enviro plan document	NA	Miss C	6 th November 2015
The Enviro Education Link in our Learning on Planet Earth and Beyond	Enviro plan document	NA	Miss C	6 th November 2015
School A Annual Plan 2014	School plan document	2014	Miss C	6 th November 2015
Enviroschools – A Whole School Approach	Enviroschools information table	NA	Miss C	6 th November 2015
Agents Responsibilities	Enviro group information document	NA	Miss V	11 th November 2015
Cool Kiwis Passport	Brochure	NA	Miss V	11 th November 2015
Wings of NZ Program – Enviro	Enviro group information document	NA	Miss V	11 th November 2015

Empowering Students Program				
2013 Focus on Continuing a Sustainable Journey	Enviro plan document	2013	Miss V	6 th November 2015
School A Website	Website	2015	Public access	12 th February 2015
School A Enviro Website	Website	2014	Public access	10 th March 2015

**Appendix V: Table of School Documents and Websites
that were Analysed from School B**

Document Name	Type of Document	Document Date	Access Provided By	Date Accessed
Religious Education	School policies, procedures and guidelines	NA	Mrs B	19 th November 2015
Shade	School policies, procedures and guidelines	NA	Mrs B	19 th November 2015
Te Reo Māori and Tikanga Māori	School policies, procedures and guidelines	April 2009	Mrs B	19 th November 2015
School B and Community Agricultural Day	School policies, procedures and guidelines	NA	Mrs B	19 th November 2015
Use of School Facilities	School policies, procedures and guidelines	NA	Mrs B	19 th November 2015
Education Outside the Classroom	School policies, procedures and guidelines	NA	Mrs B	19 th November 2015
School B Website	Website	2015	Public access	16 th February 2015
School B Information Booklet	School policies, procedures and guidelines	2012	Public access	19 th February 2015

Appendix VI – Images of an Enviro Scrapbook from School A



Sustainability in Room 22

We write about it.....

Hillcrest Normal School is a green-gold school. We care for the environment, we care for the planet by growing plants and throwing away rubbish. If you still don't think Hillcrest Normal School is a green-gold school then think again after you read about the things we as a school do.

We have reduced our rubbish by a large amount. Now our rubbish bins have gotten smaller. We have made food day to reduce packaging because the rubbish truck comes less often. So less rubbish goes to the landfill so the Earth won't fill up with rubbish.

We are growing gardens and trees to make our school greener. We take part in out of school tree planting events like Arbour Day. Veggie Village is a garden that our school has that grows veges for the people that helped grow them. If we grow more trees there will be less carbon dioxide and other gases in the air.

We are recycling and reusing paper by the R.O.P. box which stands for 'paper only please'. We have a worm farm to eat our scraps. We feed the sandwiches to the chickens. We do all of this to recycle the things that can be recycled. If you recycle you will recycle lots of natural resources too.

Now do you think Hillcrest Normal school is a green-gold school I would say yes. The reason is that our school does a lot to be a green-gold school and I think our school will get better in the future.
By Michael Zhang.

We blog about it.....

EcoSchools

Year	Score	Rank
2010	100	1st
2011	100	1st
2012	100	1st
2013	100	1st
2014	100	1st
2015	100	1st
2016	100	1st
2017	100	1st
2018	100	1st
2019	100	1st
2020	100	1st

Niya - Underwood Elementary, America
October 27, 2011 at 11:21 AM
Dear Ben and Samantha,
Hi my name is Niya I am 8 years old Ben for your response yes we do recycle. What are eco-warriors? We would like to be eco friendly. School the way we recycle paper but we don't recycle plastic even though it's pretty cool. We also do compost. What are some other things do you do to be eco friendly?
Cheers,
Niya

Ben - Hillcrest Normal School
October 27, 2011 at 3:47 PM
Hi Niya eco-warriors are people who look after the school's environment. AKA enviro agents we have made food. Nudge food is no wrapping on your food like plastic or yogurt containers. Oh yes we have compost bins/worm farms. Looking forward to blogging you again.
From Ben!

We care about it.....

Working in our classroom

We action it.....

Market Day

Fizzy drink fizzes on my tongue.

Recycle Reuse Toys

Sweet, sweet treat.

This market is sooo cool.

