

**Sustainability Education in Aotearoa New Zealand:
Theory, practice and possibility**

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Abbreviations

EE	environmental education
EfS	education for sustainability
EOTC	education outside the classroom
ESD	education for sustainable development
IIS	International Implementation Scheme
IK	Indigenous Knowledge/Indigenous Knowledge Systems
IPCC	Intergovernmental Panel on Climate Change
MFE	Ministry for the Environment
MOE	Ministry of Education
NZC	New Zealand Curriculum
NCEA	New Zealand Certificate of Educational Achievement
NZQA	New Zealand Qualifications Authority
OECD	Organisation for Economic Co-operation and Development
PCE	Parliamentary Commissioner for the Environment
PISA	Programme for International Student Assessment
SANZ	Sustainable Aotearoa New Zealand
SD	sustainable development
TKI	Te Kete Ipurangi
TINA	'There is no alternative'
UN	United Nations
UNDESD	United Nations Decade of Education for Sustainable Development
UNEP	United Nation's Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WCED	World Commission on Environment and Development

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Ehara taku toa, he taki tahi, he toa taki tini

*My success should not be bestowed onto me alone
as it was not individual success but the success of a collective*

Abstract

Sustainability education is a contested field in Aotearoa New Zealand, as it is in other countries. A variety of philosophical and theoretical interpretations and possibilities for practice therefore co-exist within this emerging field. This thesis develops a 'complex perspective' of sustainability education by exploring the way it is conceptualised in literature and the New Zealand curriculum, and interpreted in practice in the context of a New Zealand secondary school. Guided by the key contributing theories and a qualitative methodology, the thesis maps the complexity of the field from the macro- or global and international level to the micro- or local level using the reference points of theory, practice, and possibility.

Developed during and in response to an intense period of social and environmental change that shows no signs of abating, the thesis comprises two interrelated components. The first and more substantial component is the literature review. This takes account of situational factors that are giving rise to different conceptions and approaches to sustainability education and to contrasting views presented in literature and curriculum. Used as an umbrella term for all forms of education with environmental and sustainability foci, 'sustainability education' (in whatever form it takes) stands as an admission of broad social failure and the need for substantial change. Conceptions of sustainability education range from 'education for sustainable development' (ESD), which is advanced by the United Nations and other influential international organisations, to 'education for sustainability' (EfS), which has taken precedence over 'environmental education' (EE) in the New Zealand curriculum. The literature shows that this complex, contested, contextualised and emerging field is as much hopeful as it is critical.

The qualitative case study comprises the second interrelated component of the thesis. Grounded in the real-life context of a secondary school with a distinctive approach to teaching and learning, it involves an empirical investigation of the ways in which two teachers and a diverse group of Year 9 to Year 14 students understand and practice sustainability education. This component draws on the interpretive methods of interviewing and observation to afford an empathetic and multi-perspectival view of sustainability education in practice. The case does not strive to establish 'truth' but rather to be open to multiple truths, realities and meanings - in a manner that is consistent with the theories of social constructionism and interpretivism in particular.

It is suggested, through this study, that sustainability education cannot be confined to a stable conception or consistent framework, or approached through a programme of standardised levels and assessments. Representing a complex, multi-dimensional, dynamic and emergent concept, sustainability education may best be approached and sustained in a corresponding fashion, through multiple, critically-informed, and dialogically-linked points of entry.

Chapter 1: Introduction

The United Nations Decade of Education for Sustainable Development (2005-2014) provides an opportune time to consider how education with an environmental and sustainability focus is conceptualised in literature and the New Zealand curriculum, and the way it is interpreted in practice by teachers and students in the context of a New Zealand secondary school. Such is the purpose of this thesis.

In Aotearoa New Zealand, as in other countries, education with an environmental and/or sustainability focus is a contested and emergent field. Intended to address some of the most significant challenges of our times, 'sustainability education' - the umbrella term that is used in this thesis - is variously conceptualised, prioritised and practiced. This thesis explores and maps the complexity of the field from the macro- or global and international level to the micro- or local level using the reference points of theory, practice, and possibility. Chapter 1 introduces the research topic, circumstances, and rationale. Key questions are posed, and an outline of chapters is provided.

1.1. Background to the study

As a pre- and in-service teacher educator, my interest in education with an environmental and sustainability focus developed when I was invited to teach a social sciences course entitled 'Integrating Environmental Education across the Curriculum'. Developed by two colleagues in the late 1990s, this optional course for third-year students is based on the integrated approach to environmental education that is advanced in *Guidelines for Environmental Education in New Zealand Schools (Guidelines)* (Ministry of Education [MOE], 1999), a curriculum support document.

Contributing to my interest in environmental education (EE), sustainability and a sustainable future, sustainable development (SD), and education for sustainability (EfS), *Guidelines* goes beyond subject-based conceptions of curriculum to advance a more expansive view of curriculum and education and a more extended, connective and integrative perspective of education with environmental and/or sustainability foci. As environmental education was not mandatory in New Zealand schools until relatively recently (and some may argue that this remains the case), *Guidelines* lingered on the periphery of the national curriculum where, predictably, it has had an unremarkable level of influence on curriculum decision-making and practice (Bolstad, Cowie, & Eames, 2004).

Representing a range of perspectives and policies on the natural and built, social and cultural environment, and a commitment to The Treaty of Waitangi¹ and international environmental and sustainability agreements, *Guidelines* defines environmental education as “ ... a multi-disciplinary approach to learning that develops the knowledge, awareness, attitudes, values and skills that will enable individuals and the community to contribute towards maintaining and improving the quality of the environment” (MOE, 1999, p. 9). *Guidelines* advances an holistic view through its framework of interrelated concepts - interdependence, sustainability, biodiversity, and personal and social responsibility for action. Māori views of the world are integral, and visually or textually referenced throughout the document, one fifth of which is written in Te Reo Māori - the indigenous language

¹ *The Treaty of Waitangi* is the founding document of Aotearoa New Zealand. It is an agreement entered into by representatives of the Crown and of Māori iwi (tribes) and hapū (sub-tribes). It is named after the place in the Bay of Islands where the Treaty was first signed, on 6 February 1840 (New Zealand History Online: <http://www.nzhistory.net.nz/politics/treaty/treaty>).

of New Zealand. A relational approach is further supported through cross-disciplinary planning guides that integrate the dimensions of environmental education: education *in* the environment, education *about* the environment, and education *for* the environment² (MOE, 1999, pp. 11-14) and participatory, place- and action-based pedagogies.

Working with *Guidelines*, and with tertiary students who were keen to make sense of and address 21st century challenges, was a seminal experience. Developed during and in response to The United Nations Decade of Education for Sustainable Development (2005-2014) and The New Zealand Curriculum Project (2003-2010), this thesis represents another stage in that personal and professional journey.

Sustainability education is conceived to be problematic and potentially counter-hegemonic in this thesis. This is because some conceptions (for example, socially-critical, cross-disciplinary, and indigenous conceptions) represent a challenge to mainstream education. However, while the *quantity* of initiatives with an environmental and/or sustainability focus has grown, initiatives tend to be incorporated within and constrained by conventional structures, concerns and approaches (Bolstad, Cowie, & Eames, 2004). Robottom (1985) argues that *qualitative* change can be initiated if educators examine their own philosophical and theoretical assumptions, and create and communicate a 'complex perspective' of sustainability

² Environmental education involves the integration of three key dimensions: education *in* the environment involves experiences beyond the classroom in natural and built environments; education *about* the environment involves knowing about and understanding the environment and the social, political, ecological and economic influences on decision-making at local, national, and global levels, and; education *for* the environment is intrinsically linked to the affective aspects of EE, as it deals with people's emotions and willingness to make lifestyle choices that help maintain and improve the quality of the environment (Ministry of Education, 1999, p.14).

education by 'sharing experiences'. Formulated within a qualitative 'school of thought' (Tolich & Davidson, 1999, p. 25), this thesis responds to Robottom's argument. It also aims to respond to Delors' (1996) recommendation that "...education must simultaneously provide maps of a complex world in constant turmoil and the compass that will enable people to find their way in it" (p. 85).

1.2. Rationale and key questions

In Aotearoa New Zealand, the concepts of sustainability and education with an environmental and/or sustainability focus have acquired a presence in *The New Zealand Curriculum (NZC)* (MOE, 2007) since *Guidelines* was published in 1999. In contrast with the previous national framework and in keeping with international trends, the current curriculum features environment and sustainability-related concepts in the overview, vision, principles, values, key competencies and learning areas. Schools are now obliged to develop and implement programmes with these foci.

The NZC was developed during The United Nation's Decade of Education for Sustainable Development (2005-2014) (UNDESD) and distributed to schools at a time when news of a most damning report on climate change, *The Intergovernmental Panel on Climate Change [IPCC] Synthesis Report* (IPCC, 2007) was hitting the headlines. Designed to address social change and to be a statement of what is important for learners in the 21st century, a cursory reading of the NZC suggests that the education system is responding to the challenges of our times.

As curriculum conceptions and decision-making processes are notoriously complex and contested (Goodson, 1994; Marsh, 1997; McGee, 1997) and sustainability conceptions and decision-making processes are similarly problematic (Chapman,

2006; Fien & Tilbury, 2002; Gibson, Hassan, Holtz, James & Whitelaw, 2005), conceptions of sustainability education cannot be taken at face value. In the New Zealand education system, where a relatively permissive curriculum exists and some responsibility for developing curriculum courses and selecting materials lies with the classroom teacher (Abbiss, 2009), it is important that educators – education policy-makers, academics and researchers, teacher educators and teachers – are ‘situationally aware’ and able to recognise different curriculum orientations, and engage critically with the range of theories, practices, and possibilities that are associated with education with environmental and sustainability foci.

This multi-levelled investigation was conducted with the aforementioned concerns and recommendations in mind. The thesis comprises two components: a substantial review of situational factors that are giving rise to different conceptions of sustainability education and a multi-levelled analysis of conceptions in literature and in the New Zealand curriculum, and; a descriptive study of the ways in which two secondary school teachers, in a particular school context, and a small group of their students understand and practice sustainability education. The thesis addresses three key questions:

1. How is sustainability education conceptualised at the global/international national, and local levels, and in the New Zealand curriculum?
2. How is sustainability education conceptualised and practiced locally by teachers and their students in a New Zealand secondary school?
3. What are the implications of the findings regarding sustainability education, and the possibilities for practice?

1.3 Overview of the chapters

As suggested by the title: *Sustainability Education: Theory, Practice and Possibility*, this thesis operates on a number of interconnected and mutually-informing levels. It draws on debates in education and sustainability education, and on an investigation of sustainability education in practice. The key questions are addressed in different chapters, as indicated below:

- *Chapter 1: Introduction.*

This chapter identifies the research topic, circumstances, and rationale, and the key questions that drive the investigation. An overview of the thesis chapters is provided.

- *Chapter 2: Theories that contribute to the study.*

Pertaining to procedural and substantive aspects of the investigation, this chapter describes the contributing theories and their role in the thesis.

- *Chapter 3: Methodology.*

This chapter describes the methodology that orients the investigation. It covers the qualitative research design and methods, key sources of data and ethical considerations, data gathering strategies, and analytic and interpretive strategies.

- *Chapter 4: Sustainability education in theory: Conceptions in literature and the New Zealand curriculum*

Here a complex perspective of sustainability education is developed through a discussion of significant situational factors and a multi-levelled investigation of literature and curriculum that describes and aims to generate debate about sustainability education. Chapter 4 addresses key question 1.

- *Chapter 5: Sustainability education in practice. A descriptive case study.*

This chapter describes an empirical investigation of the ways in which two secondary school teachers and a small group of their students understand and practice sustainability education. It addresses key question 2.

- *Chapter 6: Discussion.*

This chapter addresses question 3. It works to draw the strands of the study together and to highlight the implications and possibilities for sustainability education.

1.4 Summary

In this chapter, the research topic, circumstances, rationale, and key questions have been outlined and key conceptions of sustainability education introduced. While environmental and sustainability concepts have an increased presence in the NZC (MOE, 2007), there are different ways of making sense of these concepts and of ascertaining their relevance to 21st century education. This multi-levelled investigation responds to the challenges presented by Robottom (1985) and Delors (1996) to go beyond superficial studies of curriculum and sustainability education; to examine the deeper ideological foundations of different conceptions of sustainability education, and the complexities of sustainability education in practice.

Chapter 2: Theories that contribute to the study

The theories that contribute to this investigation are introduced in this chapter. Pertaining to procedural and substantive aspects of the investigation and representing the "... logically-related assumptions that orient (the) thinking and research" (Bogdan & Biklen, 2007, p.24), social constructionism, interpretivism, critical theory, postmodernism, post-structuralism and curriculum theory are described in terms of their origins and key assumptions.

While McKenzie and Snipe (2006) warn that the use of different theories can lead to confusion and an ill-defined outcome, the use of multiple and complementary theories can also provide deep and complex understandings of social phenomena.

2.1 Social constructionism

Social constructionism provides a broad theoretical framework for this study. It supports the methodological assumptions, the research design, and my position as a researcher. A key premise of social constructionism³ is that "...reality is socially constructed and that the sociology of knowledge must analyse the process in which this occurs" (Berger & Luckmann, 1966, p.13).

As social constructionism has wide application, it is hard to find a precise definition for it. Burr (1995) identifies its basic assumptions as: a critical stance towards taken-

³ The term 'social constructionism' is often used interchangeably with that of 'social constructivism'. However, there is a difference between the terms. Constructivism emphasises the way individuals mentally construct the world of experience through cognitive processes, while constructionism is concerned with the nature and construction of knowledge: how it emerges and gains significance in society (Young & Colin, 2004).

for-granted knowledge; historical and cultural specificity, and; the belief that knowledge (which is sustained by social processes) and social action go together. Elaborating on a critical approach to taken-for-granted knowledge, Burr states:

“It invites us to be critical of the idea that our observations of the world unproblematically yield nature to us, to challenge the view that conventional knowledge is based upon objective , unbiased observations of the world” (p.3).

In considering the epistemological and ontological premises of social constructionism, Burr argues that knowledge is constructed between people during the course of their everyday lives, and that the concepts and categories we use to understand reality are cultural artefacts. In keeping with postmodern and post structural premises, the social constructionist view is that there is no underlying structure to be discovered:

“Explanations are to be found neither in the individual psyche nor in social structures, but in interactive processes that take place routinely between people” (pp.7- 8).

As social constructionism embraces multiple realities and multiple truths, and it emphasises processes over structures, this theory contrasts with the theory of essentialism - which defines observable phenomena or ‘reality’ in terms of their inherent, trans-cultural, and trans-historical essences.

Gergen (1985) advises that using the lens of social constructionism can expand the horizons of social enquiry, demystify the processes by which people come to describe, explain, or otherwise account for the world (including themselves) in

which they live, challenge practices that serve to sustain and support certain social patterns to the exclusion of others, and establish the principles and conditions for both dialogue and the practice of relational responsibility.

While Gergen (1985) and Burr (1995) promote the analytical, dialogical, and generative capacities of social constructionism, contrary views remain, which has led Burr to complain about the difficulty of gaining a stable perspective on the realism/anti-realism debate⁴ and Maze (2001) to take social constructionism to task for its failure to assert anything at all, given its emphasis on subjectivity and interpretation. Liebruks (2001) offers a way through this conundrum when he asserts that social constructionism is neither antithetical to realism nor epistemologically relative (as a theory), just methodologically so. Gergen (2001) explains this line of reasoning:

“Constructionism makes no claims to being a first philosophy, a foundation upon which a new world may be erected. There is no attempt to replace all traditions in the name of truth, ethical principle, political vision or any other universal creation. Rather, the hope is to augment and expand on existing resources in the service of planetary well-being. This point is closely related to another: there are no policies or pedagogies that cannot be understood through the lens of social constructionism ... all make a certain contribution to the sea of intelligibility. The central question is whether the implications of a specifically constructionist consciousness cannot open new avenues of departure” (p.10).

⁴ Realism asserts that an external world exists independently of our representations of it (Searle, 1995). Anti-realism repudiates this doctrine, arguing that since any such external world is inaccessible to us in both principle and practice then it need not be postulated or considered.

Based on the theoretical descriptions of Burr (1995) and Gergen (1985, 2001), the theory of social constructionism undergirds this thesis. Loosely aligning with it, the remaining contributing theories are now described.

2.2 Interpretivism

Interpretivism informs the case study component of this thesis through an empathetic interpretation of teacher and student understandings and practices, in relation to sustainability education. Originating in the empathetic tradition in the social sciences and the intellectual tradition of hermeneutics⁵ (Mertens, 2005), and regularly conflated with social constructionism in methodological literature, interpretivism emphasises the subjective and inter-subjective ‘lifeworld’ (Husserl, 1936; Habermas, 1981), the emic point-of-view, and the understandings of social actors (Robottom & Hart, 1993). When applied in educational research, it can relate to the philosophical premises (methodology) that ground and shape research, and/or to tools and techniques (methods) that are used to access or generate data within a broader mode of enquiry⁶, as applies here. In the case study, the interpretive methods of interviewing and observing afford an empathetic view of the “...value -based, multiple, holistic, competing, often conflicting realities of multiple stakeholders and participants” (Robottom & Hart, 1993, p.10).

⁵ Originating in the field of theology, hermeneutics represents the art, skill, or theory of understanding the significance of human actions, utterances, products and institutions (Bullock, Stallybrass, & Trombley, 1988; Martens, 2005).

⁶ In a methodological sense, interpretive methods can provide a way into the social and cultural practices of curriculum, or insights into the debates that have shaped education. In a technical sense, they can be used to make sense of qualitative data as one method among others in a wider mode of enquiry (Bogdan & Biklen, 2007).

The limitations of this mode of research are well documented. Lincoln (1995) asserts that its boundaries are 'ill-defined' and its standards 'fluid and emergent. Williams (2000) complains that interpretivism fails to produce generalisations. In response to these and other criticisms, Macdonald, Kirk, Metzler, Nigles, Schempp and Wright (2000) argue that the detail and effort involved can generate significant insights into particular events and perspectives that may not otherwise come to light, and Bogdan and Biklen (2007), Elliott and Lukes, (2008), and Guba and Lincoln (1994) are confident that rigorous standards can be maintained through internal (rather than external) validity, conceptual consistency and coherence, and transferability rather than generalisability. Given these justifications and the detailed guidelines that accompany them, an empathetic interpretive approach is adopted in the case study.

While interpretive research can provide an empathetic description, Robottom and Hart (1993) argue that this mode "... remains essentially conservative in terms of its imperative for social transformation when compared with the alternative paradigmatic orientation, critical theory" (p. 10). Given that sustainability education is characterised by controversy and change, critical theory has a place in this study.

2.3 Critical theory

Critical theory focuses on critiquing and changing society as a whole, rather than merely understanding or explaining it as interpretivism aims to. As such, it has a place in the literature review and final discussion. While it is not my intention to provide analyses of the literature from the perspective of a *particular* ideological position (such as feminism or Marxism), critical theory informs some of the more analytical arguments in the literature. In the case study, critical theory facilitates an interpretation of the counter-hegemonic perspectives of some participants. At a more

fundamental level, critical theory informs the concerns that underpin this thesis and my philosophy and practice as a researcher and as an educator.

In the social sciences, Critical/critical theory has both a narrow and a broad meaning. In its original, narrow sense (and when capitalised), it relates to a Marxist-derived perspective that was promoted before and after the second world war by a group of philosophers, sociologists, social psychologists and cultural critics in the Frankfurt Institute for Social Research⁷ (Stanford Encyclopedia of Philosophy, 2005). In the broader sense, as the term is applied here, critical theory (as distinguished by lower case letters) has been redefined as broadly emancipatory⁸. In this sense, critical theory represents a pluralistic field and eclectic mix of theoretical and political perspectives that are focused on human emancipation and transformative social change (Hayden & el Ojeili, 2006; Stanford Encyclopaedia of Philosophy, 2005).

Given its political pedigree and utopian agenda, critical theory is criticised for failing to live up to the Marxist ideal (Popper, 1974), for originating from authoritative communities of knowledge-makers (Gergen, 2001), and for being preoccupied with abstract issues and concerns (Kompridis, 2006). In spite of these criticisms, critical theory has the distinction of having supported a range of significant emancipatory or

⁷ The Frankfurt Institute set out to challenge the dominance of the empirical approach of the natural sciences and to question morality, religion, science, reason, and rationality from a variety of perspectives and disciplines simultaneously (Stanford Encyclopedia of Philosophy, 2005).

⁸ In the 20th century, Antonio Gramsci identified that subtle but pervasive forms of ideological control and manipulation (hegemony) perpetuate all repressive structures. Jürgen Habermas sought to advance the wider goals of human emancipation by emphasising the link between knowledge and ‘right action’. These theorists drew attention to the multiple sites of power and resistance that exist, and to socially-feasible and favourable alternatives that are being developed (Kuhling, 2004).

transformatory movements, including feminism, critical race theory, and post-colonial criticism, during the phases of its history (Ward, 1997).

In the education field, critical theory makes it possible to recognise and resist unjust systems and situations. Giroux (1988) sees the critical educator as one who can "... raise ambitions, desires, and real hope for those who wish to take seriously the issue of educational struggle and social justice" (p. 177) through the languages of 'critique and possibility'. Apple (2004) sees critical theory as indispensable to the expansion of knowledge, justice, and democracy. In this theorist's view, power is not confined to government or a specific class but diffused throughout the social sphere and so changes can be made through small but significant steps that link learning to the struggles and conflicts of everyday life:

"The continued development of a field – especially one as diverse as education - is often dependent on epistemological and conceptual 'breaks' in which previous traditions are disrupted, displaced, and regrouped" (2004, p. viii).

Viewed in this light, critical theory bears some resemblance to the theories of postmodernism and post-structuralism. Representing the fourth and fifth of the contributing theories, the 'post' theories make it possible to move from more incisive critical analyses, in and through the literature review, to nuanced and multi-perspectival representations of sustainability education in practice.

2.4 Postmodernism

Postmodernism contributes to this study by shedding multiple lights on an era that is characterised by dramatic changes in global politics, economics, and culture.

Postmodernism (or post-modernism) is an umbrella term that is used in different ways by different speakers. As such, the term defies definition. Originally applying to certain forms of art and architecture that emerged in the period after the modern era,⁹ the term now applies to a range of social and cultural changes in contemporary society (Ward, 1997).

While the modern and postmodern eras interact and overlap, they contrast in character. Taylor (2005) draws on the ideas of primary commentators in the field (for example, Derrida, 1976; Foucault, 1979; Lyotard; 1984; and Rorty, 1989) to provide an account of the conditions that bridge the 20th and 21st centuries. He describes the key conditions as:

- “The disintegration of colonial systems, historically ruled by imperial nation-states, and the subsequent dispersal of people, traditions, information and commodities at accelerated rates across geographical boundaries...
- The decline of industrial capitalism and the rise of a transnational, information-age economy...
- The rise of global media systems whose continuous operations collapse traditional boundaries of space and time (and)...important distinctions that traditionally have shaped modern cultural identities...

⁹ The modern era or movement: ‘The philosophy of this period is often defined in terms of its belief that progress in society could be brought about through the gradual perfection of humanity. The upside to it was an investment in universal human rights.... The down side ... is that, believing their own values should be universally applied, Enlightenment thinkers tended to see Europe as the most enlightened and advanced part of the world’ (Ward, 1997, p.9).

- The rise of new creative and artistic practices...that reject modernism's reliance on linearity, coherence, realism, and internal consciousness...
- Increasing suspicion and rejection of 'foundational' narratives that have authorized the dominant institutions of modern Western culture... (and)
- The erosion of traditional identities premised on stability and essence ..." (Taylor, 2005, pp.116-118).

Reflecting on the changes that have occurred in the postmodern era, Ward (1997) concludes that "...the map of cultural life has been redrawn (and) everything swims in the same social sea of signs, images and meanings" (pp. 30-31). What remains, observes Jencks (1995), is "... a liberating nihilism, a living with the here and now; a weariness and a playful irony" (cited in Ward, 1997, p. 25). Others regard the era in a less favourable light. Jameson (1984, 2004) argues, for example, that the 'perpetual present' of postmodernism represents an advanced stage of modernism - a break in intellectual refinement, the fragmentation of individual and social identities, historical and political unconsciousness, an extension of the neo-liberal economic world order, and the homogenisation and commodification of culture.

In considering the postmodern condition, Lyotard (1984) described the shift he detected the way that education and knowledge was being viewed and used:

"Knowledge is and will be produced in order to be sold, it is and will be consumed in order to be valorized in a new production. In both cases the goal is exchange. Knowledge ceases to be an end in itself, it loses its 'use-value' ...Knowledge in the form of an informational commodity indispensable to productive power is already, and will continue to be, a major – perhaps *the* major – stake in worldwide competition for power"(pp.4-5).

As contemporary changes are having both positive and negative effects (Leichenko, O'Brien, & Solecki, 2009), they have attracted the attention of the writers who are referred to in the literature review, for example, Sauve, Berryman and Brunelle (2007). Given that education and curriculum – and sustainability for that matter – are fundamentally concerned with the nature of knowledge, reality, and truth, it can be argued that there is an increased need for educators to approach conceptions or formulations of these significant notions with an 'attitude of incredulity' (Lyotard, 1979) or 'wonder and doubt'. As the theory of postmodernism is characterised by diverse, creative, and questioning perspectives on the contemporary era - it is useful to this thesis.

2.5 Post-structuralism

Complementing the theory of postmodernism is the anti-foundational theory of post-structuralism. This theory adds another quality to the study as it is less interested in the social and material conditions of the contemporary era, and more interested in the 'mysterious relationship' between "...language and materiality, world and word" (Nightingale & Cromby, 2002, p. 706) - as it is represented in contemporary commentary on curriculum, education, and sustainability for example.

Researchers drawing on the theory of post-structuralism do not attempt to reduce their findings to neat, over-simplified analyses of power (Foucault, 1980). Rather they aim to highlight (sometimes playfully or ironically) examples of ambivalence, absence, tension, conflict, resistance, and possibility that can be detected in what Schön (1987, p.6) calls 'zones of uncertainty' or "...indeterminate zones of practice (that) escape the canons of technical rationality." This is not to say that power is not generated in an unequal fashion through hegemonic structures and discourses (as

critical theorists point out), but to say that "...there is no outside to power; it is always, already everywhere" (Foucault, 1980, p.98). This means that the socially-discursive "...practices that systematically form the objects of which they speak" (Foucault, 1972, p.49) can be detected *and* subverted in everyday actions. Bertens (2001) describes post-structuralism as 'deeply subversive':

"Post-structuralism ... deconstructs all those binary oppositions that are central to Western culture. (It) exposes false hierarchies and artificial borders, unwarranted claims to knowledge, and illegitimate usurpations of power. Its focus is on fragmentation, on difference, and on absence, rather than on the sameness, unity, and presence that are so pervasive in the way we think of ourselves and the cultures we are part of" (p. 147).

In this thesis, the theory of post-structuralism illuminates the relationship between language and materiality. In approaching different conceptions of and discourses on curriculum and sustainability education, the following questions - posed by Ward (1997, p. 180) - serve as a locus for reflection: "Who is being allowed to speak in this representation, for whom, and to what end? Who 'hears' it and who is excluded from it?"

2.6 Curriculum theory

As conceptions of sustainability education are rooted in conceptions of curriculum, research into sustainability education has the potential to both inform and be informed by an understanding of curriculum theory (Robottom & Hart, 1993). Curriculum also constitutes the context of this investigation, which ranges from the global and international level, where major initiatives are championed, to the

operational levels of the national curriculum and a local secondary school. As such, curriculum theory is essential to this thesis.

As a theoretical field in its own right, curriculum provides a foundation for the profession of teaching (Carpenter, Dixon, Rata, & Rawlinson, 2001) and a context and laboratory of sorts for the disciplines of psychology, sociology, and philosophy. Expressing a social constructionist perspective, Goodson (1997) describes curriculum as "...a multi-faceted concept constructed, negotiated, and renegotiated at a variety of levels and in a variety of arenas." (p.1) and Pinar (2011) describes it as a 'complicated conversation' that is informed by academic knowledge and characterised by educational experience. Smith and Lovat (2003) view curriculum as the 'linchpin' between theory and action. Other conceptions that have the potential to shed light on the sustainability education, in terms of theory, practice, and possibility are now considered.

The following conceptions contribute to a more holistic view of the curriculum field and the forces that shape it. These partial or incomplete views¹⁰ also contribute to the development of a 'complex perspective' of sustainability education (Robottom, 1985). The conceptions are first explained in general terms, and then in terms of their relevance to the thesis.

A selection of 'curriculum visions'

Tanner and Tanner (1980) proffer a selection of distilled 'visions' or guiding philosophies for understanding curriculum. The 'conservative' vision is based on disciplines that are 'tried and true'; the 'progressive' vision promotes critical,

¹⁰ In this sense, the terms 'partial' and 'incomplete' do not imply criticism. Rather, they indicate that there is not, nor is there likely to be, a 'complete' or unbiased description.

constructive, and reconstructive approaches via scientific and democratic processes; the 'romantic' vision emphasises child-centred, naturalistic development in a non-authoritarian environment, and; the 'inner' vision supports an existential desire for self-development, self-fulfilment, and an understanding of the meaning of human existence. While they acknowledge that curriculum visions are seldom this pure, Tanner and Tanner emphasise the potency of vision statements, school tenets, values, and 'brands', and the axioms of the classroom. This conception contributes to an examination of the character and tenets of the case study school in this thesis.

Education for democracy and social reform

Rooted in respect for the rights of children and young people, democratic education is an educational ideal in which democracy is both a goal and a method of teaching and learning. John Dewey, an eminent 20th century educational reformer, was a principal contributor to democratic education. Dewey conceptualised people and communities as highly complex natural organisms, and he understood that knowledge arises from active human adaptation to the environment. In seeking to facilitate the process of adaptation and social reform, he sought to identify phenomena that aid or impede it. In the view that the dualisms¹¹ of the Western worldview represent one such impediment, he also sought to reconcile them through his work (Berding, 1997). With similar reconciliatory intentions, Dewey proposed that education needs to cultivate community, communication, intelligent inquiry, and a reconstructive attitude if it is to serve the citizens of an ever-evolving world (Garrison, 1999):

¹¹ For example, education/society, theory/practice, mind/body, science/morality, discipline/freedom, society/individual.

“A democracy is more than a form of government; it is primarily a mode of associated living, of conjoint communicated experience. The extension in space of the number of individuals who participate ... is equivalent to the breaking down of those barriers of class, race, and national territory which kept men from perceiving the full import of their activity” (Dewey, 1916, p. 101).

A democratic view of the educational process and purpose argues that children and young people are not the products of an education system, but rather valued participants in a vibrant learning community. An understanding of democratic education is relevant to the thesis as the case study school commits to a model of social and educational reform through the practice of democracy and choice.

Curriculum as ‘an object’ or ‘an action’

Grundy (1994) observes that curriculum is often viewed as either an ‘object’ (the syllabus view) or an ‘action’ (the pedagogical view). Grundy explains that the syllabus view emphasises the content or canon that is to be transmitted to the students and assumes that student abilities, needs, and interests can be externally-determined, standardised, and measured. Contrasting with this view, the action view emphasises the dynamic teaching and learning process, and considers it important that student abilities, needs and interests to be internally-determined. The ‘football’ metaphor likens the syllabus view to the object of a football, and the pedagogical view to the action of a football game. An understanding of this point of difference gives rise to the following questions: What can be achieved when teachers engage students in the socially-critical task of co-constructing curriculum? And, how can the relationship between school and community be developed to advance democratic participation and social justice? Grundy’s conception and these questions play a part in the case study interpretation and discussion.

