
A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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Declaration

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

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# Abbreviations

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<thead>
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<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AuSSI</td>
<td>Australian Sustainable Schools Initiative</td>
</tr>
<tr>
<td>CHEAN</td>
<td>College Human Ethics Advisory Network</td>
</tr>
<tr>
<td>CEOE</td>
<td>Catholic Education Office of Melbourne</td>
</tr>
<tr>
<td>DES</td>
<td>Deep Ecology Spectrum</td>
</tr>
<tr>
<td>DEECD</td>
<td>Department of Education and Early Childhood Development</td>
</tr>
<tr>
<td>DESD</td>
<td>Decade of Education for Sustainable Development (2005-2014)</td>
</tr>
<tr>
<td>EE</td>
<td>Environmental education</td>
</tr>
<tr>
<td>EE™</td>
<td>Earth Education</td>
</tr>
<tr>
<td>EFS</td>
<td>Education for sustainability</td>
</tr>
<tr>
<td>ESD</td>
<td>Education for sustainable development</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-government organisation</td>
</tr>
<tr>
<td>RSS</td>
<td>Resource Smart Schools</td>
</tr>
<tr>
<td>SSP</td>
<td>Sustainable Schools Program</td>
</tr>
<tr>
<td>STEM</td>
<td>Science, technology, engineering and mathematics</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Program</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<tr>
<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
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Abstract

This thesis used a deep ecology lens to look for evidence of anthropocentrism or ecocentrism in environmental education (EE) in the sustainability community of three Victorian secondary schools. The research also investigated whether students have the capacity for ecophilosophical thought, and it explored the concept of student as ecophilosopher - a new branch of philosophy in schools.

Findings showed that many of the participants had attributes or held beliefs aligned to a deep ecology philosophy, including wilderness preservation, promotion of biodiversity, anti-consumerism, and love of nature. The data from this study highlighted the critical role that sustainability communities in schools play in producing a cohesive effort to better the immediate school natural environment, and enhance student attitudes toward nature via environment club activities. The other key finding was that an environment club was key to the development of students’ situated identity within the club, their ecological self, and their larger self beyond the school and into the natural world. The study showed that some club students were connected to nature through sustainability education in primary and secondary school that contributed to a more developed awareness of environmental issues.

The findings from this research provide the basis for future explorations of ecophilosophy in schools and indicate a need for studies of sustainability programs that focus on social, cultural and ecopolitical solutions to environmental problems. It is unlikely that efforts to move from an anthropocentric past to an ecocentric future are possible unless school-wide sustainability practices and policies are embedded into the entire school culture.
Chapter 1. Introduction

1.1 Context of the Study: Explaining the Problem

This study was an exploration in ecocentrism and anthropocentrism, which are two major concepts in environmental philosophy and environmental ethics (Boslaugh, 2011; Woods, 2011). The main aim of this thesis was to generate new knowledge about ecocentric and anthropocentric thoughts and practices in school environment clubs. The study had its origins from my personal concern about the lack of an ecocentric focus, as seen through a deep ecology philosophical lens, in secondary schools in Victoria. There is little evidence in the scholarly literature of academic investigations of ecophilosophy in schools, and peer-reviewed studies of students in environment clubs are limited in number and scope. The research presented here addresses this problem by using a deep ecology worldview as a benchmark for sustainability education in schools. Ecocentrism is an ideology where the Earth is the focus of our ecological considerations (Pepper, 1996), and where the Earth’s needs are placed before human needs (Naess & Rothenberg, 1989). The term ecocentrism was derived from the Greek oikos (house) and kentron (pertaining to the “centre”). Anthropocentrism holds the opposite view (human-centredness) that the Earth only has instrumental value to present and future humans (Naess, 1973). Some see anthropocentrism as the root cause of the environmental crisis (White, 1967). Ecocentrism was also defined by a close relationship with the Earth (O’Riordan, 1981), standing in opposition to technocentrism where humans manipulate and control the environment (Jordan & O’Riordan, 2000). Deep ecology is broadly equivalent to ecocentrism but it emphasises more the connectedness or “rootedness” to the Earth (Naess & Rothenberg, 1989), whereas shallow ecology only sought technical solutions to environmental crises (Naess, 1973).
The literature on deep ecology claimed that anthropocentric bias was part of the fabric of Western consumerist societies, where capitalist, resource-hungry lifestyles used natural resources at far greater rates than Third World cultures (Devall & Sessions, 1994; Naess, 1973; Naess & Sessions, 1995; Sessions, 1991). While there was a call by some deep ecologists for a radical ecocentrism to counter the rise in industrialism (McLaughlin, 1995a), not all ecologists agreed, with social ecologists arguing since the 1980s that environmental problems were really social problems (Messersmith-Glavin, 2011). It is presently unknown to what extent (if at all) the ideologies of deep ecology, social ecology and shallow ecology exist within schools – this is an inadequacy in our current understanding of environmental education that requires illumination. This study sought to address this gap by interviewing members of secondary school environment club communities, including students, sustainability coordinators, parents, teachers and principals. The thesis provides a comprehensive view of sustainability practices and policies in these three schools by investigating their ecological philosophy.