Books

Pukemokemoke Bush

The pa site used to be surrounded by swamp full of oels, flax bushes and trees.

The guardians of Pukemokemoke Bush are the people that live at the Tauehi Marae that is right next to Pukemokemoke Bush.

The Maori used to play in the bush together.

Did you know that all the Maori and European signed a treaty and they had to agree with each other?

The Maori and the European had to share their land once they signed the treaty.

!!Awesome As!!

The Pukemokemoke bush used to be a pa that the Maori's used to live on.

The Maori grew lots and lots of kumara and stored it under ground.

The Wormery

This is the wormery that Room 12 takes care of. They feed the worms. Food scraps given by children at the end of lunch. They get food scraps by having 8 buckets/bins. Each of them have labels that indicate what you put in them.

These are the bins that the children put their food scraps into and they are collected by room 12.

AND THEN WE EAT IT!

These are all the food scraps that come out of the bins. This is the wormery with all the worms in it ready for the worms to eat!


This is a plant that supplies us food.

These are the worms eating their scraps and what the worms make is good for plants and their growing.

This is the fertilizer that worms make and what we put on plant as it is very good for food.

INVESTIGATING ENERGY AT SCHOOL & LIVING SUSTAINABLY

ROOMS 8 & 10




REFLECT ON CHANGE

We as a school increased our power bill by over \$1000 because of new heat pumps around the school, but we as a class made a difference but we have dropped down in the last few weeks.

We did a statistical investigation on energy and how we as a class could make a difference. We went around to each class and tried to persuade them to make a difference.


TAKE ACTION

We need to stop using appliances during PEAK times (9-11am) because classes are using their heat pumps when it is a sunny day with doors open and lights on. In times when we are not in the room or when we don't need appliances turn everything off and close the doors.





IDENTIFY THE CURRENT SITUATION

- If we aren't careful we will have to use fundraised money that we would have used for fun things but instead we would use the money to pay bills.
- We (the school) are not doing what we want so that means we aren't turning off lights, heat pumps and computers.
- The situation we are in is not a very good one because the classes and teachers aren't listening.



EXPLORE ALTERNATIVES

We need to shut the doors more often, not use the heat pumps on sunny days and turn lights off when not needed. Put up signs and posters on classroom doors and windows. Display info and suggestions about the energy wasting.

Sustainable Energy

Rooms 10 & 8

Identify the Current Situation

- As a class we were very concerned about the over use of power at our school. We found that we were using too much power by looking at last year's power bill.
- We identified the problem and came up with some solutions to lower the use of power at the school as well as lowering the power bill.
- We decided to educate the whole and make a difference and keep it that way. We switch off the lights when we don't need them on. We close the doors when the heat pump is on so the heat stays inside. We don't use electrical appliances as much as we usually do during peak demand time (9am-11am). We switch off and shutdown the computer when we're not using it.

Explore the Alternatives

- First we calculated our carbon footprints. There was a dinosaur which was the worst, a kangaroo was in the middle and a honey bee was the best. If the world continues like this there won't be enough space on earth to look after everyone.
- We analysed last year's power bill to find out the highest power consumption. We also compared it to this year's power bill to find out if we made a difference.
- We selected the most used electrical appliances and went to each class and surveyed them about how often they use these appliances. Each class gave themselves a rating from 1-5 on how well they used them.
- We did a statistical investigation and charted this information. We collected school wide information and put it on our charts.