A cyclical, dynamic, and interactive model of curriculum construction

McGee (1997) provides a comprehensive, multi-levelled, and integrative account of curriculum theory and development. He describes a number of influential models of curriculum development, including the 'objectives' model (Tyler, 1949), the 'interactive' model (Taba, 1962), the 'process' model (Hawes, 1979) and the 'cyclical' model (Nichols & Nichols, 1978). In response to these models, McGee develops a cyclical, dynamic, and interactive model of curriculum decision-making. Applicable at all levels of curriculum (national, school and classroom), McGee's model centres on teachers as 'key curriculum decision-makers'. McGee's text aims to strengthen the knowledge, status, and individual and collective agency of teachers applied to this thesis, McGee's cyclical, dynamic, and interactive model draws attention to the inter-relating levels of curriculum decision-making and the complex array of external and internal factors that influence the character of curriculum in all schools, including the case study school.

Critical conceptions of curriculum and curriculum development

In the 1970s, Habermas analysed the relationship between different knowledge interests, and different forms of social and cultural life. He explained that the technical interest works to extend human control over the natural world via the development of instrumental knowledge and skills that also prepare students to fit into the world as it is currently constructed. The practical interest works to develop social and self-understanding via a broad, liberal education and prepares students for a range of social roles and life experiences. And the emancipatory interest works to actively develop the principles of citizenship and community, social justice, and democratic participation in all approaches to life.

Habermas's (1981) analytical framework informs other educational analyses (for example, Smith and Lovat, 2003). As now described, it also informs an analysis of different political orientations towards education by Kemmis, Cole and Suggett (1994). Here the technical, practical and emancipatory interests align with the vocational, liberal/progressive, and socially-critical orientations. The 'vocational' orientation proposes that education should prepare individuals for work and for contributing in the future to the economic, technical, and scientific growth of society; the 'liberal/progressive' orientation proposes that education should prepare students for life (rather than just work) and for contributing, in the future, to the development of a stable, democratic society, and; the 'socially-critical' orientation proposes that students needs to be involved in society and its structures from the outset, rather than as preparation for involvement at a later time. In this thesis, Kemmis, Cole and Suggett's (1994) analysis supports an understanding of the political context of education, and the influence of respective governments on the orientation of curriculum. It also informs an interrogation of sustainability education, and it provides a framework from which it is possible to offer interpretations of political points of reference made by the participants and the case study school. Reproduced below, the frame is lightly trimmed, and realigned to correspond to a left-right political spectrum.

Table 1: Political orientations on curriculum

View of	Socially-Critical	Liberal-Progressive	Vocational/Neo-Classical
Knowledge	<p>Dialectical. Knowledge is an interplay of subjective views on the world and the historical and cultural frameworks in which they are located. It is constructed via social interaction, and is historically, culturally, politically and economically located.</p> <p>Knowledge has its greatest significance in social action for emancipatory purposes.</p> <p>Truth is investigated via discussion and critique.</p> <p>Mental and manual aspects are integrated through group work.</p>	<p>Subjective. Knowledge is a private matter, existing in individual accomplishments and in aspects that have meaning in the person’s life, context, and culture.</p> <p>Knowledge prepares an individual for life and it ultimately contributes to the development of a stable, democratic society.</p> <p>Practical, expressive and cultural aspects of knowledge are important for communication, deliberation, and refinement.</p> <p>Mental and manual aspects are integrated in individual work.</p>	<p>Objective. Knowledge is a public matter, existing in books and performances; mostly described in terms of information/ skills of relevance in occupational and disciplinary contexts.</p> <p>Knowledge prepares an individual for work. It is a commodity/purchasable property right. Value measured in economic and/or technical terms.</p> <p>Particular interest taken in technical, rational, scientific, managerial aspects of knowledge.</p> <p>Strong split between mental and manual aspects of knowledge.</p>
Curriculum	<p>Socially-constructed. Curriculum is arrived at through a process of critical reflection and social negotiation. Differentiation of subjects and time are arrived at in negotiation.</p> <p>Student selection is based on commitment.</p> <p>Curriculum aims to confront social injustices and engages students in collective social action.</p>	<p>Eclectic. Varying conceptions may vie within curriculum development/ document. Weak subject differentiation and timetabling.</p> <p>Student selection is based on interest and readiness.</p> <p>Curriculum aims to develop reflective thinking for social problem solving and to produce well-rounded, democratic citizens.</p>	<p>Curriculum is a tangible, de-contextualised product. Its construction and implementation are separate. Rigid, hierarchical subject differentiation and timetabling.</p> <p>Student selection is based on performance.</p> <p>Curriculum content is pre-selected and assumed neutral. Aims to ensure individuals gain mastery of disciplines and vocational knowledge and skills.</p>

<p>Teaching & learning</p>	<p>The teacher is a coordinator with an emancipatory aim; organises projects, and collaborative and critical activities in negotiation with the students and community, in many -to-many relationships.</p> <p>Social constructionist - interactionist models of learning.</p>	<p>The teacher is a mentor, facilitator, and leader with recognised knowledge and concern for student growth in a one-to-one relationship. Control yielded progressively.</p> <p>Constructivist-interactionist theories of learning.</p>	<p>The teacher an instrument (albeit specialised) within system; an authoritative transmitter of knowledge in a one -to- many relationship with students.</p> <p>Directive pedagogy, behaviourist learning theory, deficit models.</p>
<p>The student & desired student outcomes</p>	<p>Student is a co-learner, engaged in critical reflection and negotiation of curriculum and socially significant tasks.</p> <p>Follows a social-reconstructionist model. Students are agents of change.</p> <p>The student becomes a critically conscious and socially responsible co-actor in life, work, and the community.</p>	<p>The student is on a journey, actively constructing knowledge, through various facilitated experiences, to discover and enquire.</p> <p>Follows a personal development and social cooperation model.</p> <p>Student becomes a self-actualised, educated person, who has learned how to learn and pursue the true and good.</p>	<p>The student is a vessel who receives transmitted knowledge who is tested on defined competencies. The competitive model prepares student for participation in a market environment.</p> <p>Follows a vocational model. The student is given knowledge and skills necessary for the work they are best suited for (manual, managerial, professional). Human capital thereby increased.</p>
<p>The school and community</p>	<p>Schools are in a relationship with and part of society.</p> <p>They are responsible for addressing issues, and active in community development.</p> <p>Parents participate in and negotiate programmes.</p> <p>Boundaries between school, community, spaces, subjects, and stakeholders blurred.</p>	<p>Schools in some level of partnership with their own community.</p> <p>Parents may be involved in school programmes.</p> <p>Schools are less-formally organised. Split between time and space, subject disciplines, departments, staff and students less rigid.</p>	<p>Schools in competition in '<i>laissez-faire</i>' environment.</p> <p>Parents and students are consumers.</p> <p>Schools 'manage' their own 'enterprise', establish business partnerships.</p> <p>Schools are structured hierarchically. Subjects, departments, staff, students, time and space are compartmentalised Formal classroom arrangement.</p>

Curriculum decision-making and curriculum change.	Teachers, administrators, students and the community are interdependent. Decision-making is participatory and procedures exist for it. Exercise of individual power constrained. Dialectic /collaborative model of curriculum change classroom, school, community and social and historical context). School and community-based.	Teachers as autonomous professionals. Decision-making is weakly hierarchical and weakly consultative - based on assumed commonality of interests within cultural framework. Active professional model of curriculum change; respecting autonomy of teachers. Teacher rather than school-based.	Teacher instruments within system; decisions taken at top of hierarchy; sharing of decision-making based on specialisation of functions within control structure. Deficit-model of curriculum change; bringing curricula up-to-date with new knowledge. Authority-based.
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Adapted from: Kemmis, Cole and Suggett, 1994 (In Hatton, 1994, pp. 131-135).

Kemmis, Cole and Suggett (1994) make it apparent that education and politics are deeply and inextricably entwined, and that politics has an influence on curriculum decision-making from the macro- or international level to the micro- or classroom level. While the orientations appear ideologically-distinct in this framework, the authors point out that they are less so in practice.

The 'dancing' postmodern curriculum

In the postmodern era of dramatic change, is necessary to have an appreciation of the distinctive character and potential of a form of curriculum that reflects the conditions of the era. Doll (1993) is helpful in this respect. He explains that the thinking approaches of the modern era - which were largely linear, uniform, measured and determined - are being replaced by postmodern 'organic' approaches that are characterised by interaction, transaction, disequilibrium and consequent equilibrium. Doll sees the postmodern curriculum as rich, recursive, relational, and rigorous. Reminiscent of Grundy's (1994) dynamic and co-constructed 'curriculum game', Doll's metaphor of a 'dancing curriculum' is underscored by 'self-

organisation, dissipative structures, ecological balance, punctuated evolution and complexity theory' (p. 12).

Slattery (2012), another commentator on the postmodern curriculum, emphasises the relationship between the postmodern curriculum and contemporary issues of social justice, compassion, and ecological sustainability. He explains:

“We must move from the modern paradigm from curriculum development in the disciplines to the postmodern paradigm of understanding curriculum in various contexts in order to move towards justice, compassion and ecological sustainability. In this sense, curriculum is always shifting perspectives and constantly reflecting new and liberating visions of learning and living. This is the postmodern hermeneutic of uncovering layers of meaning, deconstructing master narratives ...engendering poststructural sensibilities (and) affirming curriculum spaces...” (p. 293).

Harmonising with the 'choreographic' approach to the research design (Janesick, 2003) in this thesis (see the methodology chapter in this respect) the postmodern curriculum responds to the complexity of its milieu, and it features a range of perspectives and possibilities. As such, it is relevant to this thesis.

Indigenous perspectives contribute to a fuller picture of the multiple truths and multiple realities of the postmodern era. Some of these are explored now.

Māori conceptions of curriculum

Māori conceptions of curriculum are founded on Kaupapa Māori, or Māori aspirations, values, and principles. In a critique of Western paradigms of research and knowledge, Tuhiwai-Smith (1999) challenges traditional Western ways of

knowing and researching and calls for the 'decolonization' of methodologies. In the research context of Aotearoa New Zealand, an understanding of Māori conceptions makes it possible to recognise curriculum bias and alternative views of the past, present, and future. For this reason, Māori conceptions are integral to this study.

To understand the principles and processes that are advanced through Kaupapa Māori, it is useful to turn to *Te Whāriki: He Whāriki Mātauranga mō ngā Mokopuna o Aotearoa: The Early Childhood Curriculum (Te Whariki)* (MOE, 1996), the first national bicultural curriculum statement in Aotearoa New Zealand. Socio-culturally situated in the context of Aotearoa New Zealand, *Te Whāriki* is the outcome of a bicultural collaboration and extensive consultation in the early childhood sector (Scrivens, 2005). The cultural heritages of both partners to the Treaty of Waitangi are represented in the structure, text, and imagery of the document. Metaphorically, *Te Whāriki* represents a woven mat and 'point of solidarity' (Te One, 2003) for a diverse range of early childhood services. Supporting a relational conception of and approach to curriculum, the principles of whakamana/empowerment, kotahitanga/holistic development, whānau tangata/family and community, and ngā hononga/relationships are interwoven with five strands or essential areas of learning and development. The strands are mana atua/wellbeing, mana whenua/belonging, mana tangata/ contribution, mana reo/communication, and mana ao turoa/exploration (MOE, 1996, p.13).¹² Reedy (2003) explains that Kaupapa Māori is not a rejection of Pākehā knowledge and culture, but a culturally safe way to promote excellence in Māori culture.

Kaupapa Māori is central to a number of recent curriculum strategies. Two examples are *Ka Hikitia-Managing for Success: The Māori Education Strategy 2008-2012*

¹² Māori terms are not translations, but parallel concepts that have their own associations.

(MOE, 2008) and *Tātaiako: Cultural Competencies for Teachers of Māori Learners* (MOE, 2011). The first document aims to transform the education sector in ways that enable Māori to live and succeed as Māori. Drawing on the 'Māori potential approach'¹³ it focuses on the principles of identity, language and culture, and the teacher-learner relationship. Building on this strategy, the second strategy elaborates on the competencies that teachers need to develop in order to address the Kaupapa Māori principles of Wananga, which is defined as participating with learners and communities in robust dialogue for the benefit of Māori learner's achievement; Whanaungatanga, or actively engaging in respectful working relationships with Māori learners, parents, whānau, hapu, iwi, and the Māori community; Manaakitanga, or showing integrity, sincerity and respect towards Māori beliefs, language and culture; Tanagata whenuatanga, or affirming Māori learners as Māori by providing contexts for learning where the language, identity and culture of Māori learners and their whanāu is affirmed, and; Ako, or taking responsibility for their own learning and that of Māori learners (MOE, 2011, p.4). While the competencies are not formal standards or criteria, they relate to the Graduating Teacher Standards and Registered Teacher Criteria developed by the New Zealand Teacher's Council.

Considerations of culture, power, and self-determination are central to Māori conceptions of curriculum. While it is incorrect to assume that the conceptions above (or other Māori conceptions for that matter) represent an uncomplicated,

¹³ At the core of the 'Māori Potential Approach' is the belief that Māori are the key catalyst for achieving exceptional life quality for themselves, their whānau and their communities. This approach affirms that Māori have the capability, initiative and aspiration to make choices for themselves, in ways that support their cultural identity, while contributing to exceptional life quality (Te Puni Kōkiri, <http://www.tpk.govt.nz/en/about/mpa/>).

homogenous and unchanging worldview, they do reflect common principles and the ongoing relevance of the theory of Kaupapa Māori.

That Kaupapa Māori is represented in *Guidelines for Environmental Education in New Zealand Schools* (MOE, 1999) and signalled in *the New Zealand Curriculum* (MOE, 2007) is an additional reason to gain an understanding of Māori conceptions in this New Zealand-based study.

2.7 Summary

In Chapter 2, the contributing theories are introduced in terms of their origins and assumptions. As curriculum pertains to procedural and substantive aspects of the study, influential curriculum conceptions and their role in the research are described. Curriculum theories do not stand in isolation - they link to the contributing theories and give rise to educationally-relevant questions, issues, and modes of analysis. At times the links between theory and research are distinct. At other times, the contributing theories and conceptions provide a backdrop for the literature review and the case study: a way of recognising other perspectives, marginalised voices, and unforeseen possibilities.

Having theoretically positioned the study, it is time to clarify the consequential methodological choices. The contributing theories, and their assumptions, functions, methods, and analytical strategies are summarised in table form below. Table 2 links the theoretical and methodological chapters.

Table 2

An overview of the contributing theories: Assumptions, functions, methods and strategies

Theories	Assumptions	Functions	Methods and strategies
<p>Social constructionism (SC) focuses on the social processes of knowledge production that are external to the individual, and on socially-contingent variables, rather than naturally inherent qualities (Gergen, 2001)</p> <p><i>Interpretivism</i> builds on the empathetic and hermeneutic traditions in the social sciences. It is the study of social phenomena in their natural environment (Mertens, 2005).</p>	<p>Philosophical: SC proposes that reality, knowledge, truth and identity are dependent on discursive processes and on shifting ways of viewing and representing the world. It makes no claim to being a first philosophy (Gergen, 2001).</p> <p>Facts and values are inseparable. Interpretations cannot be understood without reference to discourses that give them meaning (Phillips & Hardy, 2002).</p>	<p>Methodological: Social constructionism permits epistemological diversity and dialogue between different social and research traditions (Gunzenhauser & Gerstl-Pepin, 2006).</p> <p>The SC researcher adopts a critical stance towards taken-for-granted knowledge, historical and cultural specificity, and the belief that knowledge – which is sustained by social processes – and social action go together (Burr, 1995).</p> <p>Interpretivism values, explores and interprets subjective and objective realities simultaneously and relationally. It portrays the complex world of ‘lived experience’ from the perspectives of those who live it (Nightingale & Cromby, 2002).</p>	<p>1. A review of conceptions of sustainability education in literature and the New Zealand curriculum. Drawing on the strategy of thematic analysis, this method responds to Question 1: <i>How is sustainability education conceptualised at the global/ international, national and local levels, and in the New Zealand curriculum?</i></p> <p>2. A descriptive case study of sustainability education in practice is developed through an empathetic, interpretive analysis of participant classroom observations and semi-structured interviews (Stake, 1995). Drawing on the literature review, the case study responds to Question 2: <i>How is sustainability education conceptualised and practiced locally by teachers and their students in a New Zealand secondary school?</i></p>
<p><i>critical theory (ct)</i> is critical of and determined to change social structures and discourses that encode, produce, and reproduce relations of power and domination (Habermas, 1972).</p>	<p>Reality is socially constructed. It comprises complex global and local systems and normative structures that can be exposed, challenged and transformed (Apple, 2004; Giroux, 1992; 2011)</p>	<p>ct examines discourses in relation to their historical roots and ties to social, political and economic systems and discourses (Apple, 2004). It advances emancipatory interests via critique, interaction, negotiation, participatory decision-making, collaboration, and ‘right’ social action (Kemmis, Cole & Suggett, 1994).</p>	<p>1. The review of conceptions of sustainability education in literature and the New Zealand curriculum draws on the contributing theories and critical frameworks. This mode responds to question 1 (above) and to question 3: <i>What are the implications of the findings regarding sustainability education and the possibilities for practice?</i></p>

<p>Postmodernism and post-structuralism: The post- theories challenge 'meta-theory' truths (often taken as given) that are represented in social processes and discourses. These theories attend to aspects of plurality, multiplicity, fragmentation and indeterminacy (Baggini, 2002).</p>	<p>There are no indubitable foundations for human knowledge. As inner and outer realities are unbounded, malleable multi-dimensional and inter-subjective, the postmodern subject has no rational way to evaluate a preference in relation to judgements of truth, morality, aesthetic experience or objectivity (Ward, 1997).</p>	<p>Categories of knowledge and truth are problematised. The researcher locates and discusses instances of ambivalence, tension, resistance, conflict, and possibility (Schon, 1995).</p> <p>The post-theories permit exchange between local and global, margin and centre, minority and majority (Ward, 1997).</p>	<p>1. The review of conceptions of sustainability education in literature and the New Zealand curriculum problematises key conceptions and highlights instances of ambivalence, tension, resistance, conflict, and possibility (Schon, 1995). This mode also responds to questions 1 and 3.</p> <p>2. A descriptive case study. Analyses attend to the role of discourse and difference in relation to educational processes, practices and outcomes. This mode also responds to Question 2.</p>
<p>Curriculum theory is the inter-disciplinary study of educational experience (Pinar, 2004).</p>	<p>Curriculum can be seen as a microcosm of society as a whole (Adams, Clark, Codd, O'Neill, Openshaw & Waitere-Ang, 2000). It cannot be separated the social/environmental contexts that give it meaning and purpose.</p> <p>Curriculum is complex, contextual, and contested. It can create constructive or conflicting realities for learners (Smith & Lovat, 2003).</p>	<p>Curriculum provides a knowledge foundation for teachers, who are key-curriculum decision-makers (McGee, 1997). It constitutes an important context for understanding, challenging, and reconceptualising the integrity of social structures (McCulloch, 1992).</p> <p>Research into sustainability education has the potential to both inform and be informed by an understanding of curriculum (Robottom & Hart, 1993).</p>	<p>1 & 2: The review and descriptive case study draw on different conceptions of curriculum. Representing different points-of-entry into the field, they support the analysis of conceptions of sustainability education in literature and the New Zealand curriculum. They also contribute to the development of a 'complex perspective' of sustainability education (Robottom, 1985).</p>

Chapter 3: Methodology

In the preceding chapter, the theories that represent the logically-related assumptions (Bogdan & Biklen, 2007) that inform this study are defined in broad ontological, epistemological and methodological terms and their contributions to the research are signalled. In this chapter, the qualitative methodology, research design and methods, sources of data, data gathering strategies, and analytic and interpretive strategies are introduced and justified. Chapter 3 provides an ethical and philosophical foundation for the literature review and the case study.

3.1 Qualitative methodology, research design, and methods

The complex and contested field of sustainability education lends itself to a qualitative investigation of conceptions and contexts as they are represented in literature, curriculum, and educational practice. As such, this multi-levelled investigation responds, first and foremost, to Robottom's (1985) call for educators to generate qualitative rather than quantitative change by examining the assumptions they hold and creating a 'complex perspective' of sustainability education. In view of this, a qualitative methodology orients the research. While this concept is difficult to define, Tolich and Davidson's (1999) overview of the qualitative/quantitative debate - a debate that is "essentially about *how* we can know things in the social world" (p. 24) - is as good a starting place as any it identifies the assumptions (principles of reasoning, key aims and concepts) that characterise and differentiate quantitative and qualitative methodologies:

“The traditional quantitative approach to research is premised on the idea that we can reduce the complexity of the social world to its component parts and deal with each of those parts in isolation. Implicit in this methodology is the assumption that such parts *behave the same in isolation as they do in the whole*. This is called a ‘reductionist’ approach because it *reduces* complex wholes to the particles that comprise them. ... In sharp contrast, the qualitative paradigm argues for the primacy of *relationships* over particles. It asserts that no problem can be understood or solved in isolation from its greater environment. This is most simply expressed in the belief that ‘the whole is more than the sum of parts’”(1999, p. 27 – original emphasis).

Natanson (1963) explains that a qualitative methodology represents “...a certain order of philosophical commitment” (p. 271). Thus conceived, a methodology represents a paradigm or school of thought, rather than the act of selecting useful methods, strategies, and systems of classification. However, it is still necessary to develop a workable plan or design for the research. This is the focus of the following sub-section.

Research design

In Neuman’s (2007) explanation of research design, the author employs a cyclic model that has seven key steps - choosing a topic, focusing the research question, designing the study, collecting the data, analysing the data, interpreting the data, and informing others. Neuman points out that this ‘neat model’ is oversimplified. In practice, the research process is more likely to be iterative, and it “... may flow in several directions before reaching an end” (p. 12).

Janesick (2003) emphasises the fluid but rigorous character of qualitative research by likening it to the process of choreography. The complexity of the field, opportunities for creative collaboration, and the demands of skilfully combining time-honoured procedures with innovation are emphasised through this metaphor. Janesick divides the choreographic/ research process into three stages: the warm up and preparation stage; the exploration and total workout stage, and the cool down, illumination and formulation stage. The stages are not discrete - they flow into one another, allowing movements to be revised and reworked.

During the first stage, the researcher makes important preliminary decisions about the study, the role of theory and his or her personal beliefs, the questions, the site, and the participants. Included here are decisions about access and agreements, the timeline, appropriate strategies, and the identification of appropriate informed consent and ethical procedures. During the second stage, decisions are made about time, the collection and analysis of data, obstacles and opportunities, and reassessment and refinement of the substantive focus. In the third and final stage, the researcher makes decisions about departing from the field, the final data analysis, the formulation of working models or theoretical discussions and the development and presentation of a compelling, authentic and meaningful statement (Janesick, 2003, pp. 46-79).

Janesick's description resembles the design of this study. The warm up and preparation stage lasted well over a year, as the initial research proposal, selection of supervisors, ethical clearance and other technical issues were negotiated. The main purpose was always clear - to investigate conceptions of

sustainability education in theory and practice - and their implications. However, given the complex, contested, and contextualised character of sustainability education, important decisions had to be made about the parameters of the study and its overall composition. Was the topic viable, and how could it best be addressed? What timeframe, methods and strategies would be suitable? Where would I find information relating to the substantive and procedural aspects of the study? And how could I extend my knowledge of and contribution to my professional field? These questions led to a prolonged period of reading, note-taking and reflection and to in-depth conversations with my supervisors and colleagues. It was agreed that the study would comprise two methods: a review of conceptions of sustainability education in literature and the New Zealand curriculum, and a case study of the ways in which two secondary school teachers and a small group of their students understand and practice sustainability education.

Drawing on leading authors in educational research (e.g.: Cohen, Manion, & Morrison, 2007; Davidson & Tolich, 2003; Denzin & Lincoln, 2003; Le Compte & Preissle, 2003; and Neuman, 2000)), important, ethically-based perspectives and intentions (or research assumptions) were confirmed at the outset, following Lincoln and Guba (1986). Refined during the process, the perspectives and intentions comprise:

- the intention of declaring a theoretical perspective
- the perspective that conceptions of reality, knowledge, and truth are socially constructed, inseparable from human culture, and open to interpretation and critique
- the intention of engaging in the field of study
- the intention of reviewing relevant literature

- the intention of examining social phenomena as they are occurring in a unique social setting
- the intention of developing ethical research procedures and a relationship of trust and reciprocity with the research participants
- the intention of accurately representing multiple perspectives
- the perspective that words and actions (my own, and those of the participants) are not neutral, and;
- the intention of employing theoretically and methodologically compatible strategies to gather and analyse data, and develop a richly-nuanced and coherent description of the case study.

The perspectives and intentions were established at the outset of the study to provide grounding and direction and enhance the integrity, reliability, accountability, and validity of the research process and outcomes. They represent a standard by which the credibility of the study can be assessed.

The exploration and total workout stage (Janesick, 2003) coincided with elements of the warm up stage. Data continued to be gathered for the review, using the process of document search and text analysis described later in this chapter. As this process was less dependent on the input others, I was able to fit it in and around my university teaching timetable and home-life. Building on a New Zealand-based review of national and international research literature on environmental education practices (Bolstad, Cowie, Eames, Baker, Keown, Edwards, Coll & Rogers, 2004), three objectives were established for the review, as discussed shortly. While the literature review provided a baseline for the study, it was hard to set limits and keep abreast of developments because the literature on education and sustainability education

crosses many disciplines and is ever-expanding. The search process and material expanded, until the information was sorted into levels - global/international, national, and local, and emergent categories - theoretical/analytical, political/economic, cultural and others, and confined to the literature review. This aspect was both challenging and stimulating, which has implications for anyone who is interested in exploring the literature on sustainability education.

Another important aspect of the workout stage was the case study. Extending over the period of a school year and involving two secondary teachers with an interest in sustainability education and a small group of their students, the case study comprised semi-structured interviews and participant observations. As indicated by Janesick (2003), arrangements and procedures that seemed straight-forward on paper were put to the test at this stage, as I immersed myself in the 'real world' of a school where the priorities of a visiting researcher are not paramount. Having discovered that "... real research is often messy, intensely frustrating and fundamentally non-linear" (Marshall & Rossman, 1991, p. 21), it became necessary, at times, to "...fly by the seat of (my) pants" (Davidson & Tolich, 2003, p.95), as described in the case study chapter.

During the cool down and illumination and formulation stage (Janesick, 2003), following my departure from the case study site, I worked through the lengthy processes of final data analysis, the formulation of working models and theoretical arguments, and the development and presentation of this thesis. Again, this was not a straight-forward process. The cool down stage was punctuated with episodes of emotional and intellectual uncertainty and a

degree of embarrassment given the time the process was taking. In balance, however, this stage also featured moments of engagement, discovery, and understanding. Hopefully these moments will be evident in the thesis. The outcomes of the final stage are the multiple analyses of the data, the presentation of participant perspectives, the theorising and tentative conclusions, and the submission of the thesis for examination. Representing decisions made before and during the research process, the design description sets the scene for a more restrained account of the qualitative methods, sources of data, data gathering strategies, and analytic and interpretive strategies that were used in the study.

Literature Review

Comprising a major component of the thesis, the first research method is the literature review, which corresponds to *Chapter 4: Sustainability education in theory: Conceptions in literature and in the New Zealand curriculum*. Integral to the overall enquiry and analysis of sustainability education, the literature review initially drew on a review of national and international research literature on environmental education practices conducted by (Bolstad, Cowie, Eames, Baker, Keown, Edwards, Coll & Rogers, 2004). It has three key objectives: (1) to take account of situational factors of current and ongoing global, national, and local relevance, including the climate change crisis and financial/economic crisis; (2) to collate and critique significant and influential conceptions of sustainability education that exist at the global/international level, and to identify examples in approaches and practices for the purposes of comparison; and (3) to collate and critique conceptions of sustainability education that exist at the national and local levels in Aotearoa New Zealand, and to identify some examples for the purposes of comparison. The literature review is designed to

address research question 1: *How is sustainability education conceptualised at the international level, national, and local levels, and in the New Zealand curriculum?*

Case study

The case study is described in Chapter 5: Sustainability education in practice: A case study. Grounded in qualitative research in the real-life context of a bounded, integrated system (Smith, 1979; Stake, 1995), this component of the thesis involves an empirical¹⁴ investigation of the ways in which two teachers and a small group of their students understand and practice sustainability education. Set in a secondary school with a distinctive approach to teaching and learning, the case study is bounded by the physical and philosophical dimensions of the school, and a convergence of events of social and educational significance. Drawing on the strategies of participant interviews and observations, the case study focuses on two teachers and a small group of students who were striving to make sense of phenomena that are “intricately wired to political, social, historical, and especially personal contexts” (Stake, 1995, p. 17). The case does not strive to establish ‘truth’ but rather to be open to multiple truths, realities and meanings - in a manner that is consistent with the theories of social constructionism and interpretivism in particular.

Designed to address research question 2: *How is sustainability education conceptualised and practiced locally by teachers and their students in a New Zealand secondary school?*, the case study was conducted during the phasing-in period

¹⁴ The case study is empirical in that it is field-oriented and it emphasises observables, including the observations by informants (Stake, 1995, p.47).

of *The New Zealand Curriculum* (Ministry of Education, 2007) and at a time when the National Certificate of Educational Achievement (NCEA), the official secondary school qualification in Aotearoa New Zealand, was the subject of debate. Choices relating to the setting, participants, and ethical matters, and matters of reliability and validity are described in the following sub-sections.

Choices relating to the setting, participants, and ethical matters

In considering the question: 'What can be learned from a single case?' (Stake, 2003, p.135), the case study was purposefully selected for its potential to provide a rich and intriguing context. Choices relating to the selection of the setting and participants were both premeditated and serendipitous, which means that aspects of the study evolved in unanticipated ways over time.

Previously outlined, and described in more detail in Chapter 5, the case study is bounded within a state funded, special character secondary school for students in Years 9 to 14. Situated in a busy urban area, 'Axon' High School¹⁵ claims to use the entire community as a learning resource, and its special character is based on individual, integrated, inquiry-based learning. As such, the case study can be described as 'unusual' rather than 'typical' (Bogdan & Biklen, 2007). While Bogdan and Biklen caution that 'unusual' cases '... leave the question of generalisability up in the air' (p. 67), lessons can be learned from this case, and possibilities for sustainability education identified.

The case study participants are two secondary school teachers who have an interest in sustainability education, and a group of interested Year 9-14

¹⁵ "Axon" is a pseudonym for the case study school. It was selected by the researcher.

students. Kari is a geography and social studies teacher and Paul is a social studies and outdoor education teacher. Initially a third teacher was also involved. James¹⁶ was approached as he had developed sustainability programmes contributed to the development of Education for Sustainability Achievement Standards for Level 2 and 3 NCEA. However, James took up another position in the early stages of the project, which posed a research challenge as he was my first participant, and preliminary negotiations were conducted with him in his role as a senior teacher. With James and Kari's support, Paul was brought on board, and the case went ahead as described in Chapter 5.

As research involving human participants needs to be conducted in accordance with ethical norms, and subject to ethical appraisal and approval (University of Canterbury, 2009), formal contact was made with the school early in the school year and the prospective adult, and student participants and their parents/guardians were given sufficient information to allow them to make an informed decision with regards to participation. The information letters to the teacher and student participants, and the declarations of informed-consent can be examined at the back of this thesis (see Appendices 1-5).

Carefully selected and clearly stated (Lofland & Lofland, 1995), the information/consent forms comprised: a clear description of the purpose of the research, what is involved, and the benefits of the study; a statement of the voluntary nature of participation and the opportunity to withdraw at any time

¹⁶ Pseudonyms were selected, for the purposes of anonymity, by the participants or the author.

without judgement or penalty; statements about confidentiality, anonymity, and potential risks/adverse effects; a description of the ethical complaints procedure and the contact details of persons involved in or overseeing the project (the researcher, the lead supervisor, and the chair of the University of Canterbury Ethics Committee), and; space for a name, signature and date (including parents/guardians where appropriate) (University of Canterbury, 2009).

As ethics is a *process* that involves ongoing reflection and review rather than a form-filling exercise, it was important to check that the participants understood what they were agreeing to. While the case study can be described as being low risk (University of Canterbury, 2009, p. 4), it was necessary to consider the rights and welfare of all participants - and those of the student participants in particular - to ensure that their needs and interests took precedence over my own. To this end, a tone of professional respect and trust was formed through clear, honest, and amicable lines of communication and negotiation; a flexible and empathetic research approach; unobtrusive classroom observations and comfortably-situated, semi-structured conversations on a topic of mutual interest, and; an understanding that the participants could withdraw from the procedure and/or amend their comments on receipt of written transcripts.