There is a view that environmental education based on science will not be enough to fix ecological problems (Benessia, 2009; Hathaway, in press) and that socio-ecological behavioural changes will be required to save the environment (Kyburz-Graber, 2013). Others argued that understanding of the politics and sociology of the environment were necessary for a full understanding of environmental issues (Orr, 2004). This thesis seeks to determine the current environmental ideology prevalent, and the scope for including discussion of ecocentrism and anthropocentrism in secondary schools. It also examined the data generated from a metaphysical perspective, since this is central to deep ecology philosophy.

Epistemologically, the study drew on knowledge primarily from a deep ecology philosophy (a branch of environmental philosophy (ecosophy) that distinguishes itself from the shallow ecology of the mid-20th century). The latter exists where human-caused
destruction of the planet (such as pollution) is a problem considered best managed by a “fix-it” mentality (Carson, 1962), as opposed to a deeper understanding and prevention of the problem through the adoption of ecocentric ideals. Etymologically, ecosophy is from the Greek oikos (house) and sophia which means the “love of wisdom” (Drengson & Devall, 2010). Two different but related forms of ecosophy emerged from within the field of environmental philosophy. One was Naessian deep ecology, which is the focus of this research. The other, offered by Guattari (2000), was different from Naess’s, with less emphasis on the metaphysics of connecting to nature. Guattari’s ecosophy does fulfil a role in moving toward valuing the non-human world but his emphasis is more on social problems.

This chapter locates deep ecology within environmental philosophy and describes a path for studying the component ideas of deep ecology in school environment clubs. To ground this study, an outline is presented of the development of environmental education over the last 45-50 years, including the work of the United Nations in education for sustainable development. The chapter also outlines the worldviews, epistemologies, and research design used to address the research questions.

1.1.1 Why ecocentrism is important.

Ecocentrism has its origins in Aldo Leopold’s “land ethic” (Belshaw, 2014), possibly the earliest reference to the value of the “uneconomic” (Leopold, 1949, p. 214) abiotic elements of nature. Ecocentrism was argued as a necessary part of the total solution to environmental problems:

Within environmental philosophy, ethics, politics, and activism, a general perception pervades that human beings are the direct cause of the ecological crisis that our planet faces. Ecocentrism underscores the notion that the worldviews that humans hold profoundly contribute to their misuse and abuse of the natural world. One of the most important belief systems or worldviews supporting forms of environmentalism that are dedicated to taking full
account of human contributions to ecological degradation, ecocentrism reconceives nature and the planet Earth as primary and humankind secondary. (Uebel, 2011, p. 133)

Ecocentrism is now regarded as one the cornerstones of environmental ethics, with ecocentrists moving beyond biocentrism and moral extensionism (zoocentrism) toward accepting all ecosystems as having intrinsic value (Woods, 2011). These views of ecocentrism were adequate but Eckersley’s (1992) earlier definition was closer to the deep ecology philosophy defined as “an ecologically informed philosophy of internal relatedness, according to which all organisms are not simply interrelated with the environment but also constituted by those very environmental interrelationships” (p. 49). The arguments for this were derived from the metaphysical doctrine of internal relations that followed from the idea that “a thing’s essence is exhaustively determined by its relationships, that it cannot be conceived apart from its relationships with other things” (Callicott, 1986, p. 311).