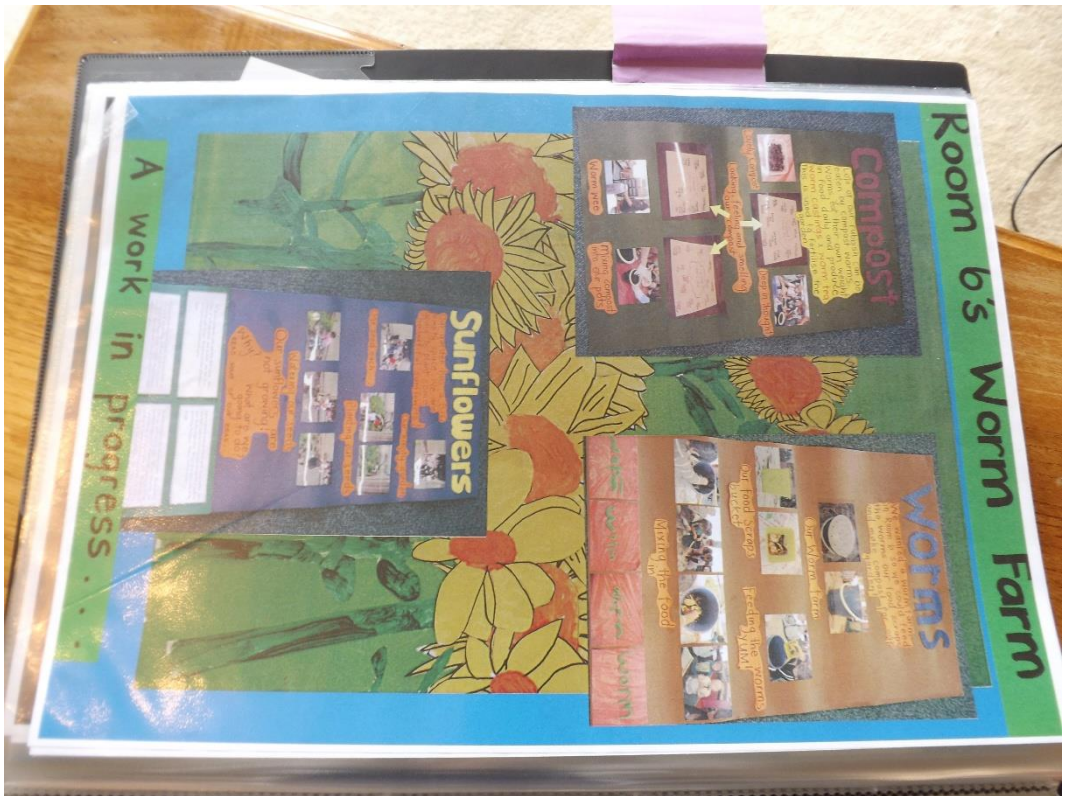
Reflection

- Rooms 10 & 8 have greatly improved and reduced their power consumption.
- We are managing self by:
 - Closing the doors.
 - Never using the heat pump in peak demand time (9am-11am).
 - We turn the lights off when we don't need it.
 - We turn off the computers and the activ-board when we're not using it.
- But... the power bill has risen over \$1000 for June compared to last year. Some reasons for the increase in power might be: We were at school more in June than last year because the term was longer. There were new heat pumps installed. There was a cold snap. But we're not being very efficient with our power consumption.