As the case study was designed to involve a group of Year 9 to Year 14 students, it was necessary to consider how to recruit and engage a small group of students. In this respect I took my cue from the Board of Trustees, the Principal, and the participating teachers at Axon who (over a period of several months) gave their permission for the research to go ahead; called for

interested volunteers; disseminated and collected the information/consent forms, and; allocated suitable spaces within the school and school timetable for two sixty minute group interviews. While it can, quite reasonably, be observed that this left insufficient time for establishing rapport or gaining in-depth commentary, it is important to point out that I am accustomed to engaging with young people¹⁷ in my work, and the students at Axon are accustomed to participating in mixed-level/gender groups. Also, the topic is low risk, there was little foreseeable risk of harm or discomfort and the threat to privacy and confidentiality was modest, as was the level of intrusiveness and disruption. As the interviews were recorded with the permission of the participants, a surprising amount of interesting data was gathered.

While research can be intimidating for participants, it can also be beneficial, as Renzetti and Lee, (1993). In this study, Kari remarked on the benefits of engaging in an in-depth conversation about sustainability education as this enabled her to reflect on and better articulate the principles underlying her practice. Individually, and collectively, the students also responded well to the opportunity to communicate their views and engage in a discussion about issues of concern to them.

Reliability and validity

Clear perspectives and intentions were established at the outset of the research for reasons of integrity, reliability, accountability, and validity¹⁸. This section elaborates on these matters.

¹⁷ Students of secondary school age (13-18) are also termed 'young people'.

¹⁸ The perspectives and intentions are listed in the section on Research Design.

While some critics question the trustworthiness of qualitative research, rigorous frameworks have been in existence for some time. Guba and Lincoln (1985) identify four criteria for a trustworthy qualitative study: (1) credibility; (2) transferability; (3) dependability, and; (4) confirmability (cited in Denzin & Lincoln, 1994, p. 508). In this study, Guba and Lincoln's (1985) criteria are addressed as follows:

1. The criterion of credibility means that the results of qualitative research are credible from the perspectives of the participants. While the participants did not review the results of this research, they were afforded an opportunity to read the interview transcripts and amend or withdraw their comments. This adds to the credibility of the study.
2. Transferability means that research results can be generalised or transferred to other contexts or settings. Given that the case study is 'unusual' rather than 'typical' (Bogdan & Biklen, 2007), generalisability is not one of the aims of the study. However, lessons may be learned from this descriptive case, and possibilities for sustainability education identified.
3. The criterion of dependability means that the research process is fully and frankly described, and changes, and their effects, are explained. This criterion is reflected in the description of the research process.
4. The criterion of confirmability indicates the degree to which the findings can be confirmed or corroborated by others. To address this criterion, a convincing description of social phenomena is developed, through a finely-grained analysis and empathetic interpretation.

Tolich and Davidson (1999) recommend that validity be strengthened by means of triangulation. This means that different methods are used to 'home in' on an event from different angles. The authors add "...if different source of information are saying the same things, the social researcher can have some more confidence that the findings are valid" (p. 34). Other views are offered by Altrichter, Feldman, Posch, and Somekh (2013) who argue that the triangulation of methods provides a more detailed and balanced picture of the situation, and Cohen and Manion (2000), who explain triangulation as an attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint.

Drawing on Tolich and Davidson's (1999) recommendation, two methods were employed to gather data for the case study, as explained. Rather than 'homing in' on 'an event' (ibid), these methods revealed a variety of perspectives and the "...daily struggle and the muddle of education" (Donald, 1985, p. 242). Such is the character of the qualitative research. The following sub-sections deal with the sources of data and the data gathering strategies.

3.2 Sources of data

The term 'data' relates to "...the rough material researchers collect from the world they are studying: data are the particulars that form the basis of analysis" (Bogdan & Biklen, 2007, p. 117). For this project, the sources were textual: existing texts, including *the New Zealand Curriculum* (Ministry of Education, 2007) and *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999), and; texts that were developed from interview transcripts and observational field-notes.

Existing texts

Bogdan and Biklen (2007) divide existing texts/documents into three key categories: personal documents (intimate diaries, personal letters and the like); popular culture documents (movies, advertisements, and other mass-consumed materials) and; official documents. Produced by institutions, such as government ministries and schools, official documents are intended for internal use or external dissemination. While official documents represent an important source of data, they should not be accepted without question:

“Schools and other organisations ... produce documents for specific kinds of consumption. Bureaucratic organizations have reputations for producing a profusion of written communications and files.... These materials have been viewed by many researchers as extremely subjective, representing the biases of the promoters ... (however, they are)... useful in understanding official perspectives on programs, the administrative structure, and other aspects of the organization” (Bogdan and Biklen, 2007, p. 137).

Two official curriculum documents were located and systematically analysed for the literature review using strategies that are described shortly. They are: *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999) and *The New Zealand Curriculum* (Ministry of Education, 2007). In addition to this, some relevant information was accessed through ‘Te Kete Ipurangi - the online knowledge basket’: A bilingual education portal of the New Zealand Ministry of Education. This source yielded official information on the *NZC*, education for sustainability, secondary teaching and learning, and the National Certificate of Educational Standards (NCEA). Another source of significance was the United Nations Educational, Scientific,

and Cultural Organization (UNESCO), which provided information about broader issues of global concern and the initiative of The United Nations Decade of Education for Sustainable Development (2005-2014). Representing popular culture, media sources provided background information about informal environmental programmes and public responses to them.

A proliferation of institutional documents was produced during the period of study. In keeping with these digital times, much of this material was disseminated electronically via the world-wide web and in the form of declarations and charters, conference proceedings, educational guidelines and recommendations, surveys and progress reports, statistical databases, curriculum documents, meeting records, and newsletters. Given this proliferation, it was hard to establish clear parameters for the literature search and review. This other issues are discussed in the following section.

Texts developed from the case study

Texts that were not already in existence were constructed, as the case study proceeded, in the form of participant observation and participant interview transcripts. With the permission of the University of Canterbury, the school principal and Board of Trustees, and the participants, secondary school sustainability education programmes were observed on four separate occasions over a six month period. On each occasion, detailed observations were developed and subsequently analysed. Complementary data were gathered via semi-structured interviews that were conducted with the participant teachers and students on four separate occasions over the same period. Written transcripts were developed from the recorded (with

permission) interviews and then collated and analysed. The data-gathering strategies are described below.

3.3 Data gathering strategies

Through an extensive document search, data were provided for the literature review, and through participant observations and semi-structured interviews, data were gathered for the case study. Aligning with the contributing theories, these strategies were intended to address the key research questions.

Document search

The literature search ensured that significant published documents were located. As noted, these include *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999) and *The New Zealand Curriculum* (Ministry of Education, 2007), which are analysed and discussed. The 2003 draft version of the *NZC*, pertinent submissions on the draft, Ministerial updates, public commentary, relevant research documents and publications with historical and contextual information provided background information.

While the literature search comprised three main phases: scoping and searching; reviewing and analysing; and synthesising and communicating, it was circular and emergent. A number of documents were located using library and internet searches. Data bases, bibliographies, and indexes, and my supervisors, colleagues, and the participants provided alternative possibilities. When reviewed, key names and dates, descriptions and other details were recorded in a reading log. In this way, I was able to track the process, relocate relevant pieces of information, ensure as much accuracy as possible, and

develop key concepts and terms for the purposes of further searching, analysis, synthesis, and communication. Questions that arose during this time were recorded for the same purposes. Where inconsistencies emerged, strategies like triangulation allowed me to cross-check information and make judgements. Material that was gathered in this way contributes largely to *Chapter 4: Sustainability education in theory: Conceptions in literature and in the New Zealand curriculum*.

Interviews

Interviews come in a range of styles. Some are pre-prepared and represent little more than an oral questionnaire; others represent unstructured conversations between a researcher and respondent, where the latter has as much sway over the course of the interview as the former. Semi-structured interviews fall between these two extremes. While the interviewer develops a set of guiding questions around a topic of mutual interest, the interview style is intentionally open, flexible, iterative, reciprocal, and reflexive (Tolich & Davidson, 1999).

Given the theoretical premises and research questions described, semi-structured interviews represented the most appropriate way of gathering data. Kvale (1996) advises that a qualitative interview represents "... a construction site of knowledge. An interview is literally an inter-view – an interchange of views between two persons conversing about a theme of mutual interest" (p.2). Neuman (2000) states that the process involves building trust; asking questions; sharing experiences; listening; expressing interest; seeking further information, and; recording what was said. The idea that an interview

represents a 'construction' (Kvale, 1996) or 'joint production' (Neuman, 2000) complies with the theory of social constructionism, which underpin this thesis.

The interview process followed a series of seven steps which were established in advance, and recorded in a research journal to guide the process: (1) a series of broad, open-ended questions were developed - based on the concepts relating to sustainability education. The staff and student question guides are provided in Appendices 6 and 7 of this volume; (2) the format and interview questions were forwarded to the consenting participants for their approval and suggestions, prior to the interviews; (3) arrangements for the face-to-face interviews (time, location etcetera) were negotiated, by phone, with the adult participants; (4) the interviews were conducted and recorded, and transcribed shortly afterwards; (5) individual written transcripts were forwarded to the relevant adult participant for their endorsement; (6) they were subsequently analysed, using an iterative process and recognised strategies (identified below), and (7) on authorisation, the data were reported in this thesis (Kvale, 1996; Neuman, 2000). The approach to data analysis and interpretation is now described.

Observations

The strategy of participant observation was used during the case study. This non-numerical data gathering strategy relies on the researcher's capacity to experience, empathise, and interpret what is going on in the case study context. Contrasting with a non-participative approach where the researcher isolates him or herself from the observed group as a way of maintaining social distance and 'objectively' observing social phenomena, participant observations make it possible for the researcher to enter a social field and 'take

the part of the other' (Mead, 1933) in an empathetic manner. Schensul, Schensul, and Le Compte (1999,) define the approach as "...the process of learning through exposure to or involvement in the day-to-day or routine activities of participants in the researcher setting" (p. 91).

An advantage of participant observations is that they make it possible for the researcher to take a closer look at 'backstage culture' (DeMunk & Sobo, 1998, p.43). As such, they can contribute to the development of further research questions or hypotheses. A disadvantage is that participant observations tend to be small and time-consuming, and researchers can become too involved, thereby missing elements of data that might have been caught from non-participative approach (DeWalt & DeWalt, 2002). While these issues did not represent a challenge, in the case of this research, other challenges arose in relation to the observations. Involving the suitability of the classroom settings for the purposes of participant observation, and are discussed in the case study chapter.

For this project, four participant observations were carried out in two secondary classrooms over a six month period. Ethically-approved by the University of Canterbury and designed to address the question two, the observations comprised a description of the physical setting, portraits of the participants, some reconstructions of dialogue, accounts of particular events and activities, and an account of my own behaviour as an observer (Bogdan & Biklen, 2007, p. 121). It became apparent that the detail provided by this means had the potential to compromise the conditions agreed to in the declarations of consent (see Appendices 2 and 4). It was therefore necessary to omit and/or modify some of this information. These issues are elaborated on in Chapter 5.

3.4 Analytic and interpretive strategies

As identified, the data gathered consisted in textual form. This determined the strategies that were used to analyse and interpret them. Firstly, thematic analysis was used in relation to (a) the existing texts and (b) the texts that were developed from the case study interviews and observations. Secondly, differing interpretations were applied to some aspects of the data analyses through reference to theoretical frameworks (for example, 'Table 1: Political orientations on curriculum'). Proceeding under the assumption that the qualitative and quantitative approaches to textual analysis are commensurable under the same, general standards of empirical inquiry, this study employs a range of analytic and interpretive strategies.

Text analysis

The systematic analysis of the content of documents for thematic elements requires rigor, and it is necessary to attend to the matter of trustworthiness throughout the process. In this study, the qualitative strategy of thematic analysis was used to induce categories and themes from the textual data.

Thematic analysis

There are many ways of developing categories and inducing themes from data, including word-based techniques (word repetitions, indigenous categories, and key-words-in-context), which are an efficient way to start; the compare-and-contrast approach, which entails comparing data across people, space, and time, and drawing new meaning from the data (Glasser, 1965), and; the analysis of linguistic features, such as metaphors and analogies, forms of transition (topic shifts, interruptions, and changes in tone), and connectors

(which indicate relationships between things) (Ryan, 2003). Some were applied in this study, as detailed below.

Falk and Blumenreich (2005) advise that data analysis and interpretation is an ongoing process that begins when you start gathering data. This was my experience. In terms of the existing texts, it was appropriate to begin the analytical process by identifying and highlighting word repetitions and indigenous categories in *the New Zealand Curriculum* (Ministry of Education, 2007) and *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999). Metaphors and analogies were also identified. Following this, the strategy of comparing and contrasting was employed. This made it possible to build on first impressions, compare and categorise and re-categorise data, and develop linkages and relationships (Le Compte & Priessle, 1993). Throughout this analytical process, key words (repetitions, indigenous categories, and metaphors and analogies) were recorded in a research journal/reading log.¹⁹

For the case study texts, much the same process was followed. As the case study proceeded, individual transcripts (or data-sets) were word processed and then scanned for word repetitions, concepts, and ideas that had the potential to transcend and unify particular data and findings into coherent patterns (Bogdan & Biklen, 2007). These were noted, by hand, in the margins

¹⁹ As previously noted, key points were recorded in a research journal/reading log. Here I documented my thinking; developed codes and categories, and; noted possible links and relationships. I also documented the research aims and time frame; a record of definitions, references, library searches and inter-loan requests; important contact details and arrangements, and; the recommendations of my supervisors.

of the transcripts retained. Referred to as 'formative analysis' this ongoing process helped me to manage and organise a considerable amount of data; to recognise misunderstandings and omissions and; to increase my understanding of both the procedural and the substantive aspects of research. The subsequent phase of comparing and contrasting data across data sources and sets was harder to achieve because the data sets were distinctive. Furthermore, it was hard to separate units of meaning from individual transcripts because words and sentences have greater meaning within the larger text. I addressed this challenge by coding the data and comparing and contrasting comparable segments, in an iterative fashion. In this way I was able to build on earlier impressions and recognise conceptual links and relationships within and across the data sets (Le Compte & Priessle, 1993).

Theoretical frameworks

As described in Chapter 2, the contributing theories provide different points of entry into the field of investigation, and useful questions and frameworks. In the analysis of data, the following were applied, when appropriate: Ward's (1997, p. 180) questions about voice representation; Tanner and Tanner's curriculum 'visions' as per the character and tenets of the case study school; political orientations to curriculum (Kemmis, Cole and Suggett, 1994), as expressed in and through curriculum documents, educational approaches, and participant positions, and; indigenous/Māori categories (concepts and/or terminology) that relate to education/curriculum and sustainability education.

3.5 Summary

In this chapter it is reasoned that the complex and contested field of sustainability education lends itself to a qualitative investigation of

conceptions and contexts as they are represented in literature, curriculum, and educational practice (Robottom, 1985). Having established the methodological rationale and ethical principles for the study, the sources of data, data gathering strategies, and analytic and interpretive strategies were introduced and justified, as a foundation for the literature review and the case study.

Chapter 4: Sustainability education in theory: conceptions in literature and the New Zealand curriculum

In this chapter a 'complex perspective' of sustainability education (Robottom, 1985) is developed through a discussion of critical situational factors and a multi-levelled review of literature that explores the way sustainability education is conceptualized in literature and the New Zealand curriculum.

The literature review was conducted throughout the period of study as a combination of external factors continued to impact on the status and character of sustainability education and the pertinence of this investigation. In seeking to account for this and develop a judicious and more expansive view of sustainability education, the review examines conceptions of sustainability education that range from the global and international (macro) level to the national (meso) and local (micro) levels. The inter-relating levels provide a way of surveying and mapping this complex field.

The review is designed to address the key question: *How is sustainability education conceptualised at the global/international, national, and local levels, and in the New Zealand curriculum?* Integral to the enquiry and analysis, the review has three main objectives: (1) to provide an overview of critical, external factors that are impacting on the lives of children and young people and the character of education; (2) to collate and critique important and influential conceptions of sustainability education that exist and/or operate at the global/international level; and (3) to collate and critique conceptions of sustainability education that exist and/or operate at the national and local levels in Aotearoa New Zealand.

4.1 An overview of situational factors

In this section of the literature review, evidence in literature of intersecting social and environmental crises is examined. Responses to the crises, as they are expressed in literature, are also examined. These range from the Reports of the Intergovernmental Panel on Climate Change (IPCC), to *the New Zealand Curriculum* (Ministry of Education, 2007), which is positioned as a response 'to the challenges of our times' (p. 4).

The thesis was developed during and in response to an intense period of social and environmental change that shows no signs of abating. Intersecting global, national and local contexts, climate change and the worldwide economic downturn are generating widespread concern and impacting on the lives of children and young people in the 21st century. Reflecting on this, situation, Hicks (2007) asks "How can and should education respond to world events in the early twenty first century?" (p.3). Recognised for his work in global and futures studies and sustainable schools, Hicks (2007) says we cannot fully understand our lives in our own communities unless we position them within the wider global context:

"Every global issue has a local impact, though its form may vary from place to place – local and global have become two sides of the same coin. Education thus has a role to play in helping create citizens who can think and act globally as well as locally. This is no easy task for at heart it is about how we help young people understand their interconnections with others and ... make sense of the human condition... Not to do so would be an educational crime for the result is to disempower pupils ... rather than empower them to take part in responsible action for change (Hicks, 2007, p. 4).

The New Zealand Curriculum (MOE, 2007) is designed to address social complexity and to be a statement of what is most important for learners in the 21st century. It offers an enlarged and futures-focused perspective in the vision and principles of the document, and in the foreword where it states “Our system must respond to (the) challenges of our times” (p. 4). While it is difficult to comprehend the challenges of our times,²⁰ Hayward (2012) argues that education must try to respond to the complex interactions that are taking place in the environments their students inhabit, if it is to remain relevant. In response, the following paragraphs consider evidence about crises that are impacting on the context and purpose of education, and the character of sustainability education.

In the world our children and young people inhabit, social tensions and global conflict are being exacerbated by shortages of food, freshwater and energy (Oxfam, 2009) and over one third of the world’s rapidly growing population is living in poverty (UN, 2011). Pollution and environment-related health problems are on the rise, as are deforestation, soil loss, habitat destruction and species extinction (Flint, 2007). Adding to these well-documented concerns, recent international reports on climate change and the well-being and continued development of human society²¹ have led the ‘Club of Rome’²² to conclude:

²⁰ Refer, for example, to Flannery (2005), Gore (2006), Stern (2006) .

²¹ For example, the *2009 State of the World Report* (Worldwatch Institute, 2009), the *Intergovernmental Panel on Climate Change Fourth Assessment Report* (IPCC, 2007), *The Economics of Climate Change: The Stern Review* (Stern, 2006), and *From Conflict to Peace building – the Role of Natural Resources and the Environment* (UN Environment Programme, 2009).

²² Comprising an international group of professionals from various fields, the Club of Rome endeavours to raise awareness about the long-term consequences of global interdependence and

“The world has entered a period in which the scale, complexity and speed of change caused by human activities threaten the fragile environmental and ecological systems of the planet on which we depend” (2008, p. 1).

Assessing the impact of climate change is the task of the Inter-governmental Panel on Climate Change (IPCC). Developed by the United Nations Environment Programme (UNEP) and the World Meteorological Organization, the IPCC provides decision-makers with detailed analyses of climate change and its current and future global effects in four assessment reports (1990; 1995; 2001; 2007), which show that anthropogenic (human-caused) emissions are the main cause of climate change.²³ A fifth assessment report is due in 2014. The IPCC findings have a significant level of support. An analysis of the literature on global warming and climate change by Cook, Nuccitelli, Green, Richardson, Winkler, Painting, Way, Jacobs, and Skuce (2013) points to an overwhelming scientific consensus on anthropogenic global warming.

While climate change represents a challenge without precedent or parallel, the global level of response is also without precedent or parallel. Following the *Brundtland Report* (World Commission on Environment and Development

the need to apply systems-thinking to global issues. In *The Limits to Growth* (1972), the Club of Rome stressed the need to reconcile sustainable progress within environmental constraints (The Club of Rome, <http://www.clubofrome.org>).

²³ In advance of the 5th Report, IPCC co-chairman Chris Field argues that climate change appears to be accelerating even faster than predicted. He advises that higher temperatures may ignite tropical forests and melt the Arctic tundra, releasing billions of tons of greenhouse gas that could raise global temperatures in a vicious cycle that could spiral out of control by the end of the 21st century.

[WCED], 1987),²⁴ the 1992 Earth Summit in Rio de Janeiro, Brazil, established a process of international co-operation for development and environmental issues. At this seminal event, 179 nations including New Zealand signed the Agenda 21²⁵ agreement to promote sustainability by various means, including education.

In June 2012, twenty years after the first summit, 'the United Nations Conference for Sustainable Development' was held again in Rio de Janeiro. As the largest UN conference to date, 'Rio+20' aimed to redirect and renew global political commitment to the three dimensions of sustainable development: economic growth, social improvement, and environmental protection. In attendance were leaders from government, business and civil society, UN officials, academics, journalists, the general public and a 500-strong march of indigenous people.

While reports vary as to the aims and outcomes of the recent conference, and the priorities of participating and non-participating members,²⁶ 'mega' events of this kind are indicative of widespread concern for our common future. As a signatory to the *United Nations Framework Convention on Climate Change* (UNFCCC, 1992), the New Zealand Government agreed to develop and

²⁴ *Our Common Future* (WCED, 1987) placed environmental issues on the political agenda and conceptualised environment and development as a single issue.

²⁵ *Agenda 21* (United Nations Conference on Environment and Development [UNCED], 1992) is a non-binding, voluntarily implemented action plan on sustainable development. As an action agenda for the UN, multilateral organisations, and individual governments around the world it can be executed at local, national, and global levels.

²⁶ Some key leaders (e.g.: United States President Obama, German Prime Minister Merkel and United Kingdom Prime Minister Cameron) chose not attend because of economic crisis. Some saw this as a failure to prioritise sustainability issues.

implement national and regional programmes that contain "...measures to facilitate adequate adaptation to climate change" (Article 4.1 (b), UNFCCC). While some query the relevance and/or primacy of this commitment,²⁷ which may have contributed to the National Government's recent refusal to commit to the second commitment period (Ministry for the Environment [MFE], 2013),²⁸ a nation-wide study of the impact of climate change indicates that this country is already undergoing change. The authors warn:

"Despite remaining uncertainties about the *magnitude* of regional climate change, certainty is growing as to the *direction* of the changes over the coming century. The directions include: increasing temperatures over the whole country; increasing annual average rainfall in the west of the country and decreasing annual rainfall in Northland and many eastern areas; reduction in frosts; increasing risks of dry periods or droughts in some eastern areas; increasing frequency of heavy rainfall events, (and); rising sea level ... The robustness of these findings and the long-term and inexorable nature of climate changes means that councils and communities need to consider and plan for climate change" (Mullan, Wratt, Dean, Hollis, Allen, Williams & Kenny, 2008, p. 6. Emphasis in original).

Coinciding with the environmental crisis, deep fault-lines have appeared in the neoliberal economic structure that dominates the way most countries manage their economies, social policies, and international interactions. The

²⁷ To stabilise its leadership following the 2008 election, the government formed Confidence and Supply Agreements with the ACT (Association of Consumers and Tax payers) Party, contingent upon convening a Parliamentary Inquiry into the need for action on climate change.

²⁸ As an alternative, the National Government has expressed its commitment to a non-binding UNFCCC agreement to reduce greenhouse gas emission.

resulting global financial crisis peaked in 2008-2009 and involved a decline in international trade, falling commodity prices, volatility in the exchange-rate, reductions in foreign investment and aid, a slowdown of the growth of vulnerable economies, rising unemployment, and reductions in the availability of credit and public funding (International Monetary Fund, 2009). Drawn into the economic downturn, New Zealand suffered its worst recession in three decades - businesses and investment companies collapsed, unemployment rates rose, income levels fell, and negative economic growth resulted (Bollard, 2009; Ministry of Social Development, 2009). Newly-elected at the time, the National Government's response was to initiate a range of policies to support jobs, lift productivity and raise international competitiveness, and keep government debt under control (Key, 2009).

While New Zealand has (so far) escaped the extreme effects of the global financial crisis, the International Monetary Fund warns that the country remains vulnerable to financial and credit crises offshore (International Monetary Fund, 2012). Academic and critical commentator Kelsey (2012) explains that " ... our government, the economy, and ordinary households are in the thrall of the so-called FIRE economy – finance, insurance and real estate – that has been the principle source of wealth in the past three decades" (p.1). In *The Triumph of Failed Ideas*, Lehndorff (2012) warns that we are witnessing "... the resurrection of a neo-liberal 'there is no alternative approach'" (TINA)²⁹ (p. 159). As 'TINA' represents a return to free-market capitalism,

²⁹ 'There is no alternative' (TINA) is a slogan that was used by the British Prime Minister Margaret Thatcher. It suggests there is no alternative to economic liberalism that free markets, free trade and capitalist globalisation are the best way for modern societies to develop (Wikipedia, <http://en.wikipedia.org>).

privatisation, austerity packages and social disparity, it has met with widespread protest³⁰.

Human geographers Leichenko, O'Brien, and Solecki (2009) view the crises as further evidence that "...multiple global change processes are occurring both simultaneously and sequentially, creating either negative or positive outcomes for individuals, households, communities and social groups" (p.25).

Contributing to a growing sense of risk³¹ and uncertainty about the future, change processes are "...enhancing connections across space and time (and) weaving together the fates of ...people across the globe" (p.25).

4.2 Conceptions of sustainability education in literature

In this complex global situation, the concept of sustainability has acquired greater relevance and emerged as a principle of long-term endeavour in the rhetoric of governmental bodies and other influential organisations around the world (Gibson, Hassan, Holtz, James & Whitelaw, 2005).

Sustainability means different things to different people and in different situations, however: it is variously interpreted, and highly contested. The debate over 'weak sustainability' or 'strong sustainability'³² provides a point-

³⁰ The international 'Occupy Movement' is one example. Partly inspired by the Arab Spring, this protest movement commits to participatory democracy and the rectification of growing disparities in wealth (Occupy Together, <http://www.occupytogether.org>).

³¹ 'Risk society' describes the way modern society focuses on and responds to risk. It links to popular discourse regarding social and environmental concerns (Beck, 1992).

³² These terms/arguments are further divided into 'very strong sustainability' and 'very weak sustainability' in some typologies (e.g.: Ross & Bissix, 2000).

of-entry into the controversy. Weak sustainability' is based on an anthropocentric reality and the economic value principles of neoclassical capital theory, whereas strong sustainability' is based on an ecocentric reality and biophysical principles (Hediger, 2004). Strongly backed by western industrialised countries and dominant at this time, weak sustainability prioritises sustainable economic development and growth over social equity and environmental protection. It assigns a quantitative, monetary value to natural materials, services, and standards of living, and supports the development of technological solutions to sustainability issues. In contrast, 'strong sustainability' attributes holistic, and qualitative values to natural systems and ways of living and it supports ecological protection over economic growth on the basis that material well-being cannot substitute for ecological health (Ayres, van den Bergh & Gowdy, 2001).

While sustainability is variously defined and prioritised, Gibson, Hassan, Holtz, James & Whitelaw (2005) argue that its prominence represents a more extraordinary phenomenon than is commonly realised:

"However we may choose to define it, sustainability stands as a critique; it is a challenge to prevailing assumptions, institutions and practices. The concept of sustainability would spur no interest in a world generally confident that its current approaches will resolve looming problems and ensure a viable future. The appeal of sustainable alternatives may be as much hopeful as critical – offering a response to doubts about the validity of current trends while accommodating optimism about our ability to turn things around without much pain. But the notion quite clearly rests on rejection of things as they are. Its adoption by governments and other prevailing authorities, who are generally the embodiments of established

thinking and practice, is a remarkable, if implicit, admission of broad failure and the need for substantial change” (Gibson, Hassan, Holtz, James & Whitelaw, 2005, p. 38).

Sustainability is not a new idea, however. Gibson et al. (2005) describe it “...an old wisdom, perhaps *the* old wisdom” (p.39):

“For most people in most human communities since the dawn of time, the main earthly objective was to continue. And the core strategy was to stick with what worked, which meant maintaining the traditional practices that ensured viable relations with nature and other people and the realm of spirits, gods, or God” (ibid, p.40).

Significant differences between older and newer ideas of sustainability have been identified. By tracing the conceptual journey of sustainability, Cheney, Nheu and Vecellio (2004) learned that the original or literal meaning emphasises permanence or stability, while the term as commonly used today emphasises the threat of ecological harm. Gibson et al. (2005) learned that the ‘old wisdom’ focuses on the maintenance of practices that worked at local and customary levels, while new ideas are intent upon changing practices that don’t work at the global level.

The concept of sustainability - as vague and contested as it is - is central to the notion of ‘sustainable development’. This idea surfaced in the 1970s when the risks, side-effects, and costs of unlimited growth began to become more apparent, and confidence in the inevitability of material progress began to wane (Gibson et al., 2005). Commissioned by the UN to develop a ‘global

agenda for change', the World Commission on Environment and Development (WCED) produced a seminal report entitled *Our Common Future* (1987), also named 'The Brundtland Report' after its chair Gro Harlem Brundtland.³³ In this report 'sustainable development' was influentially defined as "...development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (p.8) and conceived as a process of change or common endeavour that requires international cooperation, decisive political action, vast campaigns of education, and debate and public participation. Here too the elements of environmental protection, economic growth, and social equity were globally and holistically conceived (pp. 2-6).

As the 'creative ambiguity' of the term sustainable development gives it wide relevance (Kates, Parris, & Leiserowitz, 2009), it became "...the closest thing to an overnight hit that is imaginable for a product of international diplomacy" (Gibson et al., 2005, p. 8). In seeking to further define and operationalise the new concept, a range of operational definitions, models, and indicators for assessing and reporting on sustainable development projects have been developed over the years. Many originate from and are designed to serve specific fields (business, indigenous, conservation, organisational and so on) and purposes. Examples include the 'triple bottom line' framework (Elkington, 1997), which was originally designed to broaden the business-basis of decision-making and evaluation by including social, environmental, and economic factors;³⁴ the

³³ The Brundtland Report and the work of the WCED laid the groundwork for the convening of the 1992 'Earth Summit' and the adoption of *Agenda 21* (UNCED, 1992), and to the establishment of The Commission on Sustainable Development.

³⁴ Criticisms of the 'Triple Bottom Line' framework are that it takes the economy as its primary point of focus and places the economic sphere outside the social sphere.

'quadruple bottom line', or 'four pillars' of sustainable development, which adds the element culture (cultural diversity, indigenous worldviews, heritage and so on); the 'egg of sustainability', which represents the relationship between people and ecosystems (International Union for the Conservation of Nature, 1994); the 'Pyramid Model' (AtKisson, 1996), which guides processes of analysis, decision-making, and action, and; the 'Amoeba Model' (AtKisson, 1991), which is based on the theory of diffusion or the scientific study of how cultural change occurs through the spread of ideas.

In spite (and because) of these attempts to define the new term in an operational sense, controversy grew. Ciegis (2004) understands that the debate reflects the 'dual nature' of sustainable development and Daly (1996) concludes that the 'initial vagueness' of the notion no longer serves as a basis for consensus, but as a breeding ground for disagreement.³⁵ Other commentators reasoned that there was no need to develop a common understanding of sustainable development, as Gibson, Hassan, Holtz, James and Whitelaw (2005) explain:

“...an unambiguous and clearly subversive concept would have received a much more limited welcome. And the lively debates and great diversity of applications have indeed promoted creative thinking and experimentation in a way that a firm specification would not have inspired” (p.39).