Understanding ecocentrism begins with the theory of deep ecology. This theory was first presented by Arne Naess (1973), a Norwegian professor of philosophy, at the 3rd World Future Research Conference in Bucharest in 1972 (Anker, 2008). Naess described deep ecology in the academic literature for the first time the following year (1973) but the concept did not become widely known until 1979-1980 when it was taken up by the American philosopher, George Sessions, and the American sociologist, Bill Duvall (Fox, 1990c).

Naess’s theory of deep ecology was about living a way of life that focused on the Earth and not the human, by employing sets of rules that restricted anthropocentrism, consumerism and the destruction of nature (Drengson & Devall, 2010). This was achieved through attaining knowledge and asking deeper questions about the world that go beyond the everyday, the technical and the scientific explanation (Fox, 1990c). In Naess’s (1973) paper, there was no mention of the word ecocentrism but there was reference to biospherical egalitarianism, a term that assigned equal value to all living and non-living elements of biological systems.
Naess’s intention was to value the physical elements of ecosystems, although this idea only became clear in a later effort to produce a platform for deep ecology that could be agreed upon by groups that associated themselves with the philosophy (Rothenberg, 1995). Naess later embraced ecocentrism when, with George Sessions, they devised the Deep Ecology Platform (Devall & Sessions, 1994; Naess & Sessions, 1995; Uebel, 2011).

A key part of the deep ecology philosophy was called Self-Realization¹ (Naess, 1995), a process that described connectedness to the environment as a deeper approach to oneness with nature (Devall & Sessions, 2007). In essence, this idea asked “more searching [i.e., self reflecting] questions about human life, society and Nature” (Devall & Sessions, 1994, p. 215), with the aim of reaching a gestalt state of human/nature monism. Self-Realization was the philosophical part of the deep ecology philosophy that “refer[ed] to the realization of a wide, expansive, or field-like sense of self, that leads to compassion” (Fox, 1990a, p. 4). Self-Realization is discussed further in Chapter 2 and is used to understand student connectedness to nature. Deep ecology is a comprehensive metaphysical worldview that embraces wisdom about the Earth and the development of an ecological self (Mathews, 1991; St. John & MacDonald, 2007). The development of the ecological self for deep ecologists was often referred to as a gestalt experience (Mathews, 1991) defined as “[a]n organized whole that is perceived as more than the sum of its parts” (2015). This definition of the “experience” of deep ecology (the gestalt experience) was used as a reference point in this thesis to describe and analyse the responses of students and teachers as they related to ecocentrism. Self-Realization was described as the cognitive/affective response humans have to being in nature. This thesis explored the idea that students may be able to connect to nature using Self-Realization.

¹ UK spelling is used throughout this thesis, however, the spelling of Self-Realization remains, as with all direct quotations, the original spelling of the original authors/creators.
1.1.2 Dismantling anthropocentrism.

Anthropocentrism, a human-centred view of natural resource use, is what Naess meant by shallow ecology (1973), and it exists whenever (or wherever) humans are seen as the most important species on the planet (Drengson & Devall, 2010). Anthropocentrism was derived from two sources, originally described by White (1967), and recently reiterated by de Jonge (2004):

- The Judeo-Christian attribution of Earth as Man’s [sic] dominion.
- The rise of modern Western democracies from the “conquering, looting and colonizing, what is now called the developing world” (p. 11).

White argued that religious views were the cause of environmental degradation, while Boslaugh (2011) argued that anthropocentrism was not restricted to Jewish and Christian theology. According to Snauwaert (1996), it was impossible for humans to avoid anthropocentrism, but that “the anthropocentric and ecocentric debate is at the core of our choice between environmental and ecological education, and therefore constitutes a relevant and important consideration” (p. 267). The literature on anthropocentrism, particularly from the Catholic Church and other religions, has changed in the last decade and will be discussed further in the next chapter.