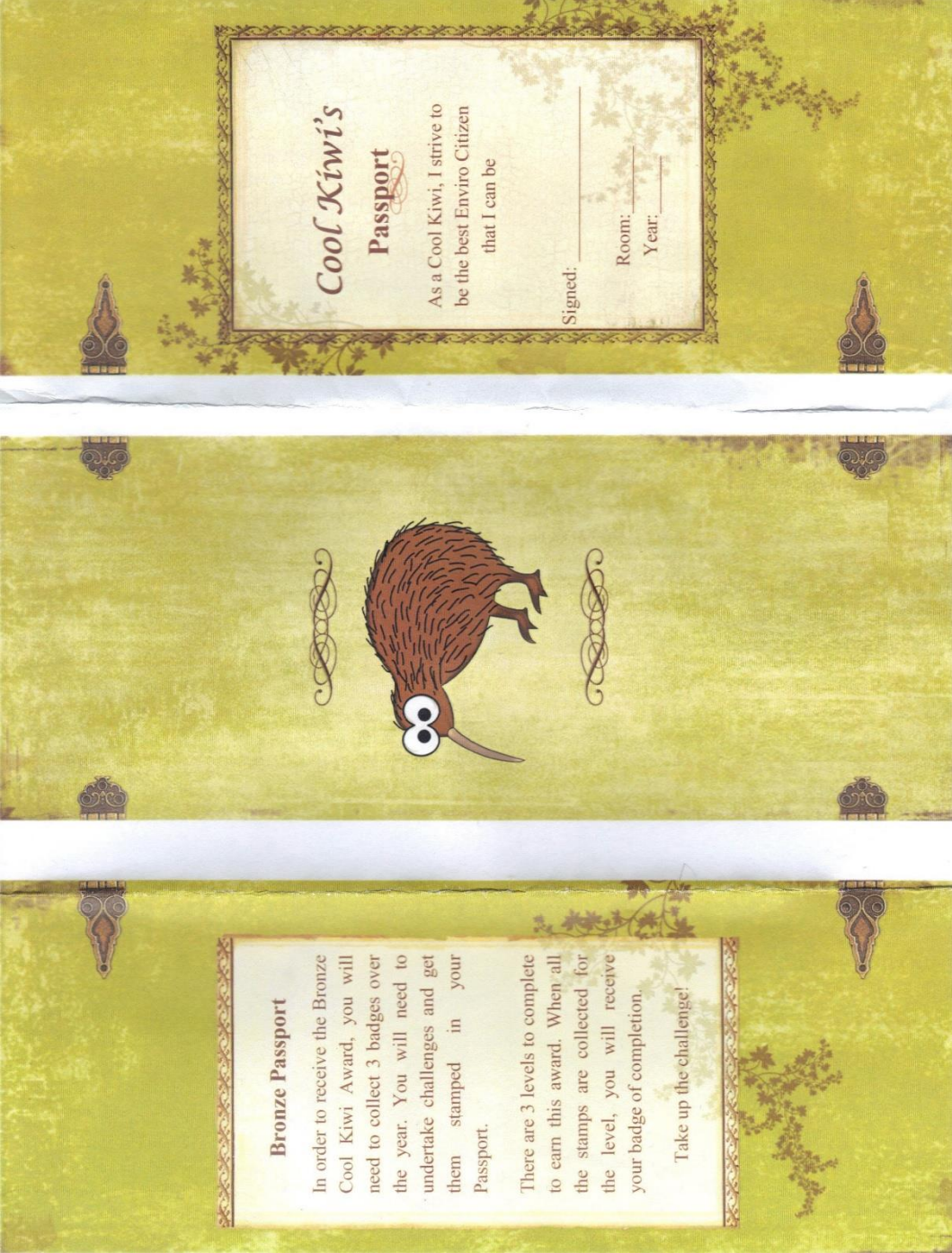
Take Action

- Once we had solutions we educated classes on better use of power. We visited classes. We made posters on our use of energy. We made a PowerPoint on energy. We targeted June for improvement. We needed to manage self.

Clean up that cloakbay



Appendix VII: Cool Kiwis Passport from School A



Personal Responsibility

- Level 1 -

Badge to be completed in term 1

Compulsory Requirements:

Nude Food

Complete 5 nude food challenges

Values

Use Respect – to each other and our environment. Be kind to others and never litter.

+ Choose a minimum of 2 from ...

Active Travel

Be active in travelling to school 3 days a week, every week

Plastic bag-free

Help your family to say no to plastic bags and choose reusable bags. Find out why plastic bags are so bad for our environment

My Home

Take photos of your recycling systems at home **OR** your garden patch that you help with. Put these on a poster or Comidlife to explain

Upcycle challenge

Create a pencil case / holder out of Trash

Taonga

Know 7 Maori Atua and be able to retell the Legend of the Forming of the Waikato River

Power challenge

Go without power for a day. Earth hour is on the 28th of March, What is it all about?

Service to the Community

- Level 2 -

Badge to be completed in terms 1/2

Choose 2 of the following to help with:

Lost Property

Help return lost property to you classmates and spread out the school clothes

Worm Monitor

Monitor the bucket for your class worm scraps and feed the worms daily

Vege Village/ Gardens

Give up half an hour a week to help in one of the patches around our school

Arbour Day

Come and help plant in our community at the annual Arbor Day

Recycle monitor

Monitor the recycle buckets in the classroom and the GOOS box

Actionators

Join the group who is helping to brighten our school

Adopt a buddy

You will be given a younger student to guide. You will help them in different things like reading and making good choices

Fundraise

Help to raise money for environmental learning and issues. See Miss Vowles.

Take Action

- Level 3 -

Badge to be completed in term 3

Choose 1 Action to plan and complete:

Keep NZ beautiful week – what could we do to clean up our community?

Plan

Action

Hamilton Zoo animal enrichment competition

– Design a toy for a Zoo animal to keep them entertained. Ask Miss Vowles for Competition details.

Plan

Action

You will need to plan in small groups and get it checked before you take action.