Educators Fien and Tilbury (2002) think that the ambiguity of this notion is confusing for teachers, and leading to delays in changes that are necessary for

³⁵ Some argue (for example, Kemp-Benedict, 2008) that this is because 'development' has already been defined or appropriated by powerful Western countries, with their own interests in mind.

a more sustainable society. This literature review addresses this concern by collating and critiquing important and influential conceptions of sustainability education that exist and/or operate at various levels. Thus structured, the review maps the complexity of the field, using the reference points of theory, practice and possibility. As such, it responds to Robottom's (1985) call for a more complex perspective of sustainability education and to Delors' (1996) recommendation that "...education must simultaneously provide maps of a complex world in constant turmoil and the compass that will enable people to find their way in it" (p. 85).

Conceptions at the global and international level

Conceptions of sustainability education that emerge from or are intended to operate at the global or international level are often designed to serve a broad and integrative function. As such, they are sometimes presented as metanarratives³⁶ or 'global truths' (van Dijk, 1977), even if they are not accepted as such. This understanding can be applied to the global project of 'sustainable development', as will be shown. Extending on the project of sustainable development, 'education for sustainable development' (ESD) was developed and promoted during the period of this investigation. As a catalysing force in the development of this thesis, ESD is a major focus of this thesis. The following lengthy discussion provides a base and point of comparison in regards to other conceptions of sustainability education.

³⁶ A metanarrative is a grand narrative or master idea (Lyotard, 1979).

Education for Sustainable Development

As characterised by the United Nations, 'education for sustainable development' supports the UN's mandate to foster co-operation in international law, international security, economic development, social progress, human rights, and the achievement of world peace (United Nations, 2013). As such, it has an integrative and far-reaching mission. While the concept first appeared in the 1980s, it gained political salience in 2002 when the UN General Assembly agreed to make ESD a focus for the decade 2005-2014. At the 2005 launch of the United Nations Decade of Education for Sustainable Development (UNDESD), the then Director-General of the United Nations Educational, Scientific and Cultural Organisation (UNESCO), Matsuura, explained that ESD supports a major shift in human perception, behaviour, and interaction:

"Education for sustainable development, of course, must be more than just a logo or a slogan. It must be a concrete reality for all of us – individuals, organizations, governments – in all of our daily decisions and actions, so as to promise a sustainable planet and a safer world to our children, our grandchildren and their descendants" (2006, p.3).

At the behest of the UN, UNESCO developed a comprehensive scheme for the Decade. The *International Implementation Scheme (IIS)* (UNESCO, 2005) is based on the commitments nations have made to its objectives. It comprises a broad framework of goals that have application to a wide range of social, cultural, political, economic, and environmental contexts and endeavours. Here the central notion of 'sustainable development' is broadly conceived as "... a way of articulating the overall social project and aim of development, alongside other over- arching concepts such as peace and human rights and economic viability"

(p.9). Here too it is stated that progress towards sustainability goals like environmental stewardship; the eradication of poverty, intergenerational equity, participatory learning; the building of capacity for community-based decision-making and action, and; the development of just and peaceable societies cannot be made unless education aligns with the principles and values of ESD.

While the *IIS* stipulates that no *one* model of ESD has or should be mandated (which suggests the opportunity for context- and needs-based initiatives) it is exact about the 'essential characteristics' of ESD. ESD must, for example: address the well-being of all three realms of sustainability – environment, society, and economy; be founded on principles and values that underlie sustainable development; be based on local needs, perceptions and conditions, but acknowledge that local needs have international effects and consequences; build civil capacity for community-based decision-making, social tolerance, environmental stewardship, adaptable workforce and quality of life; be interdisciplinary and use a variety of pedagogical techniques that promote participatory learning and higher-order thinking skills (2005, pp. 30-31).³⁷ A key role is conferred on teachers in the scheme.³⁸

While it is not easy to characterise the different responses to ESD and the UNDESD, they appear to originate from and contribute to identifiable domains and 'communities of discourse' (Hewings & Hewings, 2005) or groups of people who share particular registers and kinds of text, and are categorised accordingly.

³⁷ A full list of characteristics is in UNESCO's (2005) Implementation Scheme.

³⁸ In the Scheme and comparable reports (e.g.: *Our Common Future* (WCED, 1987) and *Agenda 21*(UNESCO, 1992)), the agency of teachers - their obligations, authority and autonomy (Archer, 1995) - is not restricted to individual sites of practice. Teachers are encouraged to actively engage in broader social structures and issues.

'Theoretical and analytical' responses are based on established theories/methodologies and methods of analysis and usually seek to determine the origins and orientation of ESD and its wider social, environmental, and educational implications. 'Political and economic' responses are based on and usually seek to extend associated modes of political and economic thought. 'Cultural' responses represent 'common-sense' (both tacit and lay) ways of knowing and living in the world, such as indigenous and local understandings accumulated over generations of living in a particular environment. As broad exploratory concepts, these categories overlap³⁹ and inform each other in complicated and significant ways that provide opportunities for further research.

Theoretical and analytical responses to ESD

While there is variation in the theoretical and analytical category, it is characterised by rigorous interrogation, debate, and critique. Largely comprising academics, researchers, and/or educators, this community of discourse contributes to the ESD debate by describing, interpreting, and critiquing the direction the discourse is taking and by identifying opportunities for communicative praxis (Tregida, Kearins & Milne, 2013), as the following examples show.

Pérez and Llorente (2005) are critical that the range and level of expectations that is invested in ESD/UNDESD has led to conceptual chaos, intercultural conflict, institutional ambiguity and methodological tension, as opposed to constructive

³⁹ In this sense, the ESD/UNDESD response fields bear some resemblance to the intersecting realms of sustainability (the environment, society, and the economy) as they are represented by the UN (See previous page).

dialogue and essential action. In their experience, the project has diluted and blurred the work of earlier pro-environment movements, and environmental education (EE). Pérez and Llorente blame the confusion on the central concept of sustainable development:

“The concept sustainable development (SD) has become a kind of *multi-purpose glue* that has brought environmentalists and real estate agents, entrepreneurs and conservationists, politicians and managers into contact...Perhaps those who have benefitted most from this situation are the defenders of neo-liberalism. The terms *development* can mean anything, depending on how we look at it or to what ends it is employed. Behind the docile appearance of semantic neutrality, we can see how its polysemous use permits diametrically opposed meanings that range from those who use it as economic growth per capita in terms of gross national product without worrying whether the economic growth exploits social and natural capital to produce more monetary capital, to those who define development as a synonym for rights and resources for the poor, and recommend prioritising the search for common good based on social and natural heritage” (Pérez and Llorente, 2005, p.298. Emphasis in original).

Sauvé, Berryman and Brunelle (2007) go beyond the problematic notion of sustainable development and examine the ideological orientation of the rhetoric of the United Nations. Using the methods of content and discourse analysis, these scholars examined more than thirty UN proposals⁴⁰ - representing a period of three decades - to see how their globalised

⁴⁰ Sauve, Berryman & Brunelle (2007) analysed the *Belgrade Charter* (UNESCO-UNEP), the *Tbilisi Declaration* (UNESCO-UNEP), *Agenda 21* (UN) *the International Implementation Scheme* for the UNDES (UNESCO) and other UN documents.

representations of education, environment, and development are socially constructed and represented. They state that the UN proposals reflect - most often in the sub-texts - an 'instrumental' view of education, a 'resourcist' 'conception of the environment, an 'economicist' view of development, and "... socio-cultural trends that characterise contemporary Western civilisation" (pp. 33-51).

"In our critical hermeneutic of three decades of United Nations texts advancing recommendations and guidelines for environment-related education, we read a troubling 'project of a world' ... a paradoxical project where, in somewhat emancipatory or liberatory language ... education is nonetheless reduced to an instrument for preparing 'human resources' to solve 'environmental problems' through a reformed notion of development mainly associated with sustained economic growth. The current 'Decade' for education for sustainable development now prioritises more of the same.... Educators must be aware of this phenomenon. The idea is to seize the best possibilities of this major institutional strategy ... while keeping a critical and reflexive distance towards its hyper-modern tendencieseducation is and must remain a space of liberty, a space where we can and need to critically explore the many dimensions of 'being humans on Earth'" (Sauvé, Berryman & Brunelle, 2007, p. 51).

While the UN contributes to a global conception of the planet and its concerns, the research of Sauvé, Berryman and Brunelle (2007) indicates that it is not free of the ideologies and norms that prevail in the wider social sphere. Concerns

about the normative⁴¹ character of the UN global schema or ‘project of the world’ (Sauvé et al., 2007) surface in other responses as well.

In an academic exchange, Jickling and Wals (2012) debate the merit and progress of ESD. Jickling is concerned about the ‘internationally propagated conversion’ of environmental education to education for sustainable development. He complains that ESD appears to present a value-free, single-conceptual meta-narrative that is constrained by the vague and problematic concept of sustainable development and shaped by the conventions of Neo-liberalism. Jickling is philosophically opposed to ‘education *for* anything’. In his view, it is necessary to create the educational conditions that allow for the ‘seemingly impossible’ (2012, p.3). As there are no obvious solutions to sustainability issues, Jickling reasons that we must prepare students to create them:

“we do not need ‘reliable servants of any ideology, even a basically good one’ and that we should, as artists do, ‘ask the imagination to move beyond its usual confines, to see the world in new ways’ (p. 24) This resonates with our ideas about education and seems a good way to tackle the ‘impossible’” (p.9).

In the same debate, Wals acknowledges that sustainable development is conceptually flawed and internally inconsistent and questions its ‘colonising instrumentality’. However, he disagrees with the suggestion that ESD is an intentionally-biased, political construction and describes it instead as an

⁴¹ In philosophy, *normative* statements affirm how things should be, how to value them, which are good or bad, right or wrong. These statements are usually contrasted with *descriptive* statements, which represent an attempt to describe or explain reality.

emerging concept that is open to a range of interpretations, activities, and actions. Wals agrees that ESD is open to powerful political influences and warns "...we need to be cautious as educators of ESD, or EE for that matter, of becoming a part of the neo-liberalist project" (p. 5).

Hicks (2007) explains that, to know where one stands on ESD, it is necessary to be familiar with the underlying ideological differences that relate to "...the meaning of sustainability and the... purposes of education" (p.2). He isolates four perspectives on sustainability: the 'technocentric' perspective, which considers human beings as more important than nature and technology as the answer to most problems; the 'ecocentric' perspective, which considers the protection of the biosphere to be as important as the fulfilment of human needs; the 'contrarian' perspective, which asserts a sceptical position on 'apocalyptic warnings' of ecological catastrophe, and; 'North vs South', which emphasises the contrasting perspectives of, and unequal relationship between, rich and poor countries.

Hicks (2007) also conducts an analysis of three ideologies, influencing education at this time. Dominating the Western reality, neoliberalism works to reduce the role of government and to increase the role of private business. Neoliberalism is based on economic rationality, so it attributes marketplace values to education and sustainability and promotes technocratic, managerial, growth- and performance-driven policies and practices. Neoconservatism is more pessimistic about human nature and seeks to protect time-honoured western traditions and the status quo. It combines aspects of traditional conservatism with a qualified endorsement of free markets, and applies top-down, regulatory approaches to the 'deficits' and 'problems' that are

understood to exist in education and sustainability. Radicalism is critical of the other ideologies, on the basis of their role in the current global situation. Comprising an ever-increasing range of informally-linked groups and concerns (relating to corporate-led globalisation, exploitative practices, environmental degradation, human rights issues and the like), Hicks reports that this 'movement' is largely in agreement that the educational and democratic purpose is to examine and debate these ideologies and their effects, and to stimulate the development of alternative, sustainable ways of understanding and living in the world.

Huckle (2012) is similarly concerned that the breadth and ambiguity of ESD make it hard for educators to see the tensions that are inherent in the notion. His interrogation of two lines of political and economic thought on ESD intentionally overlooks counter-discursive elements to focus on the main differences between the assumptions of 'reformists', who vouch for the greening of capitalism, and the assumptions of 'radicals', who vouch for the greening of socialism. Huckle argues that education should explore and critique contrasting perspectives, rather than any one perspective:

Berryman (1999) believes that the 'new prescription' of ESD serves interests other than those of pupils, teachers, and communities. He argues that it is wrong to consider schools to be the main source of innovation and adaptation. Drawing on the research of Dovey (1985), Orr (1994), Shepherd (1982) and Sobel (1995) who advocate (respectively) the physical, psychological, socio-cultural and environmental benefits of authentic, place-based experiences, Berryman concludes that ESD will have " ... perverse effects, with respect to child development and (the) preservation of diversity in people, cultures, places, practices and languages" (p.50).

Berryman's broad concerns resonate with those of Sullivan (2012), who claims that the diminishment of biological, linguistic, cultural and epistemological diversity can be largely attributed to neoliberal market and financial incursions into new socio-ecological spaces, and to the reconceptualisation of nature in monetary and tradeable terms. Sullivan cites the proliferation of online trading platforms and exchanges that are focused on environmental transactions such as the multi-billion dollar trade in carbon emissions, the recruitment of big business to conservation causes that are aligned to the agenda of 'green growth', and the growing discourse on 'payments for ecosystem services'. According to this author, the 'penetration of finance' into everyday life and into discourses of environmental conservation and sustainability is "... a key feature of contemporary capitalism" (p. 3).

These examples of theoretical and analytical responses tally in many respects. Notably, they identify a political/economic bias in the discourse, and the need for more informed critique and debate. This level of accord could signal partiality in the approach to this review. However, it is countered that researchers who approach ESD with 'an attitude of incredulity' (Lyotard, 1979) discover the notion problematic Individually and collectively, Pérez and Llorente (2005), Sauv , Berryman and Brunelle (2007), Jickling and Wals (2012), Hicks (2007), Huckle (2012), Berryman (1999), and Sullivan (2012) raise the level of debate about sustainability and sustainability education.

Political and economic responses to ESD

Political and economic responses to ESD contrast with theoretical and analytical responses in that they are not overtly (or transparently) theoretical

or analytical. As the expressions of non-governmental organisations, international institutions, political and economic ministries, central banks, and business corporations, Political/economic responses are based on and usually aim to extend established systems of political and economic thought. While differences are characteristic of the field, the slim body of political/economic commentary on ESD is characterised *at this time*⁴² by an assumption of political and theoretical authority. What this means is that the discourse on ESD (or concepts relating to it) operates as if previous consensus existed and there is little or no need to contextualise or problematise a political or economic response, or to open it to debate (Sauvé, Brunelle & Berryman's, 2005). As the following responses demonstrate, this community of discourse is not particularly active in the ESD debate. This said, it has a powerful influence on the reality in which ESD and other forms of sustainability education are interpreted.

While political/economic responses to ESD are few-and-far-between, the Organisation for Economic Co-operation and Development's (OECD) proposed framework for ESD warrants close scrutiny. Established in 1961, the OECD supports the development of policies that stimulate the economic progress of its 34 member industrialised-countries and the expansion of world trade on a multilateral, international basis. As such, this intergovernmental organisation wields considerable influence within and beyond the political/economic community of discourse. Recently, the organisation has also developed a strong interest in education. Unsurprisingly, its educational aims align with the economic purpose of the OECD. Lingard and Grek (2007) elaborate on this finding:

⁴² In a different political and economic climate, these tendencies could be reversed.

“While the OECD is basically concerned with economic policy, education has taken on increasing importance within the mandate, especially as it has been reframed as central to national economic competitiveness within an economic human capital framework and linked to an emerging knowledge economy. The OECD has been a central bearer of these ideas and central to the constitution of what Bourdieu (2003) calls the global economic field, a part of the new scalar politics associated with globalization. Through its educational policy work, especially in relation to indicators, we would argue, it has also been important to the construction of a global educational policy field” (pp. 1-2) ⁴³

Lingard and Grek (2007) are concerned that the ‘new sphere of international influence’ represents the constitution of new spaces of governance (scalar politics) that are associated with globalisation, a reduction in the power (cultural, democratic etcetera) of nation states - which is increasingly located in a ‘web of policy relations beyond national borders’ - and the framing of education to fit with OECD objectives. While this observation requires thorough examination, it is the OECD response to ESD that is of immediate (though not unrelated) interest here. In keeping with the previous observations however, the OECD’s response to ESD reflects its mission to achieve (for member countries at least) sustainable growth, rising standards of living,

⁴³ The ‘indicators’ referred to are those of the ‘Programme for International Student Assessment’ (PISA): an OECD-devised measure that compares the educational performances of member and other nations, and influences national policies and programmes of educational reform. In Lingard and Grek’s view, this development (which has support from UNESCO and the World Bank) represents “... the emergence of an as yet inchoate global educational policy field, paralleling a global economic field” (p.3).

financial stability, economic expansion and a growth in world trade (OECD, 1960).

This characterisation is evident in the 2008 publication the *OECD Work on Competencies for ESD* by Candice Stevens, an *economist* and former OECD Sustainable Development Adviser.⁴⁴ In this 3-page document, the ESD 'competencies' (knowledge, values, attitudes and skills) are adapted to fit the OECD Programme for International Student Assessment (PISA) framework: a worldwide study of 15-year-old school pupils' scholastic performance in mathematics, science, and reading that aims to improve education policies and outcomes. Stevens declares that the 'Proposed Curricula Approach' for ESD needs to follow sequential, age-related developmental stages that progress from "...giving students a solid understanding of basic economic, environmental and social concepts (primary level) to explaining interdisciplinary concepts and the need for integrated approaches (secondary level) to studying the state-of-the-art in sustainable development governance, measurement, assessments and practices (tertiary level)" (Stevens, 2008, p.3). In seeking to make ESD comply with an existing, standards-based frame, the multi-dimensional and emergent character of ESD is considerably reduced.

A search for updates on the OECD (2008) ESD competencies reveals little, which suggests that ESD - in terms of the primary and secondary sector at least - is of marginal interest to the OECD at this time. It is probable that the OECD does not consider ESD or any similarly-focused endeavour to be an educational priority at this time. Where the ESD concept *is* taken up, as in the

⁴⁴ Biographical details for Candice Stevens were accessed at the UN Research Institute for Sustainable Development (<http://www.unrisd.org/>).

3-page framework described, it is reduced to fit the OECD's existing, economically-based aims, frameworks, and comparative measures.

The OECD takes 'sustainable development' more seriously however, which has profound implications – for education, society, and the environment. In the policy discourse of the OECD, the popular new proxy concept of 'green growth'⁴⁵ occupies a prominent position (Jacobs, 2012). This shows that the OECD and its member countries are more interested in striking a balance between economic growth and considerations of social welfare and environmental protection than in reshaping the economy and society in ways that respect ecological limits and global justice (Huckle, 2012). While this suggests an extraordinary level of certainty, in regards to the best way to address social and environmental crises, and an extraordinary level of international accord, it masks the issues, uncertainties and differences that are evident at national and regional levels. To verify this point, it is helpful to consider another report by Sauvé, Brunelle and Berryman (2005). Here the authors compared the official documents of nineteen different OECD and non-OECD countries, covering the period 1970 to 2005, to see how education for sustainable development and environmental education are conceptualised. They recognise 'two points of a gradient': at one end are national proposals that are "...permeated with the dominant sustainable development 'paradigm'"; at the other, are national proposals that "...reinforce EE as an essential dimension of personal and social

⁴⁵ The *Green Growth Strategy* (OECD, 2011) grew out of the *Declaration on Green Growth* (OECD, 2009), which was signed by all OECD member countries. The former aims to drive economic development and address urgent challenges like climate change, environmental degradation and energy security (OECD, <http://www.oecd.org/greengrowth>).

contemporary education based on an explicit educational theoretical framework” (p. 272). They go on to say that “...these proposals include a vision of social development that is distinct from economic development; it insists on the importance of ethics, culture, context and participation” (p. 279). This report highlights the differences that exist in national-level conceptions, and it advises (in cautionary tones) of a significant shift over the period covered by the investigation, from a focus on EE to a focus on ESD.

In another report on international and national developments in SD/ESD that includes hyperlinks to relevant international and national documents and information, Huckle (2006) describes a range of government, business, non-governmental organisation, and university initiatives. While this report and the author’s more recent analysis of New Labour’s policy on ESD (2008) pertain to Europe and the United Kingdom, they have wider application in a globalised environment:

“Instrumental rationality means that such ESD is too ready to overlook the semantic, ethical and epistemological issues that lie at the heart of the sustainability debate; and too reluctant to examine the real causes of unsustainable development that lie within modern institutions and ideas...Values and principles have to be translated into political policies and programmes and learners should engage in analysis of the diverse meanings of sustainable development in the political arena. Such analysis contributes to their political literacy, and together with the social and moral responsibility fostered by sustainability as a frame of mind, advances their education as global citizens” (Huckle, 2006, p. 5).

In Aotearoa New Zealand, ESD is not well recognised and the United Nations Decade of Education for Sustainable Development [UNDESD] (2005-2014) seems to have passed (or *been* passed) under the political/economic radar. Launched in Auckland in March 2005, the Decade is co-managed by the National Commission for UNESCO and Sustainable Aotearoa New Zealand (SANZ). SANZ is a charitable trust of practitioners (non-governmental organisations, community groups and individuals, professional bodies, experts and representatives from industry) that promotes the goal of 'strong sustainability'⁴⁶ (rather than sustainable development *per se*) in its broad, multi-levelled, non-directive strategic plan (2009) for the UNDESD. Advising on the global situation, SANZ states that - even in our 'clean and green' branded country - the status quo is unsustainable. The trust calls for a major reassessment of the challenges we face, and a re-evaluation of the ethicality, viability, and pertinence of prevailing worldviews, systems, institutions, and lifestyles.

The UNDESD has had a minor role in Aotearoa New Zealand, in spite of the efforts of SANZ, which means that the opportunity to instigate a shift in human perception, behaviour, and interaction has not been realised. Given that the co-management of the Decade passed to a lesser-known (however competent) charitable trust, the role that formal education and teachers were to take in the Decade (UNESCO, 2005) has also been passed up. And while the

⁴⁶ As articulated by SANZ (2009), strong sustainability is the prerequisite and foundation of any form of human development and it requires the preservation of the integrity of all ecological systems in the biosphere. A strongly sustainable human society lives and develops as an integral part of ecosystems that have ecological integrity.

message of 'strong sustainability' co-exists with the OECD and government message of 'weak sustainability' or 'green growth,' it exists in a space of lesser influence. These findings support the findings of a report on the first year of UNDESD-related activity: *A Due Diligence Report on New Zealand's Educational Contribution to the UN Decade of Education for Sustainable Development* (Chapman, Flaws, & Le Heron, 2006), where it is observed that "...efforts have been minimal and the impacts negligible" (p.281). The authors continue:

"...the context in which UNDESD arrives should not be trivialized. New Zealand has struggled to embed educational pathways involving environmental or sustainability [sic]... if we do not understand the limits of our current educational frameworks then the decade will simply be a rhetorical farce" (pp. 290-291).

While the low level of response in the political/economic category signals a lack of political and economic enthusiasm for ESD, it does not equate to neutrality, or a lack of awareness or influence. Rather, as the literature reveals, politics and economics shape the context(s) in which ESD and similar projects are publically debated and institutionally prioritised – or *not*. And as the OECD example shows, this field also has an influence on the way that concepts relating to sustainability and education are perceived and implemented. A politically-narrow range of responses to ESD and increasing support for (or resignation to) neoliberal economics are also revealed in the review, which indicates that the 'there is no alternative' (TINA) response is deeply ingrained⁴⁷.

⁴⁷ For example, in its 'Budget 2009 Education Savings' programme, the National Government withdrew its support from 'discretionary programmes with an environmental

Cultural responses to ESD

Representing the third category of responses to ESD, cultural responses give expression to common-sense (both tacit and lay) ways of knowing and living in the world (or worldviews⁴⁸) and to indigenous and local understandings that are accumulated over generations of living in a particular environment. As ideas about culture are often linked to ideas about diversity, universal human rights, and fundamental freedoms (UN, 1948), this category relates to both the particular *and* the universal.

The *UNDESD International Implementation Scheme*, (UNESCO, 2005) includes one-off references to diversity, socio-cultural perspectives, indigenous, traditional and local knowledge and worldviews, locally relevant issues and priorities, multiple entry-points, inclusive and democratic strategies, communication and dialogue, partnerships and alliances, participatory citizenship, human dignity and human rights, equity, peace, and just ways. However, 'culture' - as a valued and comprehensive dimension - is lost in the layers of the *Scheme* and its three-sphere (environment, society, and economy) model of sustainable development.

education and education for sustainability focus' (MOE, 2009). More recently, it has "...joined several of the world's largest carbon-emitters, including the United States, China and India, in negotiating a replacement treaty to Kyoto" (Science Media Centre, <http://www.sciencemediacentre.co.nz>). Paradoxically, these withdrawals tend to be blamed on the collapse of the global economic system, and its financial impact in this country.

⁴⁸ A 'worldview' is the cultural frame of reference of a group or 'race' of people. Emanating from experience, it carries an understanding of the totality of existence, and, mores for living in the world. A worldview is largely unconsciously conceived, open to the influence of education, indoctrination, coercion, advertisement and the like, and unlikely to be the subject of systematic examination.

That this dimension can enhance SD and ESD is more expressed in recent policy documents⁴⁹.

In *Culture: Fourth Pillar of Sustainable Development* (2010), the United Cities and Local Governments Committee on Culture⁵⁰ explain that it is necessary to add the dimension of culture to the model of sustainable development:

“It is generally felt...that (the three) dimensions alone cannot possible reflect the complexity of current society. Many voices including UNESCO, the World Summit on Sustainable Development, and researchers, are calling for the inclusion of Culture in the sustainable development model, since culture ultimately shapes what we mean by development and determines how people act in the world” (the United Cities and Local Governments Committee on Culture, 2010, p.3).

Another example of a declaration that includes the dimension of culture is the recent Hangzhou Declaration, *Culture: Key to Sustainable Development* (Hangzhou International Congress, UNESCO, 2013), the dimension of culture is strengthened through explicit references to new, people, and place-based approaches; indigenous peoples and traditional knowledge; a source of

⁴⁹ The role of culture is accentuated in the UN General Assembly Resolutions N.65/1 (2010); N.65/166 (2011) and N.62/208 (2012) on ‘Culture and Development’ and in a number of other relevant declarations, statements, and normative instruments adopted at international, regional, and national levels (UNESCO, 2013).

⁵⁰ This United Cities and Local Governments Committee on Culture report builds on the *Universal Declaration of Cultural Diversity* (UNESCO, 2001) and *The Convention on the Diversity of Cultural Expressions* (UNESCO, 2005).

meaning, energy, and extraordinary power; creativity and innovation; knowledge capital; biological and cultural diversity; the safeguarding of cultural heritage; cultural landscapes; opportunities, capabilities, and resilience; diversity and choice; cultural/artistic activities and cultural literacy; inclusive, equitable societies; inclusive economic development; small to medium sized enterprises; green employment; urban historic environments, cross-cultural exchanges; democracy and freedom of expression; intercultural dialogue, and; confidence in the future.

Reflecting on the role of the cultural dimension in his introduction to Hawkes' (2001) book, *The Fourth Pillar of Sustainability: Culture's Essential Role in Public Planning* Yencken writes:

“Culture is one of those omnibus terms like democracy or environment which embraces many different usages employed by many different people for many different purposes. It thus defies precise definition. It can be seen to represent very many of the intangible aspects of our values, customs and patterns of life that are often ignored in government thinking and action. If the understanding or definition is a broad one, it represents profoundly important aspects of any society. There is therefore a critical need to reintroduce the notion of culture into the language of politicians and bureaucrats” (p. iii).

While considerations of culture can unsettle the status quo, Hawkes (2001) argues that culture is integral to democratic decision-making:

“A society's values are the basis upon which all else is built. These values and the ways they are expressed are a society's culture. The way a society

governs itself cannot be fully democratic without there being clear avenues for the expression of community values, and unless these expressions directly affect the directions society takes. These processes are culture at work. Cultural vitality is as essential to a healthy and sustainable society as social equity, environmental responsibility and economic viability... for public planning to be more effective, its methodology should include an integrated framework of cultural evaluation along similar lines to those being developed for social, environmental and economic impact assessment" (2001, p.8).

To understand how culture is represented in the categories already described, a re-reading of the political/economic and theoretical/analytical literature was undertaken. This revealed markedly different understandings of the role, character, and potential of culture, which has implications for ESD. In the political/economic category, a re-reading of the *OECD Work on Competencies for Sustainable Development* revealed that the 'proposed ESD subject approach' "...can be adapted by different countries to suit their own educational systems and culture" (Stevens, 2008, p.2). Apart from this single, singular, and rather tokenistic reference, culture is absorbed into the more homogenous 'social' category with its lean links to: 'participatory processes such as voting', 'measuring happiness and well-being', 'behavioural changes and values (tolerance, solidarity)', 'poverty reduction' and 'real life contexts' (pp. 2-3). As the proposed ESD framework may misrepresent the OECD's broader cultural perspective/s, concerns and priorities, a brief web-search using the search terms 'OECD + culture' was conducted. As detailed below,⁵¹ the accessed documents and/or projects portray culture in monetary, service, and tradeable terms.

⁵¹ A web-search using the terms 'OECD + culture' revealed (in this order):

In contrast, the theoretical/analytical responses to ESD convey a complex view of culture. Sauv , Berryman and Brunelle (2007) indicate that the UN discourse upholds "... socio-cultural trends that characterise contemporary Western civilisation" (p.51); P rez and Llorente (2005) assert that SD/ESD has given rise to 'intercultural conflict'; Berryman (1999) argues that ESD will have "...perverse effects, with respect to child development and (the) preservation of diversity in people, cultures, places, practices and languages" (p.50), and; Sullivan (2012) attributes the diminishment of forms of diversity to neoliberal incursions and the reconceptualisation of nature in monetary and tradeable terms. Thus while the theoretical/analytical responses originate from very different geographical locations, academic disciplines, and investigative and/or educational endeavours, they are characterised by complex conceptions of culture and the forces that shape it and are shaped by it.

Two anomalies emerge in relation to the political/economic and theoretical/analytical communities of discourse. The first is that the political domain has some responsibility for the processes of democracy, yet a re-

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- *The Project on the International Measurement of Culture* (OECD, 2006) is based on the principles that a: 'clear comprehensive framework is crucial to comparability; should coordinate not conflict with other international frameworks; (and) integrate a variety of aspects using multiple standards: industry/economic activity, occupation, product, government expenditures, consumer expenditures
 - *The OECD Local Economic and Employment Development Programme* (OECD, no date) includes three short paragraphs on 'culture and development' ("...culture has become an essential component in the quality of life, a source of tourist revenue and a "creativity lever" for new goods and services. The contribution of culture to employment can vary from 3 to 7 % or more...") (<http://www.oecd.org/cfe/leed/>)
 - *The Impact of Culture on Tourism* (OECD, 2009) focuses on 'increasing the attractiveness of destinations through cultural resources' (<http://www.oecd.org>).

reading of political/economic responses to ESD suggests that democratic practices are being eroded, via elements of this community of discourse. The second anomaly is that the theoretical/analytical community has some responsibility for generating debate and new ideas, but the complexity of the global situation and accompanying discourse can work against this. As an aside – the complexity of these matters is the oft-given justification for top-down and pragmatic decision-making practices. However, these anomalies suggest that it is necessary to open the debate on ESD (and similar concepts) to a wider and more diverse audience. Suggestions as to how this can be achieved may arise from the following perspectives of indigenous peoples.

While information on indigenous knowledge (IK) systems/worldviews on sustainable development exists, indigenous views of ESD are similarly hard to find, which suggests a mixed or muted response. To understand how this diverse but philosophically and historically-linked community might respond to ESD, it is necessary to draw inferences from SD-related information, which is a less-than-satisfactory but informative exercise. The following highlight important concerns, understandings, and possibilities.