Although anthropocentrism is claimed as the root cause of environmental degradation (Callicott, 2005), recent writers held that anthropocentrism was a necessary part of any debate on the environment, and that the path to a “self-reflexive human who might simply be there [authors italics]” (Boddice, 2011, p. 5) inevitably leads to anthropocentrism. White (1967) argued that anthropocentrism was derived from Christianity and that “orthodox Christian arrogance toward nature” (p. 1207) was at the root of anthropocentrism. White also added that the problem could be resolved without abandoning a particular faith. Callicott (2005) viewed the development of a non-anthropocentric value theory as the most important philosophical task for environmental ethicists because it conferred intrinsic (rather than
instrumental) value on all forms of life. Non-anthropocentric value theory was derived from value theory that “designates the area of moral philosophy that is concerned with theoretical questions about value and goodness of all varieties — the theory of value” (Schroeder, 2016, p. 1). Merchant (1992) agreed with Callicott that the primary purpose of environmental ethics was to assign non-human value to the abiotic elements of ecosystems. However, according to Naess (1973), anthropocentrism was a master/slave relationship between man and the Earth that prevented us from gaining deep pleasure and satisfaction from nature.

Criticising anthropocentrism will not be straightforward because there was still a prevailing view that humans occupy a very special place in the universe (Smith, 2013). However, it has been well established from mathematical modelling that there are limits to growth and that human survival depends on favourable scenarios in which resource use is limited, pollution and waste are reduced, and population growth is managed (Bardi, 2011; Meadows, Meadows, Randers, & Behrens, 1972; Meadows, Randers, & Meadows, 2004).

1.2 Theoretical framework

The theoretical framework used in this thesis was based on the philosophical stance of deep ecology. The framework shaped the research questions, informed how the data were generated and analysed, and underpinned the questions used in the interviews. The deep ecology lens also guided the research “as to what issues [we]re important to examine, and the people that need to be studied, [and] also indicate[d] how the researcher position[ed] himself or herself in the qualitative study” (Creswell, 2009, p. 62). The Naessian binary of shallow versus deep ecology (Naess, 1973), acted as “scaffolding” for the study, upon which new ideas and models might be built from the data.

In Naess’ (1973) original paper, he compared ‘shallow’ and ‘deep’ ecology as two different ways of approaching ecological thinking and living. I used this interpretation of the ‘binary’ as an analytical tool for generating data. While Naess did not use the word ‘binary’
in his 1973 paper, he did differentiate two ecologies: “An ethics of responsibility implies that ecologists do not serve the shallow, but the deep ecological movement” (1973, p. 97).

The dualism of shallow and deep ecology served as a useful approach to the study for the related terms, anthropocentrism and ecocentrism. Naess mentioned anthropocentrism in his 1973 paper:

To the ecological field-worker, the equal right to live and blossom is an intuitively clear and obvious value axiom. Its restriction to humans is an anthropocentrism with detrimental effects upon the life quality of humans themselves” (1973, p. 96).

Indeed, Naess expressed negative views on the use of the term ecocentrism to represent deep ecology:

The Eight Points [of deep ecology] are, of course, not intended to function as a definition of the deep ecology movement: neither as a rule-given definition of the term, nor as a plain description of how the expression “deep ecology movement” is actually used, nor as an expression of the essence of the deep ecology movement. I do not know of any satisfactory definitions at the dictionary level. I do not think a dictionary entry like the following is very helpful: “deep ecology movement: a movement within environmentalism that is activist, ecocentric rather than anthropocentric, and based on nonviolent philosophical or religious views”. (2005c)

However, he accepted that the word “ecocentrism” had value to some:

Supporters of the deep ecology movement like to say that they support ecocentrism, not anthropocentrism, and Spinoza certainly offers high-level premises for what has sometimes been labeled biocentric or ecocentric egalitarianism. I think these Latin and Greek terms are useless in serious discussions, but they may be helpful in offering some vague idea of a kind
of basic attitude. Spinoza tried something immensely difficult, namely, to articulate with some preciseness certain basic attitudes. (2005k, pp. 406-407)

Naess also recognized that ‘ecocentrism’ was deeply embedded within deep ecology:

It is characteristic of the deep ecology movement that great efforts at conservation are argued not only as something good and profitable for human beings, but also as a task that should be carried out for the sake of what is intended to be conserved. It is worthy of conservation, independently of any narrow human interests. This is often called the non-anthropocentric or biocentric or ecocentric view. (2005i, p. 276)

Use of the shallow/deep or anthropocentric/ecocentric binary did not fully capture the complexity of the deep ecology philosophy, but it was a useful tool for interpreting data in this study. The binary could be used to generate data on the differences between, for example, living a shallow ecological life versus living as a deep ecologist.

1.3 Significance of the study and gap in the literature

Scholars have argued for a radical, non-anthropocentric approach to environmental education (see, for example, Bonnett, 2002; Li, H., 1996). This approach questions human domination over nature and promotes the dissolution of the human-nature binary. Deep ecology is a total view of the environment that is not typically part of teaching and learning, but one that I argue should be part of environmental education programs in schools. This total worldview is part of the Tbilisi Declaration (UNESCO, 1977):

Environmental education, properly understood, should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provision of skills and attributes needed to play a productive role towards improving life and protecting the environment with due regard given to ethical values. By adopting a
holistic approach, rooted in a broad interdisciplinary base, it recreates an overall perspective which acknowledges the fact that natural environment and manmade environment are profoundly interdependent. It helps reveal the enduring continuity which links the acts of today to the consequences for tomorrow. (pp. 13-14)

The ecosophy developed by Naess promotes the need for biodiversity and wilderness preservation as taught in classroom science and biology programs, but also includes the metaphysical connectedness to nature (in the form of Self-Realization) and non-violent action (from Gandhi). Scientific/technocratic approaches to environmental problems are important, and schools follow learning outcomes in the curriculum to ensure some basic environmental literacy. In this thesis I propose that students are capable of higher-order, philosophical thinking about the environment, and that students should learn about anthropocentrism and ecocentrism. They also argued that anthropocentrism and ecocentrism should become a fundamental part of the formal curriculum. Previous research showed that social, religious and cultural aspects of students’ environments influence their views toward basic environmental concerns like pollution and recycling (Johansson, 2012), but there have been few if any studies of deep ecology in secondary schools. I am aware that introducing a new slogan like “deep ecology” into environmental education might be criticised as being deterministic (Jickling & Spork, 1998), and that its inclusion might not be useful for schools. However, recent literature proposed that anthropocentrism and ecocentrism have been left out of the “education for sustainable development” (ESD) debate in environmental education (Kopnina, 2013).

Sterling (1993) noted that missing from environmental education, in general, was the consideration of non-anthropocentric views. However, this has in part been addressed in recent literature on environmental education (Postma, 2006). I argue in this thesis that ecocentrism should be introduced to schools because deep ecology is one branch of
environmental philosophy, yet it receives no mention in any programs of philosophy in schools (Victorian Association for Philosophy in Schools, 2015). This thesis explored whether students were capable of ecophilosophical thought, a notion not previously described in the literature.

According to Kopnin (2013), the “ecocentric perspective developed within environmental ethics [wa]s marginalized in current ESD [d]ebate” (p. 607), and Li (1996) argued that Environmental Education (EE) lacked a moral dimension because it avoided ethical questions related to the human domination of nature. However, recent research on connectedness to nature in children (Cross, 2011; Ward, 2014) and adults aged 18-68 (Mayer & Frantz, 2004), reported that experiences in wild nature promoted connectedness to nature in adulthood (Liefländer, Fröhlich, Bogner, & Schultz, 2013). Other literature used an animal liberation lens to investigate biological egalitarianism in EE (Caine, 2008). Children needed to experience nature to fulfil “physical, mental and spiritual health” (Louv, 2013, p. 2). This sparked the Children & Nature Network, “a nonprofit organization whose mission is to fuel the worldwide grassroots movement to reconnect children with nature (Children and Nature Network, 2016). The connectedness to nature literature is linked to another major research area called significant life experience (SLE) (Chawla, 1998; 2009) that showed that childhood experience of nature was a common aspect of the lives of adults who care about the environment. SLE work was not targeted at deep ecology in secondary school students but is useful for interpretation of the data in Chapter 7.