In *Indigenous Knowledge, Cultural Values and Sustainable Development in Africa*, Apusigah (2008) argues that culture is a necessary dimension of sustainable development as it adds context and meaning to the other dimensions. She asks why culture has for so long been alienated from development, as this has alienated people from their roots. She also asks why it has become an object of 'gross manipulation' as in the use of dichotomous terms (high/low, refined/primitive, modern/traditional, First-/Third-world, North/South, East/West) that are associated with social, cultural and environmental denigration, degradation, and violence. Apusigah believes that the dynamic

relations indigenous peoples have with the environment have suffered during the era of modernisation and that there has been a diminishment in the educational ethic of care. To address this situation, Apusigah advocates 'endogenous development': "...the indigenization, localization, and humanization of development toward the effective integration of traditional and modern knowledge and values" (p.12):

" In an era of sweeping globalization with its devastating effects on humans and environment, a return to indigenous knowledge and cultural values offers enormous opportunities for mitigating sustainable change that is culturally appropriate and ecologically renewing"(p.1).

In *Western Science and Traditional Knowledge*, Mazzocchi (2006) considers the relationship between different approaches to sustainable development. He concludes that, in spite of their obvious variations, different forms of knowledge can learn from each other. Mazzocchi appreciates that the role of indigenous knowledge is coming to be recognised internationally.⁵² He explains:"...beyond its obvious benefits for the people who rely on this knowledge, it might provide humanity as a whole with new biological and ecological insights ... and be useful in conservation education as well as in development planning and environmental assessment" (p.4). While traditional systems of knowledge can be difficult to understand, from a western viewpoint, Mazzocchi advises that 'contemporary hermeneutics' and 'complex thinking'⁵³ are useful. In reasoning that "...the real world is too complex to be

⁵² Mazzocchi (2006) cites the UN *Convention on Biological Diversity*, article 8 (1992).

⁵³ 'Contemporary hermeneutics' is a branch of philosophy that is concerned with the theory of existential understanding and interpretation. 'Complex thinking' challenges the

compressed into static conceptualizations” (pp.10-11), Mazzocchi works to advance a renewed approach to intercultural dialogue that serves as a “...a tool for social cohabitation, as well as for discovering and enhancing knowledge” (p.10).

Indigenous and Western worldviews of sustainable development are compared in *Western and Māori Values for Sustainable Development* (2005) by Miller. While this analysis relates to the context of New Zealand, it highlights the conceptual relationship between western and indigenous knowledge systems. Miller identifies some ‘fundamental differences’ and ‘emerging similarities’ between the indigenous knowledge system of Mātauranga Māori,⁵⁴ and Western Science. Comparable notions are set side-by-side to facilitate understanding, comparison, and dialogue. Abridged below, Miller’s table of *differences* includes terms in te Reo Māori. Some understanding of these terms may be gained by referring to the context in which they occur, the corresponding concepts in English, or the provided explanations.

‘meta’ point-of-view. It seeks and analyses the dynamic web of relationships that exist among different perspectives (Mazzocchi (2006).

⁵⁴ Mātauranga Māori can be defined as ‘the knowledge, comprehension, or understanding of everything visible and invisible existing in the universe’, often used synonymously with wisdom. In the contemporary world, this is usually extended to include present-day, historic, local, and traditional knowledge; systems of knowledge transfer and storage; and goals, aspirations and issues from an indigenous perspective.

Table 3: Key differences in Māori and Western Science Worldviews

Concept	Mātauranga Māori	Western Science
General	holistic thinking with a healing paradigm	silo thinking with a treatment paradigm
Spirituality	intertwined with and inseparable from the physical world	separate from rational, scientific thought
Values in Knowledge System	value-laden	value-free
Theory vs Intuition	use of intuitive learning	strong reliance on theory
Explanations of Cause and Effect	include all natural and supernatural phenomena, metaphor and narrative	objective, analytical, ideally mathematical, value-free
Transmission of Knowledge	traditionally oral	almost exclusively written
Access to Knowledge	tapu knowledge restricted to those considered worthy	free access to knowledge, except where confidential or classified
Relationship with Land and Resources	symbiotic and reciprocal, descended from land	ownership, humans separate from land
Attitude to Water	special significance as containing mauri	resource to be exploited or used for recreation

Adapted from Millar (2005) (First Found, <http://www.firstfound.org/david%20miller.htm>).

Miller (2005) contends that Western scientific views reflect a dominant Western mindset that is gradually being eroded. This may account for the conceptual *similarities* that he identifies in a second table. This table is presented, again in an abridged form, on the following page.

Table 4: Key similarities in Māori and Western Science Worldviews

Concept	Mātauranga Māori	Western Science
Underlying Structure of the Universe	world of Tua-Uri composed of complex, rhythmical patterns sustaining the natural world	all matter is composed of complex, rhythmical patterns of energy
Knowledge System	general similarities in accumulating, systemising and storing information	general similarities in accumulating, systemising and storing information
Holistic View	kaitiakitanga encompassing society, culture, economy, environment and political	sustainability of environment, society and economy
Resource Managers	kaitiaki	local government
Providing for Future Generations	ngā whakatipuranga	inter-generational equity
Limitations on Resource Use	rahui	quotas, size restrictions, resource consents
Temporary Resource Use Rights	tuku	lease
Conservation	species and landscape are taonga	amenity values
Measurement of Long-Term Viability	mauri	sustainability
Significant Areas	tapu areas	heritage areas

Adapted from Millar (2005) (First Found, <http://www.firstfound.org/david%20miller.htm>).

In Miller's experience, similarities between Māori and Western Science views tend to be expressed at a personal rather than academic or political, level. He

attributes this to the attachment people feel to a geographical or ancestral area as home.

As Miller suggests, Māori culture permeates the world of non-Māori in Aotearoa New Zealand. Certainly this is my experience, and one for which I am grateful. This experience supports the social constructionist view that the making of environments is 'a social process'. Pawson and Brooking (2002) elaborate on this statement:

“...the environment[s] we inhabit [are] inseparable from human culture’;⁵⁵ in other words, from the ways in which we see and use them. Everything that surrounds us – rural landscapes, cities, seas – is shaped, traversed, and harvested in accordance with cultural imperatives and social needs. Our awareness of these environments, and our representations and interpretations of them, reflect human traditions and expectations. Our awareness is not as objective as we might imagine, but is shaped by deep-seated assumptions about actual or ideal relations between people and nature⁵⁶...The making of environments is a social process” (p.3).

It follows from Pawson and Brooking’s (2002) social constructionist view that there is never just *one* way of viewing anything, which also means that anything people socially construct can be constructed in *different* ways. This is

⁵⁵ K. Flint & H. Morphy (Eds.). (1997). *Culture, landscape, and the environment: The Linacre Lectures 1997*. Oxford: Oxford University Press.

⁵⁶ P. Slack (Ed.). (1998). *Environments and historical change: The Linacre Lectures 1998*. Oxford: Oxford University Press.

an important understanding, in relation to the matters of sustainability and sustainability education.

Given the socially constructed character of the social and biophysical environment, it is not surprising that the literature review highlights different conceptions of and responses to the concept of ESD. A number show that the dimension of culture cannot be separated from SD/ESD. While considerations of culture, in all its complexity, can bring hard issues to the surface, culture also provides multiple points-of-entry to the project of sustainable development and ESD through people- and place-based approaches, the safeguarding of cultural heritage, cultural and artistic activities, green employment, cross-cultural exchanges and the like.

While it is impossible to do justice to the rich dimension of culture, this discussion examines the link between culture and ESD. Differences and similarities between 'common-sense' ways of understanding and relating to the world are identified. Given that these are being challenged by the forces of globalisation, the question arises: What are the practical pre-conditions for cross-cultural engagement in relation to the interrelated challenges of the past, present, and future? Apusigah (2008), Mazzocchi (2006), and Miller (2005) provide worthwhile suggestions as regards to the re-valuing of indigenous perspectives, a recognition differences and similarities, the possibility that different knowledge systems can learn from each other, and the imperative of cross-cultural dialogue in any democratic decision-making process.

Conceptions of sustainability education at the national level

In Aotearoa New Zealand, a range of conceptions of education with an environmental and/or sustainability focus exist. As the following examples indicate, these co-exist and even merge in some situations. In this section of the literature review, conceptions of environmental education, education for sustainability and Mātauranga Taiao, and education for sustainable development are described in terms of their origins and influences, and national character and implementation.

Environmental Education

In the 1970s, the field of environmental education came to international attention through a series of UN-based international meetings and declarations that have that have guided the course of environmental education since. The Stockholm Declaration 1972 identifies the "...need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment" (p.1), the Belgrade Charter 1975 comprises a framework of guiding principles, and the Tbilisi Declaration 1977 establishes the objectives, characteristics, and role of Environmental Education (Chapman & Eames, 2007). In this sense, EE has powerful political origins and a globally- integrative and educative function.

Scott (1986) understands that the antecedents of EE are 'conservation education' and 'outdoor education', which stem, in turn, from the subject of nature study (a popular American-based 19th - 20th century education movement that sought to reconcile scientific investigation with personal experience of the natural world) and the humanistic and experiential goals of John Dewey and the progressive education movement. In this sense, EE has

more modest, educational origins, and a locally-situated, life-enhancing function.

Scott (1986) thinks that these accounts correspond to different stages in the evolution of EE. The first stage is understood to represent the American/Western ideal of a natural affinity between people and nature, and the second to represent the international ideal of a global commitment to sustain life on this planet. Viewed in this light, the ideals are less at odds – though this is not to overlook their complex and contested character.

As ‘an idea whose time had come’, environmental education was integrated into curricula around the world, but confusion remained as regards to its purpose, content, and practice (Johnson & Mappin, 2009). Scott (1986, p.20) attributes the confusion to the ‘excessive breadth’ of EE: “It had become difficult to nominate any aspect of the human and natural worlds that was not within the ambit of some formulation of environmental education (and) the instructional issues paralleled the conceptual problem”. In spite of these issues, early definitions⁵⁷ of EE centred on the elements of ‘cognitive learning, values clarification, values change, problem-solving, decision-making, and action’ (Scott, 1986, p.19).

In Aotearoa New Zealand, the Ministry for the Environment developed a national strategy for environmental education: *Learning to Care for Our Environment: Mi Ako ki te Tiaki Taiao* (1998). Here environmental education is

⁵⁷ Scott (1986) refers to Brennan (1969), Stapp (1969), Roth (1969), the International Union for the Conservation of Nature and Natural Resources (IUCN) Commission on Education (1970), and Morrisey and Wiley (1971).

defined as "...a multi-disciplinary approach to learning that develops the knowledge, awareness, attitudes, values and skills that will enable individuals and the community to contribute towards maintaining and improving the quality of the environment" (p. 9). This strategy contributed to the development of *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999).

Guidelines is based on four interrelated concepts - interdependence, sustainability, biodiversity, and personal and social responsibility for action, as the introduction to this thesis indicated. In the document, the environment is conceptualised as a set of interdependent systems (biophysical, social, economic, and political) and the link between people and the land is reinforced through the Māori concept of whenua (land and/or placenta). Sustainability is conceived to be problematic, but links are drawn between this concept and notions of grievance, equity, relationship, protection, ecological literacy, legal frameworks and sustainable futures. The concept of biodiversity is associated with diversity, ecological integrity, indigenous and productive systems, extinction and conservation, and personal and social responsibility for action involves issues and problems, education, decision-making, rights and responsibilities, management, and positive/everyday actions.

Guidelines (MOE, 1999) advances a bicultural approach and a respect for Māori understandings, language, and customs. Māori views of the world are integral to the key concepts. Listed in the footnotes below,⁵⁸ fourteen Māori concepts

⁵⁸ The 'Key Concepts Underlying Environmental Education' section of *Guidelines* (MOE, 1999) references: The Treaty of Waitangi, Rangi and Papa, whenua, tangata whenua,

are included in the three-page 'key concepts' section, and one fifth of the document is in te Reo Māori - the indigenous language of this country. The document also expresses a commitment to *The Treaty of Waitangi*, the Government's *Resource Management Act 1991*, the *Environment 2010 Strategy* (Ministry for the Environment [MFE]) and other national schemes. In this respect, *Guidelines* stands apart from most curriculum documents in Aotearoa New Zealand.⁵⁹

In addition to exhibiting a national and bicultural commitment, *Guidelines* makes reference to international or inter-cultural declarations including the *Draft Declaration on the Rights of Indigenous Peoples 1993* (UN Working Group on Draft Declaration), *The Earth Summit* (United Nations Conference on Environment and Development [UNCED], 1992), *Our Common Future* (WCED, 1987), and *The Tbilisi Declaration* (UNESCO, 1978). *Guidelines* stands apart from other documents in this respect as well. It draws attention to the relationship between global and local contexts and concerns, and it promotes equitable and democratic processes of problem-solving, decision-making, and action.

In *Guidelines*, cross-cultural and cross-disciplinary endeavours are supported through planning guides that integrate the dimensions of education *in* the environment, education *about* the environment, and education *for* the environment (MOE, 1999, pp. 11-14) that promote participatory, place-based and action-oriented pedagogies. Once again, *Guidelines* is distinguishable, in

mauri, hauora, rāhui tapu, rangitiratanga, taonga, te wai, uri whakatipu, kaitiakitanga, tapu, wahi tapu. For English translations, refer to *Guidelines* or a Māori/ English dictionary.

⁵⁹ Another exception is the earlier mentioned *Te Whāriki: The Early Childhood Curriculum* (MOE, 1996).

its fundamental ethos, from most other curriculum documents in Aotearoa New Zealand.

In 2004, five years after the publication of *Guidelines*, Bolstad, Cowie, and Eames (2004) developed a summary report of a comprehensive study of environmental education in New Zealand schools. The writers describe a number of common features that emerged in the slim body of New Zealand literature on EE that existed at the time:

“...an emphasis on creating links between programmes ...and agencies; the endorsement of ‘whole-school’ approaches...; the advocated inclusion of Māori knowledge and values...; the tradition of education ‘in’ the natural (and local) environment –e.g. through school camps, biology field trips and learning experiences outside the classroom; the frequent selection of certain areas of content ‘about’ the environment ...(for example...local flora/fauna, nature conservation...tree planting ...gardening); and a central focus on the relationship between environmental education development and the content of curriculum statements in the seven learning areas of the curriculum framework”⁶⁰ (Bolstad, Cowie & Eames, 2004 (Volume 1), pp.1-2).

Bolstad et al (2004) describe some examples of international practice and co-operation that were located in the literature, such as the sharing of EE strategies, dialogue about EE goals, aims and purposes, and the advancement of research and professional development.

⁶⁰ *The New Zealand Curriculum Framework* (MOE, 1993) was an over-arching statement on curriculum. The New Zealand Curriculum was revised in 2007.

Having summarised the review of the international and national literature which relates to the second component of this research report, Bolstad, Cowie, and Eames (2004) describe the outcomes of a critical stock-take of EE practices in 193 New Zealand schools. They report the following: most survey respondents had been teaching EE for around five years or less; a great deal of enthusiasm for EE; a strong emphasis on education *about* the environment and some emphasis on education *for* the environment; curriculum integration of EE (most often into the areas of science, social studies and technology); support for (though not necessarily engagement in) 'whole-school' approaches; a focus on school and local environments (e.g.: waste-management, water studies, planting and gardening), and; reports of positive impact on student knowledge, attitudes, and motivation, and school and community relationships (pp.2-3). Only half of the teachers surveyed were familiar with *Guidelines*, and some respondents considered that the ambiguous character of EE in the New Zealand curriculum, "...created tensions for including it in their school or classroom teaching programmes" (p.3).

A third component of this New Zealand report describes eight EE case studies that were carried out in primary, intermediate, area, secondary, and kura kaupapa Māori schools. Bolstad et al (2004) report that while the 'success and visibility' of EE differed across these diverse settings, common themes and issues arose. These included: staff members with a passion for EE; proactive approaches to professional development and student leadership and responsibility; a commitment to formal school-wide programmes; a desire to use or protect school and local environments; a consistency between the school culture, philosophy and

values and the goals and aims of EE, and; moves to formalise school commitments to EE through policy and planning (pp. 3-4).

Some commonly experienced challenges to the implementation of EE also emerged in this study. These included: a dependence on key staff; teachers finding the time and energy to sustain projects; bringing other parties on board; having sufficient resources/ units/ideas for EE teaching and learning; developing school structures and policies to support and sustain EE, and; having time to establish and maintain links with the community and environmental agencies (p.4).

In the final component of their study, Bolstad et al (2004) summarise the findings and offer the following 'conclusions and implications':

"Environmental education in New Zealand schools would appear to benefit from further strategies to support communication and dissemination of information about environmental education, including information about the *Guidelines* and strategies to support networking and sharing of ideas and information about 'effective' environmental education practice. Other areas for further consideration are: building on the initial professional development support some schools have received in environmental education; further consideration of the role of curriculum integration with respect to environmental education; identification of specific areas where schools need resourcing in environmental education; coordination in the development and delivery of programmes and resources to support environmental education in schools; and consideration of the visibility and status of environmental education" (Volume 1, p.4).

Following the publication of this major report, Chapman and Eames (2007) were asked by the Ministry of Education to develop a position paper as a prelude to re-writing *Guidelines*. The position paper, which was written but remains unpublished, was to provide a basis for discussion, consultation and feedback by means of online submissions and consultation meetings. Regrettably, there is no evidence that this nation-wide, democratic process was completed, and nor was *Guidelines* re-written.⁶¹ The 2007 position paper remains a valuable source of information however.⁶² Here Chapman and Eames explain the international and national shift from a focus on environmental education to a focus on ‘sustainability’ and ‘sustainable development.’ They consider how the breadth, shifting emphases, and ambivalent character of these notions added somewhat to the confusion. In conclusion, the writers state that: “...the concept of Education for Sustainability (in whatever form it is used) remains vague and mysterious in many educational discussions, both in New Zealand and internationally” (2007, p.4).

Education for Sustainability

In this section, education for sustainability and Mātauranga Taiao, which represent the most prominent conceptions of sustainability education in the

⁶¹ There are several likely reasons for this. First, EE/EfS education is represented in the 2007 NZC; second, printed material was reduced as online information became available, and; third, decision-making approaches and official EE/EfS perspectives are likely to have changed, following a change of government in 2008.

⁶² The *Position Paper: Backgrounding new Guidelines for EE/EfS* (Chapman & Eames, 2007) was accessed at ‘the New Zealand Association for Environmental Education’ website: <http://nzaee.org.nz/ee-forum/efs-position-paper/>.

English and Māori medium-components of the New Zealand curriculum, are discussed.

Reflecting the shift in the discourse from an emphasis on EE to an emphasis on EfS, as described by Chapman & Eames (2007), and by Sauve, Sauv e, Brunelle and Berryman (2005), EfS looms large in the official literature in Aotearoa New Zealand. The shift took a number of years, and coincided with a national change of government and a period of curriculum re-development.

Initially developed under the Labour Government (10 December 1999 -19 November 2008), The NZC (MOE, 2007) does not advocate a particular approach to education with an environmental and/or sustainability focus but comparable concepts feature in the overview, vision, principles, values, key competencies and learning areas of the document. The following table of NZC ‘sustainability’ statements exemplifies this point.

Table 5: Sustainability education: Statements from the 2007 New Zealand Curriculum

Curriculum Components	Selected Statements
Foreword. (p.4).	<ul style="list-style-type: none"> • <i>Our education system must respond to ... the challenges of our times</i> • <i>(and) ensure that all young New Zealanders are equipped with the knowledge, competencies, and values they will need to be successful citizens in the twenty-first century</i>
Vision: What we want for young people (p.8).	<p><i>Our vision is for young people:</i></p> <ul style="list-style-type: none"> • <i>Who will seize the opportunities offered by new knowledge and technologies to secure a sustainable social, cultural, economic and environmental future for our country;</i> • <i>Work to create a (country) in which Maori and Pakeha recognise each other as full Treaty partners, and ... all cultures are valued for the contributions they bring, and;</i> • <i>Who will be confident, connected, actively involved, and lifelong learners.</i>
Principles: Foundations of curriculum decision making (p. 9)	<p><i>The principles put students at the centre of teaching and learning, asserting that they should experience a curriculum that engages and challenges them, is forward-looking and inclusive, and affirms New Zealand’s unique identity. They include:</i></p> <ul style="list-style-type: none"> • <i>The Treaty of Waitangi (...acknowledges the principles of the Treaty and the bicultural foundations of Aotearoa New Zealand. ...All students have the</i>

	<p><i>opportunity to acquire knowledge of te reo Maori me ona tikanga Maori);</i></p> <ul style="list-style-type: none"> • <i>Cultural diversity (reflects .. and values the histories and traditions of all its people);</i> • <i>Community engagement (... has meaning for students, connects with their wider lives .. engages the support of their families, whanau, and communities)</i> • <i>Coherence (...a broad education that makes links within and across learning areas .. opens up pathways to further learning), and;</i> • <i>Future focus (... encourages students to look to the future by exploring such future-focused issues as sustainability, citizenship, enterprise, and globalisation).</i>
<p>Values: To be encouraged, modelled, and explored (p.10)</p>	<p><i>Students will be encouraged to value:</i></p> <ul style="list-style-type: none"> • <i>Excellence, by aiming high and by persevering in the face of difficulties;</i> • <i>Innovation, inquiry and curiosity, by thinking critically, creatively and reflectively;</i> • <i>Diversity, as found in our different cultures, languages and heritages;</i> • <i>Equity, through fairness and social justice;</i> • <i>Community and participation for the common good;</i> • <i>Ecological sustainability, which includes care for the environment, and;</i> • <i>Integrity, which involves being honest, responsible, and accountable for acting ethically.</i>
<p>Key Competencies: Capabilities for living and life-long learning (pp. 12 – 13).</p>	<p><i>Opportunities to develop the competencies occur in social contexts. The competencies include:</i></p> <ul style="list-style-type: none"> • <i>Thinking (creative, critical and meta-cognitive processes);</i> • <i>Relating to others (interacting effectively with a diverse range of people in a variety of contexts), and;</i> • <i>Participating and contributing (being actively involved in communities ... for purposes such as learning, work, celebration or recreation ... local, national or global ...balancing rights, roles and responsibilities and ... contributing to the quality and sustainability of social, cultural, physical, and economic environments).</i>

Drawn from the front section of the NZC, the statements in the table above underpin decision-making and the development of cross-curricula programmes. Other allusions to the environment and sustainability exist in the NZC, including the indigenous concept of hauora (the Māori philosophy of well-being), Māori kowhaiwhai (symbolic patterns), emblematic images of harakeke and pohutakawa and full-page features of natural and cultural significance like the Southern Lakes, foreshore, and Rangitoto Island. Given that no *one* approach to sustainability education is promoted, it is up to the school and/or classroom teacher to select from the NZC and develop programmes that are ‘meaningful and beneficial to their particular communities and students’ (MOE, 2007, p.37).

Designed to support the NZC, 'Te Kete Ipurangi [TKI] - the Online Knowledge Basket' is another key source of information on EE and EfS. On the 'bilingual education portal and initiative of the Ministry of Education' (TKI, 2013), EfS presides over EE. However, the EfS homepage still links to *Guidelines* (MOE, 1999) and to the 'EfS Teaching and Learning Guidelines (Year 11-13)'. EfS is described as follows:

"Education for sustainability is about learning to think and act in ways that will safeguard the future wellbeing of people and our planet....

Education for sustainability includes learning about:

- the environment – water, land, ecosystems, energy, waste, urban living, transportation
- the interactions between the natural environment and human activities and the consequences of these
- the choices and actions we can take to prevent, reduce or change harmful activities to the environment" (Te Kete Ipurangi, 2013).

At first these concepts appear to align with the environmental education concepts in *Guidelines*, but closer inspection reveals significant differences. Māori concepts are no longer integral, although some appear on subsequent pages, which may reflect the existence of a parallel Māori-medium EE/EfS website, 'Te Kura Taiao'. Another difference is that a visual representation of EfS (described as an 'EfS Swirl' rather than a koru⁶³) replaces the 'tree' of aims

⁶³ As a symbol of creation, the koru is based on the shape of an unfurling fern frond. Its circular shape conveys the idea of perpetual movement, and its inward coil suggests a return to the point of origin. The koru therefore symbolises the way in which life both changes and

in *Guidelines*. Complementing the swirl and its English terms is an image of a Māori carving, on a separate page. The 'Toitū te Ao' carving is said to represent 'a Māori world view of EfS'. Incongruously, written descriptions of the raranga whāriki (woven mat), raparapa (double spiral), and poutama (stairway of knowledge) patterns of the carving link to information about co-operative, experiential, and inquiry learning, rather than to explanations of their deeper symbolism, meaning, and relevance to EfS. A further point-of-difference is that the Treaty of Waitangi and other significant agreements and policies are not fore-grounded, as they are in *Guidelines*. It could be argued that explicit references to the Treaty are unnecessary, since it is now a principle of the *NZC*, but this is not good modelling. It is likely that these changes reflect the priorities of the National government, which has overseen curriculum development since the General Election in November 2008.

The same web page links to relevant information on the National Certificate of Educational Achievement (NCEA): the main qualification for secondary school students in Aotearoa New Zealand. NCEA comes in three externally and/or internally assessed levels, and schools are able to use the standards to develop courses that suit the needs of their students. Developed between 2003-2008, the NCEA Achievement Standards for EfS and the resources to support teachers include: a 'sustainable future' action plan, an inquiry into human activity in a central harbour, a description of indigenous and western worldviews and their consequences for a sustainable future, a values-based investigation into the management of a city stormwater system, an eco-house makeover, an account of some characteristics of sustainability, and a co-

stays the same (The Encyclopedia of New Zealand:
<http://www.teara.govt.nz/en/photograph/2422/the-koru>).

operatively developed, waste-free strategy (Level 2). They also include an historical inquiry into eco-system changes, research into human and biophysical interactions, and the co-operative development of a school-based sustainability strategy (Level 3). The EfS standards⁶⁴ are currently under review (NZCEA, 2013). At the senior level of the curriculum, critical, cross-curricula, co-operative, inquiry and action-based approaches are advanced, and more complex perspective of sustainability is presented. It would be interesting to find out the number, character and motivation of Year 11-13 students who pursue the EfS NCEA standards, and to compare the existing and revised standards when the review is complete.

Mātauranga Taiao

‘Mātauranga Taiao’ is the title of EfS in Maori-medium education. While information on Mātauranga Taiao is accessible to speakers of te Reo Māori through TKI, it is beyond my understanding and the understanding of many New Zealanders. According to the 2013 Census statistics, this may include the majority of Māori⁶⁵. Other sources were therefore accessed to

⁶⁴At the time of writing, the Ministry of Education, in association with the New Zealand Qualification’s Authority (NZQA), was reviewing levels 2 and 3 EfS achievement standards. Working and advisory groups were formed to develop a draft matrix of standards, and to refine it on the basis of feedback from schools and other stakeholders. The standards will undergo NZQA quality assurance during 2014 and be listed on NZQA’s Directory of Assessment Standards in December 2014 for use from 2015 onwards.

⁶⁵ A 2013 Government Census Report by Statistics New Zealand states that ‘over one fifth of Māori can hold a conversation in te Reo Maori’. This represents a 4.8 percent decrease from the 2006 Census (Statistics New Zealand, <http://www.stats.govt.nz>).

provide this overview of some of the key concepts of Mātauranga Taiao. The description may or may not accord with conceptions on the Ministry of Education website.

Mātauranga Taiao is not a direct translation of EfS in the English-medium as Māori knowledge is based on different premises. In a Māori worldview, creation plays a fundamental role and has a level of complexity that goes beyond the scope of this thesis. Walker (2008) provides a useful description of elements that shape the way the natural environment is perceived and utilised, in Mātauranga Taiao. These include – but are not exclusive to - the concepts of kaitiakitanga, whānaungatanga, mātauranga, mauri, tapu, utu, whakapapa, and mana.⁶⁶ The following lightly abridged definitions are taken directly from Walker (2008, pp. 4-7).

Kaitiakitanga is about the stewardship or guardianship of the environment (or ngātaonga tuku iho). While the term is new, the concept of sustainability is ancient. In former times kaitiaki (or tiaki) were on one level represented by an atua (spirit), on another level by the manawhenua iwi (usually hapu or whanau) and on another level by an individual. The role of each was to manage a particular natural resource in a healthy and productive state. The three: atua, people and individual acted in unity to

⁶⁶ These concepts cannot be directly translated from Māori to English, so misinterpretations may arise. Many are amorphous and contextual, and therefore hard to define outside of a context. In addition, their properties and characteristics differ from iwi to iwi, hapū to hapū and whānau to whānau.

exert a control on each other and maintain the resource and its physical and spiritual productivity, potential and balance.

Whānaungatanga is derived from *whānau* or family and refers to relationships or bonds of kinship. In the traditional Māori worldview relationships between people, people and the physical world, and people and the spiritual world were all important. The role and responsibility of the individual as part of a collective was emphasised, which gave people a sense of belonging, togetherness, and relatedness. *Whānaungatanga* remains a strong part of modern Māori society and continues to shape the relationships between Māori people and the environment.

Mātauranga can be described simply as 'traditional and contemporary knowledge'. In a traditional context it is 'the knowledge, comprehension or understanding of everything visible or invisible that exists across the universe'. Within a modern context it can represent 'Māori research, science and technology principles and practices' (Mohi, 1993). *Mātauranga Māori* is not based on Western 'objective' notions or models of science; its parameters are wider and include traditional religion, belief and ceremony. Its role is to preserve and protect (while utilising) the environment rather than to understand things in a detached way.

Mauri is a central component of the Māori perspective on the environment. It can be defined as the life principle, life supporting capacity, or life force present in all things both animate and inanimate. The presence of *mauri* requires people to appreciate and respect that resource. Overuse, depletion or destruction leads to a diminishment of

mauri which is generally unacceptable to tangata whenua. The phrase 'Mauri ora!' can be used to evoke the mauri life force in things.

Tapu is often translated as sacred but the concept is wider than this. The term *wāhi tapu* is used to describe sacred sites. Tapu is also used to protect the mauri in things. Recognition of tapu involves an appreciation of and respect for another life force and acts as a protective measure, social control, and way of understanding the divine origin of all things (James, 1993). The complementary word *noa* is often associated with tapu: meaning free from tapu. The word *rahui* is also linked to tapu meaning 'a temporary restriction'.

Utu is sometimes defined as revenge but this represents a limited understanding, particularly in terms of the way this concept relates to the environment. More correctly it can be defined as reciprocity or an 'ethic of reciprocity, as in giving back or replacing what you take or receive. If one takes something from the environment then one is obliged to give back to it. In this way the physical and spiritual environment is kept in balance. Utu also includes the principle that one should only take enough for one's own needs.

Whakapapa is often defined as genealogy in reference to people. However in the Māori worldview, whakapapa is also about the relationships of all life forms and phenomenon to each other and to the atua. In the Māori worldview, all flora and fauna have a whakapapa. Whakapapa thereby assembles the natural world in a similar fashion to biological classification systems. However, whakapapa relates life forms and phenomenon to

their place in ecology and it demonstrates that all things are connected not only to each other but also to the atua. In contrast the Western scientific model uses the Latin language to codify flora and fauna based on similarities between genera and species. It draws no links between people and the spiritual side, and may actively omit them from an understanding.

Mana is often defined simply as status and pride. It is much more than this, however. It also includes the ideas of authority and legitimacy as in *Mana Motuhake*, *Mana Whenua*, and *Mana Moana*: these being legitimacy to control, manage, and administer land, water and marine resources. *Mana* is gained both through *whakapapa* and the management and utilisation of these resources. The wise management of resources will lead to a rise in *mana* within an individual, *whanau*, *hapu* or *iwi*. Poor management and/or the degradation of a resource will lead to a loss of *mana* (Walker, 2008, pp. 4-7).

In traditional Māori knowledge - as in many indigenous cultures - everything in the world is related or interconnected, as Walker (2008) and Miller (2005) explain. These writers argue that the Māori worldview is re-emerging as a valid, holistic perspective on the world. This would suggest that, in Aotearoa New Zealand at least, Māori conceptions need to foregrounded in the official curriculum. *Guidelines* (MOE, 1999) and *Te Whāriki* (MOE, 1996) provide strong and respectful bicultural curriculum models, in this respect.