1.4 Aims of the study

This research investigated anthropocentrism and ecocentrism within the sustainability culture of a school community (students, coordinators, teachers, principals and parents) at three secondary schools in Victoria, Australia. A worldview of deep ecology was used as the lens for generating and analysing data from the participants. This thesis also investigated whether
there were evidence of ecocentric or anthropocentric beliefs in these schools, and whether environment club students embraced an ecological philosophy. Finally, the thesis examined the social forces and lines of influences within the school sustainability milieu, particularly the relationships between students, teachers, parents and principals.

1.5 The research questions

Based on the above aims, the main research questions are:

- Do students and teachers, and other members of the school community, embrace anthropocentric or ecocentric beliefs, consistent with deep ecology?
- If secondary school students can embrace an ecological philosophy, is there evidence to support the concept of student as ecophilosopher?
- What is the ontological structure of the sustainability community in schools and how does this ground ecocentrism and anthropocentrism in schools?

1.6 Scope of the study and environment clubs

The study focused on school environment club students, their parents and the sustainability coordinator. Together with the principal and other staff in the school, these people made up the sustainability milieu of the school. The primary focus of the study was to investigate whether students, teachers and other members of the sustainability community in schools had ecocentric or anthropocentric beliefs, using the foundation principles of the deep ecology philosophy. The study examined the ontology of the milieu, the social forces at play, and the situated identities of the participants in the school sustainability milieu. The second research question sought to determine if students were ecophilosopical or had the capacity to pursue high-level interrogation of questions around complex environmental issues.

Participants were asked about their understanding of the principles of deep ecology (such as biodiversity, limits to resource use, and habitat protection), to determine if students could be ecophilosopical, and if ecophilosophy had a place in environmental education.
1.7 Sustainable schools in Australia

The schools in this study were part of the Australian Sustainable Schools Initiative (AuSSI), a partnership of the Australian government and the states and territories that supported Australian schools and communities to become sustainable (Australian Government Department of Sustainability Environment Water Population and Communities, n.d.). In Victoria, the AuSSI program was provided through the ResourceSmart Schools program (ResourceSmart AuSSI Vic, n.d.-b). The ResourceSmart Schools (RSS) initiative aimed to reduce costs for schools by saving energy and minimising waste. It aimed to reduce environmental problems by promoting biodiversity and reducing greenhouse gas emissions. These aims are achieved by embedding sustainability across school programs and communities (ResourceSmart AuSSI Vic, n.d.-a). More than 500 primary and secondary schools participated in the scheme (Hall, Rickinson, Reid, & Speller, 2015). A recent evaluation of the scheme revealed successful outcomes in 81% of school campuses in regard to waste management, biodiversity, water use, and energy use (Rickinson, Hall, & Reid, 2014a). This evaluation also reported that cultural changes in school communities occurred through changed sustainability attitudes and behaviours (Rickinson, Hall, & Reid, 2014b). The RSS program used a model developed by William Scott at The University of Bath. Scott’s model (2013), and the AuSSI programs, used the metaphor of natural, built, human and social capitals, and an anthropocentric view of school sustainability practices. Scott’s model also incorporated the human/nature dualism, which was inherent in sustainability implementation in schools. Bonnett (2013) suggested though that this dualism should be replaced by the idea that an “organism and its environment should be regarded as a single unit – the ‘fundamental particle’ of ecology” (p. 263). Such a human/nature monism was part of deep ecology, which Naess based on a theory first proposed by Spinoza (Guilherme, 2011).
This study investigated if a monism or dualism occurred in secondary school environment clubs.

1.8 Summary of methodology

This study used a qualitative, interpretive approach. Semi-structured interviews were the major form of data collection and interviewees were encouraged to elaborate on their answers using prompts and probes, as a strategy to generate rich data. Participants included students, teachers and parents, drawn from the environment club community in each school. Because the interviews were semi-structured, each interviewee had the opportunity to provide a narrative of their own journey as a member of the school sustainability community and how they connected to the environment. Interview data were analysed thematically, based on themes drawn from deep ecology principles. Participation in the study was voluntary and all interviewees gave consent in writing before participation in the study.