In concluding this section on representations of EfS in the New Zealand curriculum, it can be concluded that a variety of perspectives co-exist. The

online English-medium portal provides (for the most-part) a more coherent but less complex view, whereas the *NZC* provides a more complex but less coherent (or ambivalent) view. Conversely, Mātauranga Taiao appears to offer offers a complex and coherent view. As such, and in line with the need to integrate the cultural dimension of sustainability education, Mātauranga Taiao warrants wider consideration, especially in its country of its origin.

Learning and Education for Sustainability

Another view of sustainability education, which is not restricted to formal education, is presented in *See Change: Learning and Education for Sustainability* (Parliamentary Commissioner for the Environment [PCE], 2004). In the PCE's independent report to Parliament,⁶⁷ EfS is described in the following terms:

“Education for sustainability examines how people and groups in society can learn to live in sustainable ways. It is not simply education ‘about’ sustainability... education *for* sustainability has a strong purpose. It aims to empower people of all ages and different backgrounds to contribute to a better future. It encourages people to ask lots of questions, challenge underlying assumptions, and to think for themselves. It looks at individual and systemic changes that are needed to resolve unsustainable practices. Education for sustainability will require people and organisations to see that changes for the better can

⁶⁷ As an independent Officer of Parliament, the Parliamentary Commissioner for the Environment investigates environmental concerns. S/he is independent of the government of the day and reports to Parliament through the Speaker and the Officers of Parliament Committee (PCE: <http://www.pce.parliament.nz>).

be made, and that there will need to be a transformation (a redesign of many systems and established ways of doing things) to achieve a good quality of life for people far into the future" (p. 15).

In *See Change*, EfS is described as an emerging concept that has its roots in the environmental education movement in this report. M. Williams, New Zealand's PCE at the time, suggests that "...environmentalism is mostly a movement *against* some things ... while sustainable development takes a more proactive approach *towards* positive outcomes" (p.38). In this document, EfS is aligned with the *goal* of sustainability and the *process* of sustainable development, which is an interesting point of distinction and connection. EfS is described as more broad in scope and forward-looking than EE, and as being founded on human rights and social justice. Except that it links to the concept of sustainable development, it is not easy to separate this conception of EfS from the conception of EE in *Guidelines*.

Education for Sustainable Development

In this thesis, ESD is understood to originate from and/or being designed to operate at a global or international level. As such, it has been described in an earlier section in terms of its origins, character, and influence, and the responses to it. Here it was explained that ESD is variously conceived, prioritised, and enacted. In Aotearoa New Zealand, ESD is not well recognised, and the UNDESD has not received enough support to instigate a major shift in human perception, behaviour, and interaction *through* education. This finding supports the earlier finding of Chapman, Flaws, & Le Heron, (2006), who stated that UNDESD-related "...efforts have been minimal and the impacts negligible" (p.281).

Conceptions of sustainability education at the local level

At the local level in Aotearoa New Zealand, a range of programmes and events with an environmental and/or sustainability focus have emerged over the last few decades. In this section of the literature review, the conceptions of local government agencies and non-governmental and not-for-profit community organisations are considered.

Local government agency conceptions

P. Williams (2004) is of the view that local government agencies have played a key role in the development of sustainability education in Aotearoa New Zealand. To appreciate the character of the conceptions that exist at the local level, ten local government websites were accessed. The following initiatives and events with an educational aspect were revealed: 'Learning Streams, the Make a Difference Youth Sustainability Programme', and 'Evibe, the EFS Newsletter' (Auckland City Council); 'Learning through Action', and 'EBox, a box of EfS Teaching Resources' (Christchurch City Council); 'Teaching Tools' (unit plans, action planners and recipes) (Dunedin City Council); 'Second-hand Sunday' and 'Wastewater Education Resources' (Gisborne District Council); 'Know it? Live it!' (sustainable urban design)' (Hamilton City Council); 'Environmental Education' and 'Go bush with the kids at Pukeiti' (Taranaki Regional Council); 'Waimarori Stream Care', 'Sustainability in Early Childhood Education', and 'EcoBuzz, a resource for teachers and students' (Nelson City Council); 'Learning through Discovery' and 'Worms 4 Schools' (Tauranga City Council); 'Waste Education' (Wellington City Council), and 'the Pollution Hotline' (Westcoast Regional Council).

Through this search, a number of impressions were gained. First, the programmes vary in terms of their contexts, aims, approach and intended

audience. Second, they relate in the main to regional and local initiatives, although one site had links to a global initiative. Third, they appear to support the MOE definition of EfS, in that they focus on the physical environment, interactions between people and the environment, and the choices we can make to prevent, reduce or change harmful activities in the environment – rather than the PCE (2004) definition, which supports the notions of sustainable development, critiquing ideological assumptions, promoting systemic change, and integrating human rights and social justice. Fourth, Māori views appear under-represented in the identified items, even though terms in te Reo Māori are included. The dimension of culture is not strongly promoted. Most of the local government agency websites link to the Enviroschools Programme, which is described in the following paragraph.

Conceptions of non-governmental and non-profit community organisations

Non-governmental organisations and Non-profit organisations also play a significant role in sustainability education. Some key examples are described in the following paragraphs.

The Enviroschools Foundation

Initiated in Hamilton in the late 1990s, this local government programme went nationwide in 2001. With the support of local government partners in each region, the Foundation aims to create sustainable schools and communities and to promote learning and action for sustainability via the provision of appropriate resources and school/centre facilitation support. Between 2009 and 2013, the Enviroschool's Foundation expanded from 685 to 924 schools (primary, intermediate and secondary), kura, and early childhood education centres. Drawing on the expertise and enthusiasm of hundreds of people and

an increasing range of organisations, the programme fosters local and national co-operation *and* competition, as the partnership information and regional-comparison map show (Enviroschools Foundation, 2013). The Guiding Principles/Ngā Mātāpono of Enviroschools are:

- “Empowered Students are enabled to participate in a meaningful way in the life of their early childhood centre or school. Their unique perspectives are valued for the knowledge and insight that they bring, and they are supported to take action for real change.
- The principle of Learning for Sustainability recognises the types of teaching and learning that foster student empowerment, decision-making, action and sustainable outcomes.
- The principle of Māori Perspectives honours the status of tangata whenua in this land and the value of indigenous knowledge in enriching and guiding learning and action.
- Respect for the Diversity of People and Cultures acknowledges the unique gifts, contributions and perspectives of individuals and groups, reinforcing the need for participatory decision-making in Enviroschools.
- Sustainable Communities act in ways that nurture people and nature, now and in the future, to maintain the health and viability of our environment, society, culture and economy” (Enviroschools Foundation, 2013).

In a report on the Enviroschools’ Programme to the Ministry of Education (2010, p.vi), Eames reports that the goals and intentions of the Programme align with government messages and the espoused direction for school-based EfS, and with international and New Zealand/Māori conceptions of sustainability. Strongly-directed at a national level and well-led and supported at a local/school level, Eames’ states, that the programme has had an impact on school programmes and environments, and on teacher knowledge and

pedagogy. Eames makes the following observations and recommendations, with regard to the future of Enviroschools:

“Teachers reported enhanced student outcomes such as knowledge development, action-taking, increased engagement in learning, as well as transfer of learning from school to the home environment. Considerations for the future of the Enviroschools Programme include that the programme is underpinned by a kaupapa that is providing a strong foundation for development and a commitment to the endeavour from those involved. The development of the programme, and EfS in New Zealand schools generally, could be improved by a more clearly defined and integrated approach from central government” (Eames, 2010, p.vi).

Community-based sustainability education initiatives in Canterbury

In the region of Canterbury, where this study is based, a multiplicity of local initiatives with a focus on the environment, education, and sustainability exist.⁶⁸ These include: ‘Te Ara Kakariki - the Greenway Canterbury Trust’ - a community initiative that promotes native plants and native plant communities on the Canterbury Plains; ‘The Waihora Ellesmere Trust’ - a community organisation that aims to improve the health and biodiversity of Te Waihora/Lake Ellesmere and its catchment; ‘Greening the Rubble’, a community project that finds temporary uses for empty sites across

⁶⁸ Associated websites are

- Te Ara Kakariki: <http://www.kakariki.org.nz/>
- The Waihora Ellesmere Trust: <http://www.wet.org.nz/>
- Greening the Rubble: <http://greeningtherubble.org.nz/>
- The Canterbury Environmental Trust: <http://www.enved.org.nz/>
- The New Zealand Conservation Trust: <http://www.nzconservationtrust.org.nz/>
- Project Lyttelton: <http://www.lyttelton.net.nz/>

Christchurch, following the damage caused by the Canterbury earthquake in September 2010; 'The Canterbury Environmental Trust': an Environmental Education Centre at Craigieburn Forest Park; 'The New Zealand Conservation Trust at Willowbank Wildlife Reserve', which works to preserve New Zealand's rare and endangered native and introduced wildlife, and; 'Project Lyttelton',⁶⁹ which is committed to building a sustainable, connected local community.

These items represent a small sample of existing community-based initiatives with an environmental and/or sustainability focus in the Canterbury region. While it is impossible to do justice to these initiatives in the space of this study (which suggests the need for a separate project), certain impressions are gained. First, the number and prolongation of the initiatives is astonishing. Second, while they also vary as regards to their contexts, aims, approach, and participants, they focus primarily on place- and action-based conservation and/or restoration and exist on the basis of voluntary participation and collective action. Third, in keeping with the local government agency initiatives, they tend to focus on the physical environment, interactions between people and the environment, and the choices we can make to prevent, reduce or change harmful activities in the environment. That is, they do not accentuate sustainable development, ideological assumptions, wider systemic change, human rights or social justice. Fourth, Māori worldviews

⁶⁹ Further information about and links to these sustainability education initiatives were accessed through the 'Community Information Christchurch' - an online community directory of clubs, community organisations and continuing education course providers in the greater Christchurch area. Created by Christchurch City Libraries in 1981, 'Community Information Christchurch' now includes more than 5, 800 listings. It can be accessed at <http://cinch.org.nz/>).

appear to be under- represented again, although some projects (for example, 'Te Ara Kakariki - the Greenway Canterbury Trust' and 'The Waihora Ellesmere Trust' have a bicultural emphasis. To address this 'community information' gap, the following investigation was conducted.

Te Ao Tūroa: the Vision of Ngāi Tahu

The absence of information on local Māori conceptions and initiatives impelled me to conduct a search of the website of Ngāi Tahu (or Kāi Tahu) - the main tribe of the southern region of New Zealand, from Kaikoura in the north to Rakiura in the south. On this official site, it is stated that Ngāi Tahu's 'vision for the environment' is:

“...that our ancestral landscape is protected and our people have living relationships with their whakapapa and traditions through the environment. The goal is that Ngāi Tahu is a principled kaitiaki (steward) of our takiwā (tribal territory)” (Ngai Tahu Iwi, 2013).

It is stated, on the Ngai Tahu site, that the concept of kaitiakitanga or environmental stewardship can be expressed in many ways. Supporting this understanding, twenty two 'Environmental (web) Stories' are provided on the site. The stories describe: 'Whakaora Te Waihora', a collaborative freshwater restoration programme between Ngāi Tahu, the Ministry for the Environment, and Environment Canterbury; 'The Tūhaitara Coastal Park Restoration Project'; 'Hei mahi māra: A beginner's guide to growing organic vegetables'; 'Pīngao Bush and Beyond' - a coastal replanting programme, and; 'Last Stand' - a 'last ditch effort' to save Te Hāpua Waituna (Waituna Lagoon) from an ecological disaster by placing a ban on further dairy development in the catchment Ngai Tahu, 2013).

The Ngāi Tahu 'stories' range widely - from a personal, cautionary tale about cancer and healthy eating to the account of 'New Zealand's largest collaborative freshwater clean-up', as befits the compass of Ngāi Tahu. Coherence is achieved through values like kaitiakitanga (stewardship), tikanga (appropriate action), rangitiratanga (leadership), which are foregrounded. The character of many of these initiatives does not seem to differ greatly from the character of other local initiatives. All of the initiatives represent a relationship to place and/or nature, and a strong sense of environmental concern and responsibility. What distinguishes the Ngai Tahu stories is that they are not stand-alone ventures, but part of the complexity of tribal life.

4.3 Conclusions and Summary

The literature review is a substantial component of the thesis and integral to it. Beginning with an overview of social and environmental factors that are impacting on the lives of young people and on the context and relevance of education, the literature review explores the way that 'sustainability education' is conceptualised in international and national literature and in the New Zealand curriculum.

Leading into an investigation of sustainability education, the concepts of sustainability and sustainable development are considered from a range of perspectives. In recognition of the complexity of the field, the literature is structured to resemble a multi-levelled map. The intention here was to follow Delors' (1996) recommendation that "...education must

simultaneously provide maps of a complex world in constant turmoil and the compass that will enable people to find their way in it” (p. 85).

As the study coincides with the United Nations Decade of Education for Sustainable Development (2005-2014), ‘education for sustainable development’ is a major focus of the review. The literature shows that ESD is interpreted in different ways and that it is susceptible to what Sauv  (1999) calls ‘semantic inflation’ (p.19). To gain purchase on this nebulous notion, three exploratory categories were developed. The theoretical/ analytical, political/economic, and cultural categories of literature revealed (among other things) a political bias in the discourse on ESD and a tendency for ESD initiatives to be incorporated within and constrained by conventional structures, concerns and approaches, rather than being opened up to debate, cross-cultural dialogue, and communicative praxis.

A range of conceptions of sustainability education co-exist at the national level, in Aotearoa New Zealand. These include the concept of ‘environmental education’ (EE), which has largely superseded by the concept of ‘education for sustainability’ in the last decade. While it is often argued that EfS is a more integral and action-based conception than EE, analyses of *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999); *the New Zealand Curriculum* (Ministry of Education, 2007), EfS categories on ‘Te Kete Ipurangi’, a bilingual education portal and initiative of the Ministry of Education, and; *Matauranga Taiao* (as explained by Walker, 2008) suggest otherwise. Given that indigenous views and terms, and national and global commitments are not fore-grounded in the more recent material, it can be argued that the complexity of sustainability education has been compromised.

This finding accords with an earlier observation of the course of environmental education (Bolstad, Cowie, & Eames, 2004) that sustainability education initiatives tend to be incorporated within and constrained by conventional structures, concerns and approaches.

At the local level, local government agencies and non-profit organisations play a strong role in developing initiatives with environmental and/or sustainability education foci. These initiatives tend to focus on the physical environment at hand, interactions between people and the environment, and choices that can be made to prevent, reduce or change harmful activities in the environment. If this understanding is accurate (and it is beyond the scope of this thesis to investigate each initiative fully), it can be argued that local government agencies and non-profit organisations lean towards the Ministry of Education definition of EfS, rather than a definition that promotes ideological critique, systemic change, and the integration of ethical matters.

The literature review revealed the problematic character of sustainability education. While efforts were made to map the literature to accord with the global/international, national, and local levels, and to approach it from a range of perspectives, it became apparent that environmental education, education for sustainability, and education for sustainable development are inherently vague and interchangeable terms that contested and variously interpreted. As such, it is difficult to navigate and map the field, which was the aim of this investigation.

This finding can be viewed in different ways. On the one hand, the ambiguity of the key concepts may be confusing teachers (and others), and leading to

delays in changes that are necessary for a more sustainable society (Fien & Tilbury, 2002). On the other hand, Gibson et al (2005) argue that the prominence of sustainability represents a more extraordinary phenomenon than is commonly realised - the appeal of which "...may be as much hopeful as critical – offering a response to doubts about the validity of current trends while accommodating optimism about our ability to turn things around without much pain" (p. 38).

Sustainability education (in whatever form it takes) represents, in the words of Gibson, Hassan, Holtz, James & Whitelaw (2005) "...a remarkable, if implicit, admission of broad failure and the need for substantial change" (p. 38). As such, a number of authors argue that it is necessary to examine and debate different conceptions of and approaches to sustainability education, and their effects, and to stimulate the development of alternative ways of understanding and living in the world (Huckle, 2012). With this suggestion in mind, the case study investigation is now described.

Chapter 5: Sustainability education in practice: a descriptive case study

Situated in the context of a secondary school with a distinctive approach to teaching and learning, a qualitative case study is the focus of this chapter. Comprising the second component of the thesis, the case study involves an empirical investigation of the ways in which two teachers and a small group of Year 9 to Year 14 students understand and practice sustainability education. Drawing on the contributing theories and the interpretive methods of semi-structured interviewing and participant observation, and linking to concepts of sustainability education that exist in literature and in the New Zealand curriculum, the case study addresses the question: *How is sustainability education conceptualised and practiced locally by teachers and their students in a New Zealand secondary school?*

Extending on Chapter 3, which explains the methodological aspects of the case study, this Chapter 5 describes the setting; the participants; the participant interviews, and; the participant observations. It concludes with an interpretation of the case and the findings, and summary comments. To preserve the conditions of confidentiality and anonymity (outlined in appendices 1-6), pseudonyms are used and details that could clearly identify the school and/or the participants are omitted or modified in a way that does not alter the veracity of the material.

5.1 The setting

'Axon High School'⁷⁰ is a co-educational school that is based on a philosophy of democracy and choice. Located on a busy urban thoroughfare, the school is

⁷⁰ 'Axon' is a pseudonym that was selected by the author of this thesis.

limited in terms of green space, but it has access to a wide range of community facilities - including parks and walkways, sports fields, a swimming pool, theatre and gallery spaces, a library, a museum, and a bus terminal.

While Axon follows the New Zealand curriculum and the eight essential learning areas in the *New Zealand Curriculum* (MOE, 2007), it has flexible qualification pathways that allow for some cross-curricula courses, course differentiation, and individual and group enquiries. This is permissible as the NZC gives all schools "... the scope, flexibility, and authority they need to design and shape their curriculum so that teaching and learning is meaningful and beneficial to their particular communities of students" (MOE, 2007, p. 37). The academic year is divided into half-term blocks and courses are designed to fit or span these blocks. The school's philosophy of democracy and choice is supported through one-to-one planning and pastoral meetings between teachers and students; regular communication with parents and caregivers; non-hierarchical and cross-level groupings; large communal spaces, and; regulated access to the community.

Elements of sustainability education are integrated into the school charter and strategic plan, and EfS is incorporated into the learning areas of science and the social sciences, and a number of cross-curricula courses. As Axon is involved in the EnviroSchools Programme,⁷¹ it is working promote learning and action for sustainability through a process of investigation, exploration, decision-making, action and reflection that complements Axon's cross-curricula and enquiry courses. The school is developing a 'whole school' sustainability vision and exploring school-wide options for action. To this end,

⁷¹ The literature review includes a description of the EnviroSchools Programme.

the '3 R's: reduce, reuse and recycle' are promoted through the use of colour-coded bins, and an energy audit has been conducted by a cohort of staff and students.

An urban secondary school on a busy road may seem an unusual choice for an investigation into sustainability education. A more obvious choice might be a 'Green Star' or 'Garden to Table'⁷² school. However, as Axon is proactively engaged with its environment and less constrained by traditional educational conventions, it provides a contextually rich and rather intriguing setting for the enquiry.

5.2 The Participants

The case study participants are two secondary school teachers who have an interest in sustainability education, and a group of their Year 9 to Year 14 students. As outlined in the Methodology Chapter, James⁷³ was the first teacher at Axon to be approached for the reason that he is strongly committed to sustainability and sustainability education, and had played a professionally active role in the development of the EfS NCEA Achievement Standards. I was excited about the possibility of working with James in an area of mutual interest, but unfortunately - from the point-of-view of this study - he left his

⁷² 'Green Star' schools have 'green feature's, like passive ventilation systems and energy efficient lighting (The NZ Green Building Council, <http://www.nzgbc.org.nz>).

'Garden to Table' schools develop vegetable gardens and run regular kitchen and garden classes (Garden to Table, <http://www.gardentotable.org.nz>).

⁷³ Pseudonyms were selected by the author or the participants for the purposes of anonymity.

senior teaching role at Axon to pursue another position, before the case study got underway.

As it is the intention of the case study to provide a rich description and interpretation of the way that sustainability education is conceptualised and practiced locally by teachers and their students in a New Zealand secondary school, education in practice, a second teacher was approached (through James) and asked to be involved in the study. Kari is a science and social sciences teacher who worked alongside James in the development of courses and school-wide programmes with an environmental and/or sustainability focus. While Kari shares her colleague's enthusiasm for sustainability education, she approaches it from very different points-of-interest, and is at a less-advanced stage in her teaching career. While negotiations were underway, with the teacher participants, Kari's was asked to take over the position of EfS leader/ coordinator at Axon, which I saw as an acknowledgement of her interest and growing expertise. In addition to her enthusiasm for sustainability education, Kari is particularly interested in organic gardening, heirloom plants and seeds, 'playing in the kitchen' and biking in foreign climes.

At Kari's suggestion, her co-worker Paul was approached and asked to participate as a replacement for James. As such, the project 'snowballed' (Bogdan & Biklen, 2007) or grew spontaneously, which was encouraging. While Paul is a relatively new to the staff at Axon, he has a lot of experience – in both formal and informal education – in the social sciences and outdoor education. Paul's interest in sustainability education relates to his enthusiasm for conservation and 'being in the wild'.

Elizabeth, Rebekah, Rory, Tim and Gretel comprise the small group of student participants. Ranging from Year 9 (age 13) to Year 14 (age 18), the students volunteered to take part in the group interview as they have an interest in the topic, and have been involved in a number of sustainability education programmes and projects. Their personal enthusiasms (as stated in the interview) include: being in the outdoors; environmental causes; vegetarianism; reducing, re-using and recycling; mentoring; turning the environment into a career; understanding indigenous worldviews; and engaging in global issues like fair trade and social justice.

Other students were in attendance during the classroom observations at Axon High School. In contrast with the staff and student participants described above - who were informed about the study and formally consented to participate – class members were not required to give formal consent as they were covered *en masse* through the observation permission granted by the school principal and teacher participants. The process that was adhered to, in this respect, is explained in the methodology chapter, and detailed in the appendices, at the back of this thesis.

Two methods of data collection and management were employed in the case study: qualitative semi-structured interviews with individual teachers and with a small group of students, and participant observation of classes with a sustainability education focus. Detailed descriptions of the data-gathering 'experiences' are now described.

5.3 The semi-structured interviews

Qualitative, semi-structured interviews were conducted with the individual teacher participants, and with the group of five students. This method was selected for its potential to afford the following: rich, descriptive data; insight into the conceptions of the participants through freer use of language; insight into the worlds of the participants through the consideration of relational and contextual factors, and; a variety of approaches to the analysis and interpretation of the data.

As outlined in the Methodology Chapter, the interviews followed seven steps that were established in advance under the guidance of my supervisors, and in negotiation with the school principal and teacher participants. To recap, the steps involved: (1) developing a series of broad, open-ended questions that relate to sustainability education (see appendices 5 and 6); (2) forwarding the interview questions to the consenting participants - and their parents/caregivers, in the case of the student participants - for their approval and suggestions, prior to the interviews; (3) negotiating the face-to-face interview arrangements, with the individual teachers; (4) conducting, recording, and transcribing the interviews, in the described manner; (5) forwarding the written transcripts to respective teacher participants for their endorsement; (6) analysing the data through an iterative process and recognised strategies (also described subsequently), and; (7) reporting the information, on authorisation, in this thesis (Kvale, 1996; Neuman, 2000). The interviews are described in the authentic manner in which they occurred. The interviews and the observations are interpreted and summarised in the final sections of the chapter.

The separate interviews with Kari and Paul are now described, using excerpts from the interview transcripts. This process is repeated for the group interview with Elizabeth, Rebekah, Rory, Tim and Gretel.

Two Interviews with Kari

Kari was interviewed on two separate occasions. The first and fuller interview was held in the school holidays, just before the second term, and the second interview was held three months later during term time.

The first interview was conducted in a communal space at Axon School. Staff members came and went from time-to-time but otherwise the area was quiet. As Kari was giving up her free time to talk to me, I took home-made muffins, and she prepared coffee in the school kitchen while I (as agreed) set up a small, battery-powered taping device. We began our conversation on a relaxed and amicable note.

Kari brought a folder of well-thumbed curriculum documents and planning guides, and I noted that she had made notes beside the interview questions. It was clear that she was enthusiastic about the conversation, and prepared to play an active part in it.

We spoke of the shift in emphasis from environmental education to education for sustainability, in the curriculum. Kari seemed to be largely in favour of this, but she made a wry comment about its impact on teachers. Her comment suggests that teachers do not have much say in decisions of this nature. The following quotes from the interview show how Kari conceptualises the

concepts of environmental education, education for sustainability, sustainability, environment, and sustainable development:

***Kari:** I can see why the shift has happened ... to me environmental education was all about education about the environment, education in the environment...it was just a little bit limiting. It didn't really encompass the change in teaching methods...*

Laurel: Uh huh....

***Kari:** ... education for sustainability is broader; it's about the change in pedagogy that goes along with the shift ... there's a whole lot more to it, and it's very focused, to me, on the action learning cycle and what goes along with that. But I have to say I laughed, because I was reading a document that (James) had given me recently, and it was all about environmental education for sustainability...so...*

Laurel: (Laughs) ... That's interesting

***Kari:** So it was an expanded concept; a merger of the two. So I go "Oh! OK ... (laughs)...maybe that's the next definition that we are going to be working with.*

Kari is familiar with the *New Zealand Curriculum* (MOE, 2007) and the sustainability concepts within it. Gesturing towards her copy of the document, she described sustainability in the following terms:

***Kari:** (sustainability)... is a word that is hard to define, and it does mean different things to different people. I always think of that visual diagram, where you have got the environment as the base I might even need to draw it!*

To illustrate her understanding, Kari drew a large circle labelled 'environment', a smaller circle within it labelled 'society and culture', and a smaller circle within that, labelled 'economics' or 'providing for society'. She

explained the diagram and contrasted it with the three-dimensional model (which is associated with the concept of sustainable development)t:

***Kari:** ...the definition of sustainability that I've always referred to... is about thinking about the decisions we make ...with regard to future generations and ... enhancing things, or keeping things at the same level, ...for future generations ... When I first learned about (this model) at university, there were those three circles that overlapped ...*

Laurel: Yes ...

***Kari:** ...the same three circles ... but... the 'economy' does not deserve to have its own circle ... the same size as that of the environment. The flaw within that model was that the economy ended up being massive, and the environment and society ones were heaps smaller, so it wasn't an equal balance, so I guess we're trying to readdress that balance....I guess I look at it, definitely, with the environment first.*

Kari went on to describe her understanding of the term 'environment'. She spoke of 'the place we are bound to', and the natural resources we cannot exist without. Interestingly, Kari said that she 'shies away' from using the term 'sustainable development':

***Kari:** ...because it has a huge emphasis on 'development' and not everything that is done sustainably necessarily needs development. Sometimes it is almost the reverse ... you are going back and trying to remove the development that has been imposed on something... but 'sustainability' is in every decision that we make, and so it is me considering my energy use at home, and that's not necessarily development at all; its' just me making sustainable decisions. So, there is quite a difference for me. And that's how I have learned to interpret the terms, I guess.*

Kari regards 'sustainable development' as a 'laden' term that involves contestable ideologies, international and regional tensions and disparities, and enormous challenges:

Kari: ... it is almost like that concept of becoming a developed nation, isn't it, where you have the developed world, and the less developed world, and ... we should all be moving towards being developed ... which is not sustainable. Cos if the whole world were to live with the same standard as developed countries, then we would need, is it, five or six earths. So it is almost like we need we need to become undeveloped, isn't it? We need to be moving backwards, or maybe it's sideways ...

Education has a big role to play in promoting sustainability, in Kari's view. She thinks that the potential of education, in this respect, is overlooked by government:

Kari: ... education has a role to play in sustainability because it is quite a big concept and it is not a concept that's easily grasped in its entirety. ... yet sometimes education isn't given enough credit ... or ... it isn't realised enough. Our Government is looking at making big changes ... in the way we live, but they overlook that side of education, which is incredibly important, and will have the biggest impact.

I discussed with Kari the increased presence of the concept of sustainability in the NZC (MOE, 2007), which she regards as a reflection of rising social and environmental concern, and growing awareness of the importance of sustainability education:

Kari: ...there are strong, strong undertones, in the curriculum for having sustainability as its' purpose ...so it looks as if there's a growing number of people who think that it should be there ... education for sustainability is about creating a learner that is confident and competent in their world to make changes that they feel are more sustainable...it's about all those things in the vision of the curriculum.

When we moved on to discuss sustainability education in practice, Kari handed me a diagram of the 'action competence cycle', which she uses for planning and co-constructing student enquiry-based courses:

***Kari:** It's based on the Enviroschools' theme. It's about looking at an issue, looking at our current situation, thinking about what our alternatives could be, looking at where we could take action, weighing up which is the best action to take, and following through with it, and then reflecting on that action.*

'Action', in Kari's view, is:

***Kari:** ... in terms of taking action – it's about real-life learning, and it's about them engaging with people in their community, and thinking about communicating with various people, and taking a step outside of the school's four walls, and justifying decision-making, and planning – in terms of action – what they want to do. It covers so many different skills!*

Kari highlighted the importance of 'locating success' within the action competence model, which means that it is necessary to anticipate the challenges that could inhibit success. By way of example, she described a programme she had taught that involved an energy audit, of the school:

***Kari:** ... this all took quite a bit of time ... to get this all lined up, and to sort of think about the learning and actually have the meetings with the Principal and things.... And when we were touring around with the electrician, we found out that there are so many things in the school that are wasting a lot of electricity... and it just kind of felt like it opened up a can of worms, and, like, "Oh, there's so much more to it!"*

Complex issues can have an overwhelming effect on children and young people, we both agreed. Kari linked this issue to the issue of 'locating success':

***Kari:** I am still finding the best methods for dealing with that. Because some recent research highlighted that it is really important for the students to have success at carrying out a successful action, because that will set them up for life-long practices. So if they are overwhelmed at this level – which is a lot of pressure – then maybe they are going to continue to feel that way, and won't step out and carry out action. So, I guess it's about selecting a really realistic action, and thinking about how it is going to take place (which is part of that selection), but it is difficult, because you also want them to be making a choice, and they need to decide whether it is realistic or not. So this is something I am still toying with. It is really, really difficult.*

As sustainability education is not an essential learning area in the *New Zealand Curriculum* (MOE, 2007), it is integrated into the social sciences, science, and other courses. As such, it is not always regarded as an academic or vocational priority. Consequently, the path of sustainability education is not always smooth. Kari spoke of this issue and other barriers to sustainability education in the following terms:

***Kari:** To me, science is such a holistic subject, and it would be great to link it in with other subjects ... but then I feel the pressure of NCEA ... where would I fit in anything holistic? What would I not teach, as the programme feels so full of pre-cursor steps and scaffolding for the other three sciences at the next level, so it is really difficult, once you get in to NCEA. We shouldn't be assessment driven, but it totally feels like that at times. But yeah ... in terms of NCEA and assessment, and being a new teacher, and wanting to do something that is local, and in context, as an ideal, but – big but - I am not that confident of creating my own assessments. It takes so much time, and I am not... I am still only beginning, and I don't have that much support*

Getting the students fired up ... about sustainability issues is harder the older they get. ...I mean, teenagers, they're great to work with, but there is so much happening, internally, about their self-discovery...that to get them to open their eyes to look at whole worldviews and whole-world issues when they are trying to figure out who they are, is a real challenge.

In addition to 'firing up' students, firing up teachers can be a challenge, in Kari's experience:

Kari: What I am referring to is, when I am trying to do staff PD, and getting the staff to think about their planning for the next year...whether they are interested in looking at the Efs NCEA standards, to see if there is something that they want to take on board. When there isn't much interest, it is limiting, because it should be a whole school approach, and yet it's just kind of left to me, and I find that limiting ... Sometimes I am viewed as the greenie: "She's the Green Teacher and that's her stuff." But really, sustainability is so much bigger than that, and that view is very limiting. "Oh, that's just her ... what she's interested in. That doesn't relate to what I do!" I find that limiting, because it should be a whole school approach.

I know that we have a lot of staff who are interested in sustainability... but it's finding the time to connect with them, I guess, and link in to what they are doing. Yeah, it's like "I am interested, but I am over here, doing my thing" and another person is over there, doing their thing, but how do we connect, and are we all heading in the same direction? I could help to create a school vision, but would they get to know about it?

Kari learned about the 'whole school' approach through involvement in the Enviroschools Programme. To her it represents a 'long term goal' that involves decision-making from the management level to the everyday level of the staff and students. The value of the whole school approach, Kari explained, is that students learn about sustainability and the importance of it – even if it is not a personal passion.

Given the internal/school and external/wider social challenges that face sustainability education, in terms of its development and implementation, Kari is grateful for the support she receives from the Enviroschools programme co-ordinator, like-minded colleagues, and students at Axon. She spoke very enthusiastically about the latter:

Laurel: Do you find that there are students you can get some support from?

Kari: Yes, definitely. In fact, that's where I do get my support.

Laurel: That's good to hear

Kari. It's a fairly small group, and you don't want to burden them with too many opportunities or responsibilities. You don't want to push them away – it's that fine balance. But there have been some good students, some awesome students.

The first interview finished on this affirming note. The second shorter interview took place three months later, during the school term. On this occasion, Kari and I sat at a table in the music room, surrounded by an assortment of instruments. As Kari had previously agreed to coordinate the student group interview, and ask for student volunteers, we discussed the procedure, ethical matters, and the required documentation prior to addressing the remaining questions, which focus on the curriculum.

We began the second interview by discussing global issues, such as the financial crisis, energy issues, and consumerism. I asked Kari how she deals with issues of this magnitude, as they can lead to apathy, compassion fatigue, and distress. Kari made the point that it is essential to recognise and highlight the links that exist between global issues and the lives, interests, and concerns of students. To this end, Kari works to develop constructive relationships with her students.

When she is using the NZC (MOE, 2007) in her planning, Kari teases out the links between the eight principles (high expectations, Treaty of Waitangi, cultural diversity, inclusion, learning to learn, community engagement,

coherence, and future focus) (p.9) and sustainability education. In her view, the 'future focus' principle is particularly relevant to sustainability education, although she can see the relevance of the other principles too:

***Kari:** ...if you want to understand sustainability, you really need to be looking forward. For me it is future-focused; thinking about our impact on future generations. But then, a lot of the other principles are very much inter-twined.*

Kari considers the principles of 'community engagement', and the 'Treaty of Waitangi' to be of significance to sustainability education:

***Kari:** Community engagement links in with the 'participating and contributing' key competency...Being involved within your community means that you have got more responsibility for the surroundings in which you live, and you have got more power to change things. And in New Zealand, the 'Treaty of Waitangi' should underpin it. In our big country's decisions, understanding that we are a bicultural nation, and adhering to that 'cultural diversity' as well.*

The Values section of the NZC (MOE, 2007, p10) is very useful to values-based learning. This is an important aspect of sustainability education in Kari's view:

***Kari:** Getting them to question things, and understand that there is no right and wrong, and we all do stand on different parts of the line, or circle (laughs) ... you need to be able to understand other people's values and look at different sides on things...Like, no right or wrong, but looking at the issues of genetic engineering and the values associated with that, and why we have the opinions we do.*

Kari also refers to the Key Competencies, which appear on pages 12-13 of the NZC. In her view, these relate well to 'real-life learning', 'whole school' programmes, and cross-curricula and enquiry-based modules. Indeed, Kari

thinks that much of the NZC lends itself to sustainability education – if one has an eye for opportunity. She stated:

Kari: When I look at the curriculum, I see sustainability in everything, but I wonder whether the majority of teachers – who have been teaching for quite a long time – see this? Because I see it, but I am looking at the curriculum through my lens of EfS, and it is jumping out everywhere, but could it easily be overlooked ... could someone be blind to it?

Over the course of two full interviews with Kari, a considerable quantity and quality of data were gathered. The excerpts above are characteristic of the conversations we had about a topic of mutual interest. They were open, flexible, reciprocal, interesting and informative. In the next section, the interview with Paul is described.

An interview with Paul

The interview with Paul took place in an office adjoining a galley-style kitchen. He left the office door ajar and occasionally took the opportunity to talk to passing students about an outdoor education trip being planned.

Over a small microphone and coffee, Paul and I began by discussing the shift in curriculum emphasis from environmental education to education for sustainability, as per the guiding questions on the teacher interview guide (see Appendix 6). Paul was a little cynical about the so-called ‘new’ approach:

Paul: In the context I am working in, which is Outdoor Education, a lot of that stuff has been happening for a long time. It's like a retitling, in some ways. ... a lot of subject areas are catching up... The environment isn't just a gymnasium but a place you live in and enjoy, and there's all sorts of value dimensions within that, which fits into the

'environmental ed' thing. But in terms of sustainability, that's another layer on top of that. In fact, if we want to keep having those environments, and have that spiritual fulfilment and re-fulfilment, then we need to look after it. It's about stewardship...

The link between sustainability education and spiritual fulfilment is an interesting one, and I regret that I did not pursue it. Paul went on to share his view of 'sustainability' and 'sustainable development':

Paul: (Sustainability) ...is a bit of a buzz word at the present time, and that's probably a reason for its inclusion in the curriculum. What does it mean? It means a whole range of things, I guess. For me personally, it means being able to keep doing things without jeopardising ... everything really. It's not just natural resources; it's actually having everything in some sort of balance where, it's ...sustainable in the future. In terms of the general meaning ... I am not sure whether it's quite that embracing. You know, it's like a lot of things, it gets segmented up. If we teach sustainability, then "we've done it, we can tick it off." But whether it actually changes individual practice by students ...I don't know, that's a challenge.

And sustainable development ... I mean it depends who's saying it, as to what they mean by it. For some people, it's a chance to continue to develop. It's still ... quite centred on human activity, rather than the environment...but we have to look at the wider implications, and the wider effects and the wider costs for other people as well. So, for me, if it was to be used, I think that it would have to have a far wider brief than it has, or in terms of the way that some people are using it...

Laurel: In terms of 'a wider brief', what do you mean, exactly?

Paul: Well, we have finite resource. Earth. And we are expanding at an exponential rate. ... it's an equity issue. Sustainable development might be sustainable, just in the context of New Zealand, but is it sustainable in terms of the planet, and in terms of all the other people living on the planet, because we are all guests here as well.

I asked Paul about the role education can play in relation to complex issues. As Paul expressed it, 'what we teach people about has to change':

***Paul:** For a very long time education has been very focused on giving students some core skills – like reading and writing and maths - to be able to live in the modern world, and to be able to do the job they need to do. But as we sort of see this whole spectre of sustainability and global warming coming into focus, what we teach people about has to change. It has to become broader. So teaching for living in the community, and living in the nation, and also living in the world is actually really, really important.*

So I think ... I mean, knowledge is easy to get hold of now, and the focus has always been on teaching knowledge, because it's easy to assess Yeah, it's really easy to measure. You can measure whether someone can count to 4 or divide by 12. It's measurable. It's easy to test. But so what?! Are they hitting the person next to them? What kind of social ethic have they got? What kind of environmental ethic have they got? How are they interacting with people? How good are they at solving problems? How good are they at looking at the future and being thoughtful about... well, what does it mean for me and everyone else? It's not just about me; it's about other people as well. So, what degree of empathy have students got, and for me _ it's easy in Outdoor Education, because all those things are naturally occurring.

Paul pointed out that it is much easier to incorporate the NZC principles, values, and competencies through Outdoor Education. He explained why he thinks this is so:

***Paul:** (In Outdoor Education) you have to be empathetic about other people, because if you get annoyed with them...about them walking slowly, because their pack's heavy and they've got blisters...the group gets separated and someone gets lost, and it takes even longer. It's got really immediate and natural consequences. In a classroom, it's a lot harder to construct that. And when we construct abstract situations, people just think about these things as abstract problems, rather than applying it directly to themselves...Outdoor Education is a bit of a lone*

voice to some extent, and I've always viewed it as being one of the few subjects that is integrated.

It was apparent that Paul appreciated the holistic character of Outdoor Education, and the freedom it allows him and the students.

Rich data was acquired through the interview with Paul. He spoke freely, thoughtfully, and enthusiastically. It was clear that he had given a great deal of thought to his role as an educator, and an outdoor educator in relation to the context of the 21st century. Our conversation flowed easily – interrupted only when Paul spoke to passing students. Unfortunately: Paul being a very busy man; the second interview did not occur, in spite of our efforts to make it happen. However, it was very interesting to talk to Paul, just as it was to talk to Kari.

1. Interview with Elizabeth, Rebekah, Rory, Tim and Gretel

Later in the school year, I conducted a lunchtime interview with a small group of students from Axon High School. Three were female students and two were male students. All (as far as I am aware) are Pakeha. Their ages and class levels ranged from 13 (Year 9) to 18 (Year 14)

I was grateful to Kari for enlisting five student volunteers and for organising a suitable time and place for us all to meet. The location for the interviews was the music room, which is ideal, as it is separated from but visible to a busy communal area in the school. A Year 11 student was already in there, practising on the piano. As I set up a round table and six chairs, and checked the small recording device, Millie continued to play a meditative, self-composed piece. The effect was calming.

Kari led in and introduced the students. We all sat around the table, as close to the microphone as possible. As non-hierarchical and vertical groupings are common at Axon, the students appeared to be relaxed in each other's company. Some ate their lunch as we spoke, which added to the relaxed ambience. Each student was given paper, pens, mints and a post-it on which to record a self-selected pseudonym. They seemed to enjoy this. I went over the purpose of the research, and the interview procedure and ethical points, in accordance with the student information letter and consent forms they (and their parents) had viewed and signed (See Appendices 3-5). Copies of the questions were also provided. I explained that we might deviate from the questions a little, depending on what came up in our conversation.

Working around the circle, the students took turns to state their age, school level, and interests. In a relaxed and consistently respectful way, they took turns to share their understandings of the term 'sustainability'. Their first comments on this matter are as follows:

Elizabeth: Where shall I start? Well, firstly it's about looking after the environment. But not just the environment, but all our world's resources for ...future generations, I suppose. Just making sure that we use things at the same rate as it is repaired so that we don't run out and ...all that kind of thing.

Reuben: it's about the economy, and the environment. So it covers a broad ...thing... Sustainability kind of ...brings them all together...

Rebekah: Just like ... (laughs) like ...recycling, and not being so ... consuming and everything and just the environment ...

Tim: And... ah ...I think that you can look at sustainability in different ways. There's the common connotation of environmental conservatism, which is

obviously really important, but also... um ...a broad view... I am particularly interested in that broad look...

Gretel: *Sustainability is real important. We need to conserve, and we need to keep things how they are and ... um ...not ruin resources, and if you are talking about relationships...sustaining workplaces, and looking long-term.*

It was not difficult to get the conversation about sustainability education going. The students had elected to attend the interview, they understood the focus in advance, and were keen on the topic. Most had attended sustainability education courses (of various types) at Axon, and elected to take part in the Blumine Island/Oruawairua and/or the Tiromoana Restoration Projects. The outdoor programmes had made a strong impression on the students, who described them with considerable enthusiasm:

Elizabeth: *I went to Blumine Island a while ago ...and we had a Maori word each day. And one of the words that I always remember is 'kaitiakitanga', which ... and I just like using that term, ... it is about guardianship more than ownership, and ... yeah ...just those kind of things.*

I was on Campbell Live (taking about) Blumine, and that was amazing, having the opportunity to talk to the whole of New Zealand was pretty cool.

Rebekah: *Um .. going on Tiromoana was good. I am passionate about the environment, and like ... also being in the outdoors. It's really good.*

Tim: *...when we went on the Tiromoana Camp, and went to the landfill, we found out that ... even if all households ...no one put out any waste at all, that that would only be one fifth, I think it was, of all the waste in (town) because of all the waste that comes from building sites, for example.*

It was interesting to observe the students making links between sustainability education and different science, social sciences, cross-curricula, enquiry, outdoor education and whole school programmes. This conceptual link occurred naturally; I did not suggest it. The students spoke enthusiastically

about learning snow skills, using a composting toilet system on an outdoor endeavour, and of tramping and kayaking. The following quotes capture sentiments expressed by the students:

***Elizabeth:** (Paul) is really interested in (sustainability) too, but it is kind of expressed in a different way, in the Outdoor Ed' programme. It's kind of ... it's more practical, rather than just talking, and it is based on the environmental care code. It's about leaving only footprints, and taking only photos, and that kind of thing.*

***Rebekah:** It is really good to learn about something that we are passionate about, and not just like sit in a classroom and being told what to learn. Like from books or something. But getting out and doing what you are passionate about.*

While teachers, school, and education beyond the classroom experiences had had a strong influence on the students – in terms of their understanding of and enthusiasm for sustainability education - many spoke equally enthusiastically about other experiences ignited or supported their enthusiasm. The following snippets, which are not in sequence or context, provide some insight in this respect:

***Elizabeth:** I've grown up... with the environment. I live on a big section, and I've lived there for about 10 years now, and that's always been a part of my life. Our family is very outdoorsy. And my Mum did an Early Childhood Degree, 2 years ago now, and she was learning Maori through that. And I've learnt a lot from her, with that, and combining all those kind of things. And I do enjoy the outdoors, so I have always had an appreciation for it, and now, with these ideas being introduced, it's a natural progression.*

***Gretel:** Yeah (laughs). And I have been on the 'Spirit of New Zealand', which is a big sailing ship.*

***Tim:** ...my parents do Bokashi, so I know how that works.*

Rory: *I am a vegetarian, my Mum and Dad are pescatarians, so they eat fish, and then my sister is a vegan.*

In terms of the students I met, Axon seems to have had a positive influence on attitudes to learning. The students spoke in favour of the character of the school, and the community atmosphere created:

Tim: *It's the whole approach, just ...well, when you think of what you could be doing. Maybe sitting in a classroom, studying books, and sitting in wooden desks, which I have a problem with for starters. And just compare it with the whole way that you are treated here, which is more like adults I think. And also, OK, another thing I like, as I said before, is that age groups are not separated That is perfectly normal to be talking to us all, as a group*

Rory: *Equality is a really big thing at this school.*

Elizabeth: *One big thing that this school has helped me to develop is ... just talking to people, like adults ...I think the biggest thing is the atmosphere here. Um, like it's just a very honest relationship that we have with our teachers. And we call our teachers by their first name, and it chills everything out.*

Given Axon's ethos of democracy and choice, and the emphasis it places on relationship building (as emphasised by Kari, Tim, Rory and Elizabeth), teachers seem able to 'shoulder-tap' students (an expression used by Kari) when opportunities arise that might suit and/or extend them. By way of example, Rebekah was taking part in an orienteering programme, Elizabeth had spoken about her Bluemine Island experience on 'Campbell Live' (a New Zealand current affairs programme), Gretel had been on the 'Spirit of Adventure' (a ten day youth development voyage), Rory had delivered a talk to the town council, and Tim was completing a first-year degree-level course.

As the interview came to a close towards the end of lunchtime, the students drew pictures of the things they would most like to sustain. Written labels included:

- Our outdoors, the forests, mountains, and nature
- Nature as a whole is amazing and should not be destroyed
- The planet, the natural environment, plants, animals, all living creatures. Don't let creatures go extinct
- Humans and the balance between their activity and nature
- Nature, family, everyone
- The world

They added a number of recommendations. This was their idea, not mine:

- Third world becomes first
- We need more sustainable action in parliament
- It's important to teach the next generation about the problems and solutions
- Education, inform people, educate them on sustainability
- Social skills should be taught really well and excitingly, maybe even a philosophy class!
- More cross-linking of subjects – imagine discussing environment, English, psychology, chemistry (weather) all together!!
- I would like to see an increased and sustained comprehension of the relationship between human and nature.
- All taking and not giving back – it needs to change
- Informed decisions
- Show people a different way of thinking
- Kaitiakitanga – guardianship

Some time has passed since I interviewed the students at Axon. Their personalities, voices, understandings, passions (a word they used), experiences, hopes and dreams had – and still have - a powerful impression on me.

5.4 The participant observations

Classroom observations were conducted on four occasions over the period of two school terms. The interpretive method of participant observation was selected for its potential to increase the validity of the study through an additional method of gathering data, and; contribute to a more holistic understanding of sustainability education practices in the context of a particular New Zealand secondary school. In addition, it was reasoned that participant observations would make it possible to check conceptual understandings that arose in the interviews, and observe situations the teachers described, in the natural setting in which they occur (DeWalt & DeWalt, 2002; Marshall & Rossman, 1995). In discussion with the teacher participants, and with reference to their term timetables, the observations were timed to coincide with school programmes that link (in the eyes of the teachers concerned) to sustainability education. Two observations, summarised below, are interpreted and summarised in the final sections of this chapter.

Observation 1: Kari and students

The first observation involved Kari and sixteen Year 9 students involved in a social sciences course entitled 'NRG: The Big Issue'. The setting was a multi-purpose, multi-media room with a low ceiling, subdued lighting, movable

furniture, a data projector and screen, wireless connectivity, and electric outlets for personal laptops.

On entering this teaching and learning space, most of the Year 9 students congregated in casual groups at the long tables. One student had a laptop, which required him to sit close to an outlet, and apart from the others. Kari took her teaching materials from a portable crate and set up a laptop and speakers on a table near the data projector. As she did this, she chatted freely to the students (13 boys and 3 girls) and referred to them by name. The students did not seem to be troubled by my presence – perhaps because visitors frequent Axon on a regular basis.

At the start of the observation, I was introduced as a visiting lecturer, as Kari and I had agreed. I planned to sit quietly and observe, jot down notes, help with the distribution of activities, and interact on occasion with the students. As a teacher educator, I regularly visit classrooms to carry out student-teacher observations, so I felt comfortable with this arrangement. My stance in this situation is best described as ‘the observer as participant’ stance, which means I could participate in activities, as desired, but my main role was to observe and collect data (Gold, 1958).

The specific learning objective for Kari’s one hour lesson was: ‘Explore the concept of sustainability that we need to apply when decision-making about future energy sources’. This objective addresses the NZC (MOE, 2007) level 6 geography achievement objective: ‘Understand how people interact with natural and cultural environments and that this interaction has consequences.’

The key concepts addressed in this sustainability education lesson were: energy, renewable and non-renewable forms, energy sources, chain of supply, energy uses, change, impact, advantages and disadvantages, complexity, sustainability, and choice. The concepts were developed through a range of individual and group activities: an Enviroschools card-sequence activity (Where does it come from, and where does it go?); a set of 'impact' cards, relating to the first activity; questions relating to the specific learning objective and group discussions; a power-point presentation about energy and sustainability; an individual and group formative assessment activity, and the use of individual learning journals. For the purposes of assessment, Kari gathered in the journals and worksheets before the session finished and the students departed.

While the setting suited a multi-media presentation – which is what it was selected for – it was not well-suited to the purposes of a participant observation. The room was a little dark which made it hard to take notes, or observe the students to see how they worked, reacted, and interacted. I was disappointed not to gather rich data, as intended. However, I was able to record key concepts Kari used, and broadly see how they were presented and explored in the context of a sustainability education lesson.

Observation 2: Paul and students

The second observation involved Paul and a group of five students who had elected to participate in cross-curricula course on 'Global Politics.' Once again the setting was a 'hi-tech' space with a long whiteboard, wireless connectivity, electric outlets for personal computers and a data projector.

As Paul set up his computer and the data projector in preparation for the lesson, he greeted the students as they entered the room. The students were of varying ages: the two older girls sat together at one table with the older boy, and the two younger boys sat at a separate table. As invited, I sat at a back table with an uninterrupted view of the space and the participants. As agreed with Paul, I was introduced as a visiting lecturer, which I remained comfortable with. Once again, the students seemed untroubled by my presence. I assumed the stance as an 'observer as participant' (Gold, 1958).

The key concepts addressed in this sustainability education lesson were: global politics, political ideologies, power, equity, justice, and sustainability. No link to the *NZC* was made on this occasion, although it may have previously. The concepts were developed through a range of teacher-directed, whole-class activities. These included: a power point presentation of political cartoons; a class discussion about political ideologies in relation to major social issues (global warming, race, religion, family, big corporations, taxes, health, poverty, gun control, and gay rights); the development of a political spectrum (from communism on the left to fascism on the right), and; a class discussion about party politics in New Zealand – as per the spectrum of ideologies. Key ideas were recorded on the whiteboard using a beam of light from the data projector.

Again, the observation setting suited the purpose of a multi-media presentation but not the purpose of participant observation, and for the same reasons. And again, I was disappointed not to gather rich data, but pleased to have been able to record the key concepts Paul used, and to see how he presented these in the context of a sustainability education lesson.

5.5 Interpretation and key findings

The interpretive methods of participant interviews and participant observation yielded a considerable quantity and quality of rich data in relation to the question: *How is sustainability education conceptualised and practiced locally by teachers and their students in a New Zealand secondary school?* As described in the Methodology Chapter, themes began to emerge from the texts that were developed from the interviews and observations. Bogdan and Biklen (2007) define 'themes' in the following way:

“Concepts, grounded theories, or ideas that emerge from your data that transcend and unify particular data and findings into coherent patterns. Themes are the big ideas derived from research and provide the structure for the presentation of findings and interpretation” (p.275).

Thus defined, four broad inter-linking themes that relate to the research question are identified, and used as categories for the purposes of interpretation. Introduced below, the themes are:

Theme 1: Social environment

The social construction of sustainability education occurs within a wider social environment. This theme focuses on the social environment, social context, or milieu, refers to the physical, social and cultural setting in which sustainability education takes place.

Axon High School adheres to a philosophy of democracy and choice. As such, it has a progressive vision (Tanner & Tanner, 1980), which is reflected in the

tenets and tenor of the school. The values of self-determination, equality, respect and trust are promoted. While the school adheres to the New Zealand curriculum, it accepts that it has the authority and scope to design and shape the school curriculum to suit its particular community of students (Ministry of Education, 2007, p. 37). On this basis, it has flexible qualification pathways that allow for cross-curricula courses, course differentiation, and individual and group enquiries. Axon works in partnership with parents and the community, and it makes use of the access it has to community facilities. As the school is less constrained by traditional educational conventions, it is characterised by a distinctive social environment.

Theme 2: Concepts

Sustainability education is conceptualised in a variety of ways. This theme focuses on the theoretical frameworks, big ideas or understandings that enable the participants to interpret and represent information relating to sustainability education.

Given that Axon espouses a philosophy of democracy and choice, it is not surprising that the teachers and the students, in this study, express different conceptions of sustainability education and education in general.

When the texts that were derived from the interviews and observations were analysed in relation to different conceptions of curriculum that are outlined in Chapter 2: 'Theories that contribute to the study', and the different conceptions of sustainability education that are described in Chapter 3: 'Sustainability education in theory: Conceptions in literature and the New Zealand curriculum,' conceptual patterns of consistencies emerged, which are

now described. It is necessary to read the descriptions with an understanding that they are not as ideologically consistent and immobile, as suggested here.

The data analysis suggests that Kari holds social constructionist views, in the sense that she takes a 'critical stance towards taken-for-granted knowledge and cultural specificity, and she expresses 'a belief that knowledge (which is sustained by social processes) and social action go together' (Burr, 1995). In keeping with a social constructionist view, Kari articulates a socially-critical conception of curriculum (Kemmis, Cole & Suggett, 1994), and an understanding of EfS that reflects the Guiding Principles of the Enviroschools Foundation. As such, her approach emphasises student empowerment, action for real change, learning for sustainability, an acknowledgement of the status and knowledge of Māori, as tangata whenua in Aotearoa New Zealand, a respect for diversity, and sustainable communities.

The analysis suggests that Paul holds social constructionist views (Burr, 1995) and a largely Liberal-Progressive political orientation (Kemmis, Cole & Suggett, 1994). Paul's conception of sustainability education reflects the influence of Education Outside the Classroom (EOTC) Codes of Practice, including safety and sustainable practices.

The students articulated a range of conceptions in relation to sustainability education and education in general. They endorsed and manifested (through their behaviour) the premise that knowledge is socially constructed, and espoused a Liberal-Progressive political orientation on curriculum (Kemmis, Cole & Suggett, 1994). While their conceptions of sustainability education varied, it is apparent that they view it through an experiential lens – in the

sense that they expressed greater interest in learning through experience and action.

Theme 3: Practice

Sustainability education is practiced in a variety of ways. This theme focuses on the way that sustainability education is taught and learned.

The texts that were developed from the interviews and observations suggest that Kari adopts a social constructionist-interactionist model of teaching and learning (Kemmis, Cole & Suggett, 1994) in that she co-constructs the curriculum with her students, (as best she can within the confines of the NZC and NCEA through a process of reflection and social negotiation. Kari is influenced by the Enviroschools approach sustainability education. She utilises the action competence cycle model, and the principles and values of the NZC (MOE, 2007). A dialectical view of knowledge prevails in Kari's arguments, as is her aim that students become critically- conscious and socially responsible co-actors in life, work and the community (Grundy, 1994; Kemmis, Cole & Suggett, 1994).

Paul's sustainability education practice is influenced by the principles of progressive education (Tanner & Tanner, 1980), which means that he places an emphasis on student interest and readiness, learning by doing, the development of individual and social skills, integrated curriculum, the integration of mental and manual aspects, problem-solving, and critical thinking. He appears to have a subjective view of knowledge, as knowledge that should prepare an individual for life and ultimately contributing to the development of a stable, democratic society (Kemmis, Cole & Suggett, 1994).

When he is teaching outdoor education, it is likely that Paul assumes the role of an autonomous professional, mentor and facilitator, who is concerned about student growth. Paul appreciates that Axon school is less constrained by traditional educational conventions, it is characterised by a distinctive social environment. His teaching practice is influenced by the Codes of EOTC, thinking and problem-solving models, and the key competencies, in the *NZC* (MOE, 2007).

The students expressed strong allegiance to their school and the philosophy of democracy and choice it promotes. They favour this model, as it promotes the values of self-determination and independence, equality, respect and trust. They also appear to favour the practices that accompany progressive educational practice – an emphasis on curriculum integration, learning by experiencing and doing, problem solving, and critical thinking. Based on a close reading of the text, it can be argued that the students hold a Liberal Progressive view of knowledge, as something that is politically and economically located, and dialectical (i.e.: an interplay of subjective views on the world) and which prepares them for life and contributes to the development of a democratic society. They favour sustainability education practice that is based on weak subject differentiation, student selection, interest and readiness, and teachers who take on the role of mentors and facilitators, rather than authoritarian figures (Kemmis, Cole & Suggett, 1994; Tanner & Tanner, 1980).

Table 6 on the next page provides a comparative summary of these points.

Table 6: Sustainability education: Participant conceptions and practices

Participant & Context	Concepts	Practice
<p>Kari</p>	<p>EfS lens: reflects Principles of EnviroSchools Foundation</p> <p>Socially-critical political orientation on curriculum (largely)</p>	<p>Pedagogical influences and models NZC – principles and values EnviroSchools - action competence cycle, whole-school approach. Social constructionist – interactionist models of learning</p> <p>Knowledge: Dialectical view - knowledge has its greatest significance in social action</p> <p>Curriculum : socially constructed – arrived at through a process of reflection and negotiation</p> <p>Teaching and Learning: the teacher is a co-ordinator, organises projects with student and community</p> <p>The student and desired outcomes: student becomes critically conscious and a socially responsible in life , work, community</p> <p>The school and community: view that schools are in a relationship with and part of society - boundaries between school, community, spaces, subjects should be blurred</p> <p>Curriculum decision-making: View that teachers, students and community are inter-dependent</p>
<p>Paul</p>	<p>Outdoor Education lens: reflects EOTC codes, sustainable practices</p> <p>Liberal Progressive political orientation on curriculum (largely)</p>	<p>Pedagogical influences and models: NZC – Key competencies EOTC Codes of Practice, sustainable practices Progressive Education – emphasis on learning by doing, integrated curriculum, problem-solving and critical thinking</p> <p>Knowledge: Subjective – knowledge prepares an individual for life and it ultimately contributes to the development of a stable, democratic society; mental and manual aspects are integrated</p> <p>Curriculum: eclectic – curriculum aims to develop reflective thinking for social problem-solving and to produce well-rounded citizens; student selection is based on interest and readiness</p> <p>Teaching and Learning: teacher is a mentor, facilitator, and learner with recognised knowledge and concern for student growth</p> <p>The student and desired outcomes: student is on a journey, actively constructing knowledge through facilitated experiences, to discover and enquire; personal development and social co-operation models</p> <p>The school and community: view that schools should be less-formally organised; split between time and space, subject</p>

Interpretation

It emerges that a range of conceptions and practices of sustainability education co-exist at Axon. This is made possible by the relatively permissive character of the NZC, and Axon's philosophy of democracy and choice. As the conceptions and practices reflect social constructionist views, and liberal-progressive and socially-critical political orientations on curriculum, the tension between them is not as great as it would be if vocational and neo-classical views were strongly promoted, which they do not appear to be at Axon. However, the school's emphasis of choice means that sustainability education is not widely supported at Axon. It does not have a well-defined and unified presence, and it is always struggling (through the efforts of individual teachers and students) to keep a place in the school curriculum. Conversely, the co-existence of different conceptions and practices of sustainability education may be the means to its survival.

Interestingly, the students recognised sustainability education, in all its guises. This may be because they are familiar with cross-curricula and enquiry courses, and therefore able to recognise the relationship between different learning areas. In addition, the students accepted there are different perspectives on sustainability and sustainability education. In this respect, the ethos of the school serves them well; they were willing to reflect on, discuss, and respectfully consider a range of conceptions and practices of sustainability education, and to thereby develop an understanding of the field that is as much hopeful as it is critical.

5.6 Summary

The case study comprises the second, interrelated component of the thesis. Complementing the literature review, and addressing the questions relating to sustainability education in practice, the case study is situated in the real-life context of an urban school that has an ethos of democracy and choice. The chapter explains the overall intentions of the case study, and it provides rich descriptions of the Axon school setting, the teacher and student participants, and the interpretive methods of semi-structure interviewing and participant observing.

The interpretive method yielded a quantity and quality of rich data in relation to thesis question. Texts developed from the interview and observation transcripts revealed three key themes that served as categories for the purposes of interpretation and analysis. The themes are: social environment – which is taken in this study to refer mainly to the school, rather than the broader social context; concepts – which refers to concepts of or relating to sustainability education (for example, environment, sustainability, sustainable development, environmental education, and education for sustainability) that were related in the interviews and observations and appear in the data, and; practice – which relates to the way that sustainability education is taught and learned.

The themes were interpreted in relation to the theories that contribute to this thesis, such as social constructionism, critical theory, and curriculum theory. Kemmis, Cole and Suggett's (1994) frame of political orientations on curriculum (Table 1 in this thesis) was used to tease out the themes in relation to notions of theoretical influence and models, knowledge, curriculum,

teaching and learning, desired student outcomes, school and community and curriculum decision-making. The interpretation and the summary table developed for this thesis (Table 6) add weight to the conclusion, in the summary of the literature review, regarding the complex, contested, and contextualised character of sustainability education. They also add weight – as shall be discussed in the final chapter of the thesis, to the idea that the emerging field of sustainability education is as much hopeful as it is critical.

Chapter 6: Discussion and reflections

The overall purpose of this investigation was to develop a 'complex perspective' of sustainability education (Robottom, 1985) via a review of situational factors and multi-levelled analysis of conceptions of sustainability education, and a descriptive case study of the ways in which two secondary school teachers and a small group of students understand and practice sustainability education. Structured to resemble a multi-levelled map, the thesis hopes to support the navigation of this complex field (Delors, 1996).

The final chapter of the thesis works to draw the strands of the study together in order to return to question 3: *What are the implications of the findings regarding sustainability education and the possibilities for practice?* It comprises a summary of the findings of the literature review and case study, and a discussion of their implications. Final observations are made in the last section of the chapter.

6.1 Summary of findings

Forming a major component of the thesis, and integral to the investigation, the literature review took stock of situational factors that are impacting on the context and purpose of education, and on the character of sustainability education. Intersecting global, national and local contexts, climate change and the world-wide economic downturn were central to this analysis, given their current and ongoing impact on the lives of children and young people.

In the review it was established that reputable international and national environmental assessment reports by the IPCC (1990; 1995; 2001; 2007); the

Club of Rome (2008), and Mullan, Wratt, Dean, Hollis, Allen, Williams and Kenny (2008) and others show that change is occurring at an unprecedented speed, scale, and level of complexity. Further complicating the situation, the neoliberal structure that defines the way New Zealand and many other countries manage their economies, social policies, and international interactions is deepening inequalities within and between countries (Small, 2009). Given that the root cause of these crises is "...located in the very nature of our current social, economic, and political systems, and in the worldviews, institutions, and life-style choices that support them" (Fien, 1993, p.vii), education has a revolutionary role to play, if it is to remain relevant.

Based on the situational analysis and the New Zealand Ministry of Education's (2007) directive that education 'must respond to the challenges of our times' (p. 4), the central concepts of sustainability and sustainable development were examined in relation to their origins, orientations, and implications. It emerged that while the concept of 'sustainability' has a strong presence in official rhetoric and policy (Gibson, Hassan, Holtz, James & Whitelaw, 2005), it is highly controversial and open to different interpretations and approaches. While some promote the interpretation of 'weak sustainability', which is: reductive, technologically-inventive, manufactured-capital and progress-based view of development, others advocate 'strong sustainability', which is an integrative, ecologically-attuned, wellbeing- and natural-capital based view. Weak sustainability, which is currently dominates, has the inter-national backing of neoliberal economics.

The literature review further revealed that the concepts of 'weak' sustainability and 'strong' sustainability are uncomfortably embedded in the

ubiquitous notion of 'sustainable development'. Advanced by the World Commission on Environment and Development (1987), this concept is similarly controversial. Fien and Tilbury (2002) contend that this is confusing for teachers, and leading to delays in the changes necessary for a more sustainable society. In response to this legitimate concern, and in an endeavour to present a complex perspective of sustainability education (Robottom, 1985) within a structure that resembles a multi-levelled map (Delors, 1996), conceptions of sustainability education that exist and/or operate at the global, national, and local levels were collated, critiqued, and compared. Although it has a logical structure and educative intentions, the review proved problematic - in part because of the complexity of the literature, which extends far beyond the field of education, and in part because of the scale, ambivalence, and contestable character of the key concepts.

First to be explored was Education for Sustainable Development, which is depicted as a global/macro level conception as it originates from and is intended to operate (albeit in nuanced local forms) at the global level. As characterised by UNESCO (2005), ESD supports the UN's mandate to foster co-operation in international law, international security, economic development, social progress, human rights, and the achievement of world peace. As such, it has an integrative, far-reaching and alluring mission. However, reading beyond the UN ESD material, it became evident that the field is fraught with tension at every level - from the conceptual to the political. Given the well-argued and detailed reporting on the perilous state of the environment in the scientific literature (as described in the situational analysis) and the directive that education system must respond to these challenges, it was difficult to make sense of these tensions. An approach the

responses to the UN ESD from three vantage points was attempted - the theoretical/analytical, political/economic, and cultural.

Representing broad 'communities of discourse' (Hewings & Hewings, 2005), the categories are characterised by common purposes and conventions. While this does not mean they were easy to deal with (indeed, they too are contestable, multi-dimensional, and intersecting), the emergent categories provided a way of exploring the literature and highlighting different aspects of the character of ESD. Drawing on the work of academics, researchers, and/or educators, the 'theoretical/ analytical' category is characterised by rigorous interrogation, debate, and critique. This category proved most illuminating and caused me to rethink my original position on ESD.

In a description of the conceptual chaos that ensued when the ESD/ UNDESD project was promoted, Pérez and Llorente (2005) critique the concept of 'sustainable development' which, they say, has tended to favour neoliberal ideals. Sauvé, Berryman and Brunelle (2007), whose extensive analysis of the rhetoric of the United Nations reveals an instrumental view of education, a 'resouricst' view of the environment and an 'economacist' view of development adds credence to the first view. In a scholarly debate, Jickling (Jickling & Wals, 2012) describes ESD as a meta-narrative that is constrained by the concept of sustainable development and shaped by neoliberal conventions. Wals contends that ESD is an emergent concept that is open to interpretation, but he adds that it is also open to political influence and, in particular, to the influence of 'the neo-liberalist project' (p.5). Hicks (2007) argues that teachers need to grasp the ideological differences between different perspectives on education and sustainability. To this end, he

compares technocentric, ecocentric, contrarian, and North vs South perspectives, and the ideologies of Neo-liberalism, Neoconservatism and Radicalism. In another analysis, Huckle (2012) highlights the differences between reformists, who advocate the greening of capitalism, and radicals, who advocate the greening of socialism. Taking a different line again, Berryman (1999) draws on the research into the physical, psychological, socio-cultural and environmental benefits of authentic, place-based experiences to show that ESD will have “ ... perverse effects, with respect to child development and (the) preservation of diversity in people, cultures, places, practices and languages” (p.50). And finally, Sullivan (2012) warns that the ‘penetration of finance’ into discourses of environmental conservation and sustainability is contributing to the reconceptualisation of nature in monetary and tradeable terms, and to the diminishment of biological, linguistic, cultural and epistemological diversity.

Selected for their well-substantiated descriptions, interpretations, and critiques of the direction the ESD discourse is taking, the theoretical /analytical literature is in broad agreement on significant points. This does not signal uniformity; rather it signals that academics, researchers, and/or educators interested enough to research ESD tend to come across certain points of tension in the discourse of the UN and UNESCO. It would be easy to dismiss these examples as academic word exercises, but as Philips and Hardy (2002) point out, “...social reality is produced and made real through discourses, and social interaction cannot fully be understood without reference to the discourses that give them meaning” (p. 3). Using methods such as document and discourse analysis, the theoretical /analytical community of discourse highlights significant issues that are being played out, on a global

scale, in and through language. As the UN discourse is found to be neither neutral (i.e., fair and balanced) nor consistent, and susceptible to different forms of persuasion, it emerges that educators need to become politically literate if they are to safeguard the educational and democratic function and stimulate the development of alternative, sustainable ways of understanding and living in the world.

In the literature review it was argued that political and economic responses to ESD differ from theoretical/analytical responses in that they are not explicitly (or transparently) theoretical or analytical. Theoretical authority is often assumed in these responses, which means that they are not open to query or debate. Assumedly, this is in the interest of promoting - rather than critiquing or analysing - political and economic perspectives views and priorities. Comprising non-governmental organisations, international institutions, political and economic ministries, central banks and business corporations, this community is not very active in the debate about ESD in particular, but it has a powerful influence on the reality in which ESD is interpreted and enacted.

The characteristics that are associated with this category are exemplified in a 2008 OECD publication on ESD competencies, which (it is worth re-emphasising) is written by an economist. Designed to support the existing 'Programme for International Student Assessment' (PISA) framework and the OECD's reformist mission of sustainable/green growth, rising standards of living, financial stability, economic expansion, and a growth in world trade, this slight and seemingly inoffensive document reduces ESD to an optional extra that is subjugated to pre-existing, standardised, and economically-

oriented programmes. As such, this response advances disbelief and indifference in relation to Matsuura's (2006) call for a major shift in human perception, behaviour, and interaction.

It was established in the review that ESD appears to have nominal political, economic, and educational support in Aotearoa New Zealand, and that the co-management of the UNDESD passed to SANZ, a charitable trust. On the basis of this finding, a number of arguments were proposed. First, the opportunity to initiate a shift in human thinking and behaviour has been politically and economically evaded, on the general public's behalf. Second, the key UNDESD role that formal education and teachers were to play, in local schools and communities, has been similarly quashed. Third, while the SANZ (2009) view of 'strong sustainability' co-exists with the government's line on 'weak sustainability,' it does so in a space of lesser influence. Accordingly, it appears that national/local public debate on ESD – and alternative forms of education with an environmental and/or sustainability focus – has been curtailed in a fashion that resembles the OECD approach above, which strengthens the premise that the political/economic community of discourse has a powerful influence on the context in which ESD, the UNDESD, and similar projects of endeavour are interpreted, debated, and prioritised. If New Zealand citizens had been given the opportunity to debate and add local distinction to ESD, this macro-level concept may have had more of a role in education, than it appears to have in New Zealand today.

'Cultural responses to ESD' form the last of the three emergent categories. This category was conceived to represent (or offer a voice to) common sense ways of knowing and living in the world and indigenous and local

understandings that are accumulated over generations of living in a particular environment. That a cultural dimension has been added, in recent times, to the three-sphere (or three-pillar) model of sustainable development is another reason for including culture.

As culture represents a broad dimension (as is the case for politics and economics), major reports on sustainable development or education for sustainable development that either allude to or explicitly include the dimension of culture were described. These make explicit reference to the potential this dimension has to add meaning, place-based approaches, energy, traditional knowledge, diversity, intercultural dialogue, and democracy – among other things – to the project of sustainable development or education for sustainable development. As such, these aspects of the dimension of culture provide multiple points of entry and possibility.

A short study was then undertaken to see how culture is represented in the theoretical and analytical and political and economic responses to ESD that had already been described. The re-reading showed that culture is diminished and conceived in monetary and tradeable terms in the political and economic literature on ESD, and that it is integral to the theoretical and analytical literature on ESD. The stark contrast between these conceptions of culture warrants much deeper analysis that is possible here.

Indigenous views on or relating to ESD were then explored. These revealed a range of past, present and future challenges in relation to sustainable development (and, by implication, ESD), and a range of possibilities. The latter can be summarised as: re-valuing indigenous perspectives, the recognition of

worldview differences and similarities, the possibility that different knowledge systems can learn from each other, and the imperative of cross-cultural dialogue and democratic decision-making.

Conceptions of sustainability education at the national level in Aotearoa New Zealand were then considered. This section of the review explored the notions of environmental education, education for sustainability, Mātauranga Taiao, and education for sustainable development in terms of their origins and influences, and national character and implementation. Identified as one of the catalysts for this project, the *Guidelines for Environmental Education in New Zealand Schools (Guidelines)* (Ministry of Education, 1999) was scrutinised in this section, and compared with notions of sustainability that appear in *the New Zealand Curriculum* (MOE, 2007) and the prevailing conception of education for sustainability. This process revealed some interesting findings, such as the finding that a bicultural approach is promoted in the former – which is rich with indigenous conceptions - but less evident in the online information on EfS that is promoted by the Ministry of Education. Other differences between these conceptions – all of which warrant deeper consideration – are identified and briefly discussed. What emerges, from this analysis, is that EfS does not necessarily represent a broader and more integral view, as often claimed. What this suggests – or rather reinforces – is the necessity to approach the discourse on sustainability education with an ‘attitude of incredulity’, as Lyotard (1979) advised.

A seminal, four-volume report entitled *Environmental Education in New Zealand Schools: Research into Current Practice and Future Possibilities* (Bolstad, Cowie, Eames, Baker, Keown, Edwards, Coll & Rogers, 2004) was discussed in this

section of the review. It reports on a survey of 193 New Zealand schools and described eight EE case studies that were carried out in primary, area, intermediate, secondary, and kura kaupapa Māori schools. A range of themes and issues for the practice of EE are discussed at some length. Chapman and Eame's (2007) position paper – which was to serve as a prelude to re-writing *Guidelines* (MOE, 1999) – was discussed. Surprisingly, this project was abandoned, and for no discernible reason. The paper remains a valuable source of information and insight into the shift from EE to EfS in the New Zealand curriculum.

Mātauranga Taiao, or EfS in the Māori medium, was described in relation to the Māori concepts of kaitiakitanga, whānaungatanga, mātauranga, mauri, tapu, utu, whakapapa, and mana (Walker, 2008). Many of these holistic concepts are integral to the *Guidelines* (MOE, 1999), and they relate well to Māori conceptions of curriculum (as discussed in the chapter on contributing theories) and indigenous perspectives on ESD. Following this is a description of EfS as defined by the Parliamentary Commissioner for the Environment, in 2004, which pays greater attention to the idea of questioning and challenging assumptions, and the integration of ethical matters.

In the final section of the literature review, conceptions of sustainability education that exist at the local level in Aotearoa New Zealand are considered. P. Williams (2004) states that local government agencies play a key role in the development of sustainability education in this country. As very little literature exists in relation to these initiatives, individually, and as a whole; suggesting an opportunity for further research; a web-search of the websites of ten local government agencies was conducted - to see how they represent

sustainability education. The search (which is best described as a scoping exercise, rather than an in-depth study) gave rise to a plethora of projects, some of which are pitched at children and young people, or families as a whole. Based on this research it was suggested that local initiatives tend to focus on the physical environment, interactions between people and the environment, and the choices we can make to prevent, reduce, or change harmful activities in the environment. This conception of sustainability education more closely represents the Ministry of Education definition of EfS than the PCE (2004) definition of EfS, or the EE definition in *Guidelines* (MOE, 1999).

Conceptions of non-governmental and non-profit community organisations were similarly canvassed. These include ‘the Enviroschools Foundation’, a range of community-based sustainability education initiatives in Canterbury, and a focus on ‘Te Ao Tūroa: the vision of Ngāi Tahu’ - the main tribe of the southern region of New Zealand. While most of the initiatives at this level are similarly characterised to the initiatives of local government agencies, in the sense that they focus on the physical environment, interactions between people and the environment, and the choices we can make to prevent, reduce, or change harmful activities in the environment, the Enviroschools Foundation – which began at the local level in the late 1990s – has expanded to encompass over 900 schools, kura kaupapa, and early childhood centres. The Guiding Principles of the Foundation have a broader compass and the organisation fosters a level of interaction and co-operation between schools and local government partners in each region. As such, this initiative has grown in status and influence.

Taken as a whole, the literature review revealed the highly problematic character of sustainability education. While the review was structured to resemble a multi-levelled map to support navigation of this complex and contested field, the key concepts of environmental education, education for sustainability, and education for sustainable development cannot be viewed as stable markers, and they are indistinct and interchangeable.

While this is confusing for educators and others who are trying to make sense of the field and effect change, the prominence of sustainability as a principle of endeavour, and the diversity of forms it takes at a range of intersecting levels is astonishing. As Gibson, Hassan, Holtz, James & Whitelaw (2005) point out, this represents a more extraordinary phenomenon than is commonly realised - the appeal of which "...may be as much hopeful as critical – offering a response to doubts about the validity of current trends while accommodating optimism about our ability to turn things around without much pain" (p. 38).

The case study comprises the second, interrelated component of the thesis. Supplementing the literature review, which is more theoretically-based, by addressing the issue of sustainability education in practice, the case study is set in an urban school that has a philosophy of democracy and choice. A rich description of the school setting and the seven participants are provided in this chapter, and the outcomes of the interpretive methods of semi-structure interviewing and participant observing are described.

Texts developed from the interview and observation transcripts yielded a considerable quantity and quality of rich data, from which three key themes were drawn: the themes of social environment, concepts, and practice. The

themes were interpreted in accordance with the theories that contribute to this thesis. Kemmis, Cole and Suggett's (1994) frame of political orientations on curriculum was used to further unpack the themes in relation to notions of theoretical influence and models, knowledge, curriculum, teaching and learning, desired student outcomes, school and community and curriculum decision-making. Table 6 represents a summary of this information.

The data from the case study indicates that a range of conceptions and practices of sustainability education co-exist at Axon High School, which is made possible by the flexibility and scope of the *NZC* (MOE, 2007) and Axon's philosophy of democracy and choice. While understandings and practices of sustainability education vary, at Axon High, they support a social constructionist view of reality, and liberal-progressive and socially-critical political orientations in relation to education and curriculum. As a result, diametrically-opposed notions and practices are not in evidence, at Axon, although the school's emphasis on choice means that sustainability education does not, as yet, have whole-school support at Axon. It does not have a well-defined and unified presence, and it is always struggling to maintain a place in the school curriculum. The very vulnerability of sustainability education means that it takes (through the efforts of individual teachers and students) diverse and inventive forms, and interestingly, the students in particular understand the connections between these forms, and they have developed a complex conception of sustainability and an appreciation that the notion, or the endeavour, can be approached practically and creatively, from multiple points of entry.

The findings and interpretation of the case study support the complex, contested, and contextualised character of sustainability education. They also support the view that the emerging field of sustainability education is as much hopeful as it is critical (Gibson, Hassan, Holtz, James & Whitelaw, 2005).

6.2 Implications and possibilities for practice

Developed during and in response to an intense period of social and environmental change that is impacting on the lives of children and young people and on the education system, this thesis is guided by two key statements. The first is by Robottom (1985), who says that qualitative change can be initiated if educators examine their own philosophical and theoretical assumptions and create and communicate a 'complex perspective' of sustainability education by 'sharing experiences.' The second is a statement by Delors (1996, p. 85), who says that "...education must simultaneously provide maps of a complex world in constant turmoil and the compass that will enable people to find their way in it". This thesis represents my endeavour to respond to these statements through the many 'conversations' I have had, with the many people whose ideas and words are represented on these pages.

As a result of this endeavour, a number of implications and possibilities for practice emerge. A most important implication, arising from the situational analysis in the literature review, is captured in this statement, by the Club of Rome (2008):

"The world has entered a period in which the scale, complexity and speed of change caused by human activities threaten the fragile environmental and ecological systems on which we depend" (p.1).

Given the veracity of this statement, which is supported by overwhelming scientific consensus (Cook, Nuccitelli, Green, Richardson, Winkler, Painting, Way, Jacobs & Skuce, 2013), it is imperative that we consider the role of education, in the changing circumstances of the world. As Paul, a participant in the case study said, what we teach people about has to change’.

A further, interrelated implication, arising from the literature review, is that – in this time of crisis – there is no comprehensible map that can direct humanity towards sustainability. The field – and I hesitate to use the word, because ‘sustainability’ (like love, or peace) resists all borders - is exceptionally problematic at every level, and in every respect.

To make sense of this problematic notion or endeavour, it is necessary to develop the skills of informed discernment, in relation to the ideologies or orientations that are taken towards it. In this respect, critical theory provides useful understandings and liberatory tools that can “...highlight the epistemological and conceptual breaks, in which previous traditions are disrupted, displaced, and regrouped” (Apple, 2004, p.viii). The theories of postmodernism and post-structuralism – while they are complicated – offer another range of tools and possibilities for practice.

The dimension of culture provides multiple points of entry into the endeavour of sustainability as Hawkes (2001) and UNESCO (2013) point out. While this dimension is often under-represented in policy and practice, and portrayed in monetary, service, and tradeable terms in the current neoliberal political and economic milieu, as the literature showed (see, for example, Sullivan, 2012), a

number of writers (for example, Mazzocchi, 2006) suggest that re-valuing indigenous perspectives, recognising worldview similarities and differences, enabling knowledge systems to learn from each other, and engaging in cross-cultural dialogue offer constructive possibilities, in relation to sustainability education. A number of key curriculum documents, referred to in this thesis (for example, *Guidelines* (MOE, 1999)) provide useful reference points, in this respect. As Kari said, in one of my interviews with her, “in our countries big decisions, understanding that we are a bicultural nation (and acknowledging) ... cultural diversity is critical”.

Further possibilities for the practice of sustainability education are offered through the practice of democratic education, as exemplified in the case study. This study highlighted the benefits of educating for democracy and social reform, and of cultivating community, communication, intelligent inquiry, and a reconstructive attitude (Garrison, 1999). Such an approach is made possible by the flexibility and scope of the New Zealand Curriculum (Ministry of Education, 2007).

Clearly these possibilities are broadly conceived. They do not equate to manuals for success, or handy tool kits – but rather to broad theoretical, ethical, and philosophical frameworks that provide possibilities for the practice of sustainability education.

6.3 Final Observations

In seeking to develop and communicate a complex conception of sustainability education, (Robottom, 1985), and simultaneously map this emergent field (Delors, 1996), I approached the notion of sustainability

education in contrasting ways. On the one hand, I determined to approach the topic systematically and present a coherent structure, through the imposition of hierarchical levels – such as macro to micro, and theory, practice and possibility. Simultaneously, I approached the case study component of the thesis in what can be described as a rich, recursive, relational and rigorous (Doll, 1993) or ‘choreographic’ (Janesick, 2003) fashion. ‘Axon’⁷⁴ emerged as a suitably dynamic metaphor and pseudonym for the case study school. The tension between the contrasting approaches was not apparent until I began to draft the thesis.

It transpires that sustainability education cannot be confined to a stable conception or consistent framework, or approached through a programme of lock-step levels and standardised assessments. As a complex, multi-dimensional, dynamic and emergent concept, sustainability education may best be approached and sustained in a corresponding fashion — through multiple, and dialogically-linked points of entry.

⁷⁴ An axon is a nerve fibre that makes contact with other cells through electrical impulses, thereby transmitting information.

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Appendices

Appendix 1: Letter to teacher participant

Dear [teacher name]

As a tertiary educator, and student in the 'Master of Teaching and Learning' (MTchLn) Programme at the University of Canterbury, I have developed a research interest in the area of sustainability education. As I am aware that you have an interest in this area too, I am writing to invite you and a group of pupils to participate in my project, tentatively entitled: *Sustainability Education in Aotearoa New Zealand: Theory, Practice and Possibility*.

My thesis has two inter-connected foci: a review and critical analysis of the theory and research informing various curriculum formulations of sustainability education, and a proposed case study investigation of the ways in which two high school teachers and their students understand and practice sustainability education within the parameters of the New Zealand curriculum. In the contexts of curriculum development and the United Nation's Decade of Education for Sustainable Development (2005 -2014), this focus is topical and timely.

I enjoyed meeting with you to discuss this research possibility. Now that the project has been awarded academic approval, I am formally requesting your written agreement to conduct the research in your teaching and learning environment during the middle terms of this school year. The study will involve your participation in two conversational interviews of around about an hour each, and two or three non-intrusive classroom observations of programmes that have a sustainability focus or element.

I am also hoping to conduct a 50 minute interview with a group of six students, in a safe and relatively private setting within the school. Using these methods, I hope to gather rich, descriptive data, and develop a deeper appreciation of the way sustainability education can be conceptualised and practiced within the parameters of the New Zealand curriculum. I anticipate that this work will contribute to my professional growth, and the growth of students I teach. Hopefully, you and your students will gain from the process too. The project will take around 5 hours of your non-contact time (for negotiation, interviews, and transcript checking), and up to an hour of the student's time.

The University of Canterbury College of Education Ethics Committee has reviewed and approved this study. I intend to seek the written consent of *all* participants, including the pupils and their parents/guardians, and as participation is entirely voluntary, all/any have the right to withdraw - without reprise - at any time. Confidentiality and anonymity will be maintained to the highest degree

possible through the use of pseudonyms, and by disguising and/or omitting some demographic data from the case study description. To ensure data validity, transcripts will be made available for you to check that I have accurately recorded views and events. All research materials and interview transcripts will be securely stored in a locked filing cabinet in my office, accessible only to me and my academic supervisors. The risks entailed in this project are minimal, given the relatively non-sensitive nature of the research focus and non-intrusive research approach. However, I do aim to work with you to establish clear ground rules and cultural and safety guidelines for all procedures.

The Principal Supervisor for my research is [name], a Senior Lecturer at the University of Canterbury. [The Supervisor] is happy to discuss this project with you. Her contact details are provided below, as are my own. Throughout the process, complaints may be addressed to the Chair of the U.C. Ethics Committee, as is noted at the foot of the consent form.

I'd like to meet briefly with you and your colleague prior to undertaking the study, so I can describe the purpose and procedures more fully, and respond to any queries you may have. I will contact you soon to arrange a suitable time. I am looking forward to the possibility of working with you and your students in the near future.

Nga mihi
Laurel Fitzgerald (Researcher)

Contact details

Principal Supervisor contact details

Appendix 2: Teacher declaration of informed consent

[Name]

I give consent for case study research on *Sustainability Education in Aotearoa New Zealand: Theory, Practice and Possibility* to be conducted in my class/learning environment at [school] during terms three and four.

I have discussed the project with the researcher, Laurel Fitzgerald, and understood the information provided. I know what is required, if I agree to participate.

I understand that the information I provide will be treated as confidential, and that no findings clearly identifying me, or the school, will be published without my consent.

I understand that all research materials and transcripts will be stored in a locked filing cabinet in Laurel's office, accessible only to her and her academic supervisors

I also understand that my participation in the project is entirely voluntary and that I am entitled to withdraw at any time without incurring any penalty.

Name.....

Signature

Date.....

**** Please return this form to Laurel Fitzgerald by [date]. Thank you for your time***

This project has received ethical approval from the University of Canterbury College of Education Ethical Clearance Committee.

Complaints may be addressed to:
[Name], Ethical Clearance Committee
College of Education, University of Canterbury
Private Bag 4800 CHRISTCHURCH

Appendix 3: Letter to student participants

Dear [student name]

I am a teacher and a Masters' student at the University of Canterbury. Currently, I am conducting some research into sustainability education. As sustainability is attracting a lot of attention lately, in the news and in the community, it seems a good time to find out how teachers and students are responding to this issue.

I have talked to [Principal], and to your [teacher] and they have given me permission to carry out an enquiry of sustainability education at your school. During terms two and three I interviewed two [teachers] about this matter, and carried out a number of observations of learning programmes at your school. As I am keen to know what high school students think and feel about sustainability and sustainability education, I am also inviting six students to participate in a group interview.

The 50 minute interview will be held during a suitable class time, in a quiet public space at school. If you'd like to participate and have your say, please sign the attached consent form. It outlines the terms of agreement - that is, what I agree to do. **Please return the signed form to [teacher] by [date].**

The University of Canterbury College of Education Ethics Committee has reviewed and approved this study on the conditions that:

- your participation is completely voluntary. You can withdraw at any time, without any issue, just by telling me or your Learning Advisor;
- at the start of the interview, we'll establish clear guidelines - such as showing respect for varying points of view;
- you will choose a code name for the project. When the research is written up, your real name and the real name of the school will not be used; and
- the research notes and the interview tape recording (to make sure all points of view are heard) will be securely stored in a locked filing cabinet in my office. No one other than me and my supervisors will have access to these.

If you have any concerns or questions regarding my request, please raise them with your parents and/or teacher. I am looking forward to meeting and talking with you soon.

Kind regards

Laurel Fitzgerald (Researcher)

Appendix 4: Student declaration of informed consent

I (full name)

agree to participate in a 50 minute group interview led by Laurel Fitzgerald and conducted within an appropriate school place and time during term 4.

I have read and understood Laurel Fitzgerald's letter and know what is expected if I agree to take part in her research into sustainability and sustainability education.

I understand that no one (apart from those participating in the interview) will know what I have said, because we will all use code names. I understand that the research notes and tapes will be locked in a filing cabinet in Laurel Fitzgerald's office, and only she and her supervisors will have access to them.

I understand that my participation is completely voluntary. I can withdraw from the process at any time, without any problem, and return to class.

I also understand that if I am to participate, parent/guardian permission is required.

Student signature.....Date.....

** * Please return this form to [teacher] by [date]. Thank you for your time.*

This project has received ethical approval from:
The University of Canterbury College of Education Ethical Clearance Committee.

Complaints may be addressed to:
[Name], Chair of The Ethical Clearance Committee
College of Education, University of Canterbury
Private Bag 4800
CHRISTCHURCH

Appendix 5: Parent/guardian declaration of informed consent

I give consent for (full name).....

to participate in a school case study interview of 50 minutes on the topic of sustainability and sustainability education. The interview will be led by Laurel Fitzgerald, and conducted at [School] during term 4.

I understand the information provided and appreciate what will be required of the student if consent is given.

I understand that, while the interview will be audio-taped, anonymity and confidentiality will be maintained through the use of code names. Research materials and transcripts will be stored securely in a locked cabinet in the researcher's office, and the thesis will not be published.

I understand that, as student participation is entirely voluntary, he/she can withdraw from the project at any time without incurring any penalty.

Name (Parent/Guardian).....

Signature.....

Date.....

** Please return this form to [teacher] by [date]. Thank you for your time.*

This project has received ethical approval from:
The University of Canterbury College of Education Ethical Clearance Committee.

Complaints may be addressed to:
Name], Chair of The Ethical Clearance Committee
College of Education, University of Canterbury
Private Bag 4800
CHRISTCHURCH

Appendix 6: Semi-structured teacher interview guides

Teacher Interview 1:

Key question: *How is sustainability education understood and practiced, within the context of the New Zealand Curriculum, in your classroom?*

Guiding questions and prompts

- In recent years, there has been a shift in emphasis, in the curriculum, from environmental education, to education for sustainability. How do you feel about this?
- The concept of sustainability has a presence in the new curriculum. What do you understand the term to mean? *What are the key concepts/ ideas? Can it be interpreted in other ways? An alternative term is sustainable development. How do you interpret this term? What are the key ideas? How is this idea different from sustainability?*
- What is your view of the relationship between education and sustainability? *Do you see education as having a role to play? Is this part of the purpose of education? What has influenced your thinking here? How and why have your ideas developed? Which theory (ies) or events, experiences and issues have influenced you? Are there any you are more critical of and why?*
- How are your understandings reflected in your teaching practice? *In terms of your philosophy, approach to teaching & learning, curriculum analysis & design, and relationships with children and the environment, for example*
- How do your views and practices mesh with prevailing views and practices? *In what ways are your views in harmony with, or critical of 'The New Zealand Curriculum 2007'? How do you address curriculum and assessment – e.g.: NZQA - requirements? Does your school adhere to a (particular) 'whole school approach' to education for sustainability? How do you fit in?*
- In what ways are you challenging – or offering an alternative to - prevailing views and practices? *How is your approach atypical? What opportunities and obstacles have you encountered? How have you dealt with them? What are the advantages and disadvantages of taking an 'alternative' approach? Do you have any advice for other teachers who are interested in pursuing 'education for sustainability'?*
- Who and what supports you – and the children – in the practice of 'education for sustainability'? *e.g.: links to local, national, or global networks or organisations;*

alternative examples of curriculum design – such as UNESCO’s multimedia education programme; professional development; or practical and financial support

- What kind of classroom culture is compatible with your vision of ‘education for sustainability’? *What values and practices are to be encouraged? How would you describe this learning environment? How do you think the children would describe this learning environment?*
- How do you know that sustainability is being promoted or enhanced in this learning environment?
How is the effectiveness, or rigour, of the programme measured within this institutional context? How has the capacity for sustainability been promoted and enhanced? How is individual and collective agency energised and channelled?
- Where to next?
What concerns and questions, suggestions and dreams do you, and the children have?

Teacher Interview 2:

Key question: How is sustainability education understood and practiced, within the context of the New Zealand Curriculum, in your classroom?

Guiding questions and prompts

- The NZC sets out a number of principles, which are ‘the foundations of curriculum decision-making’. How do you understand these principles, and how are they reflected in your programme?
- How are the values and key competencies outlined in the NZC reflected in your approach to teaching and learning?
- The document also outlines a vision for young people. What is *your* vision for them and how is it reflected in your approach to teaching and learning? Successes?

Appendix 7: Semi-structured student group interview guide

Student Group Interview

Key question: *How is sustainability education understood and practiced, within the context of the New Zealand Curriculum, in your classroom?*

Guiding questions and prompts

- *The New Zealand Curriculum encourages teachers to address the issue of sustainability. Have you heard of sustainability? What do you think it means?*
- *How do you feel about the idea of sustainability?
Is it an important idea? Who is it important to, and why? Has your feeling about this idea changed – why? How do you express this?*
- *Have you focused on sustainability this year?
What did you focus on? How did you learn about it? What did you learn? How did you feel about what you learned/did?*
- *What skills have you developed that will enable you to keep working on the issue of sustainability? [You may, for example, have learned about compost, or how to investigate the causes of environmental degradation. Maybe you are actively involved in a project or cause. Perhaps you'd rather forget about the whole idea and do something else!]*
- *In your opinion, what needs to be sustained? Name or draw 5 things. Suggest a number of ways of sustaining these things.*
- *Where to next? And thanks!
What concerns and questions, suggestions and dreams do you have?*