Strategic coding was used to look for logical explanations for interview responses (Boeije, 2010), from which coherent models of responses were devised to address the research problem and research questions. Because the interview responses yielded rich detail, a meta-analysis was conducted to formulate explanations for what was happening in the school sustainability community. The meta-analysis was further modified (a meta-meta-analysis) to include selected, shorter parts of the responses, principally to support the theoretical models constructed from the data.

1.9 Organisation of the thesis

This thesis is organised according to the following sections:

Chapter 1 establishes the research problem and describes how the research design adds to the scholarly literature in environmental education, with the primary focus being deep ecology in environment clubs in three participating secondary schools. A theoretical
framework for the research is described and developed around the deep ecology philosophy. The terminology surrounding deep ecology is introduced, including the main concepts of ecocentrism, anthropocentrism, ecosophy, technocentrism, environmentalism and Self-Realization, along with some brief background to the origins of these terms.

Chapter 2 presents a review of literature relevant to this study. It locates deep ecology within environmental, ecophilosophical, ecopolitical and ecosocial ideologies, with the purpose of establishing the research in the context of the current literature. The literature was generally time limited to works published since 1972, partly because of the significance of the 1972 United Nations Conference on the Human Environment (United Nations Environment Programme, 1972) and the first publication of the work of Arne Naess (1973). Chapter 2 also provides a rationale for deep ecology in schools, including discussion of the place of ecological philosophy in sustainability teaching and learning in schools.

This chapter establishes the importance of deep ecology to environmental education, and examines the recent (limited) literature in the field. Several emerging fields of study are relevant to the deep ecology story: environmental connectedness, environmental hope, and environmental resilience, from which the concepts of ecological wisdom, ecological intelligence and ecoliteracy are explored. Deep ecology was located within the spectrum of environmental politics as a “deep green” ideology, and in this thesis was redefined as a postmodern, relational approach to environmental education in the light of recent developments in environmental philosophy.

Chapter 3 describes the orientation of the study, the framework for the research methodology, and the research approach. The approach was founded on the interconnections between worldviews, strategies of inquiry and research methods, as outlined by Creswell (2009). The chapter starts with the worldview of deep ecology, but also relied upon a socially critical theoretical framework to build systems of beliefs that form the foundations of the
study. The philosophical stances of Naess and Habermas are built upon the epistemology of constructionism, which together, scaffold the methodology (interpretive analysis) and the method (interviews) (Crotty, 1998).

In Chapters 4, 5 and 6, the research findings are presented and analysed, using a school-by-school approach (Bunjil, Karatjurk and Waa) in separate chapters. Data from the participants at each school were analysed against the research questions and the various components of the deep ecology philosophy, using coding themes for each aspect of the philosophy (i.e., ecocentrism or anthropocentrism). Spread sheets of responses for all coding themes revealed patterns that formed a meta-analysis of the data, from which theories were developed for the social processes that supported ecocentrism or anthropocentrism in the schools (or somewhere in between). The meta-analysis generated a large set of data from the 44 participants. This led to an additional analysis (meta-meta-analysis) to condense the responses into socio-ontological models that described interactions between members of the environment club. An overall theoretical model then emerged for the development of the ecocentric student.

In Chapter 7, the research questions were revisited and addressed in light of the literature and the research findings. The findings were mapped against the component ideas of ecocentrism and anthropocentrism, providing a clearer picture of attitudes toward the Deep Ecology Spectrum (DES) amongst the sustainability community at the schools. Findings also indicated underlying reasons as to why the participants adopted particular positions on the spectrum. The chapter then sets out the contribution of the research to current environmental education, and discusses the implications of the findings for sustainability teaching and practice in schools.

Chapter 8 presents the closing argument that, until now, sustainability communities in secondary schools, and the people who populate them, have been largely under-investigated.
This thesis addresses these shortcomings by illuminating the social worlds of students, teachers and parents within the sustainability milieu of the school. The chapter summarises the study findings that deep ecology and ecocentric philosophies are of interest to the students, teachers, parents and principals who support sustainable schools, and the concept of student as ecophilosopher. The chapter concludes by presenting a unified model that explains the factors and forces that form the basis of developing the ecocentric student. Limitations of the study and possible future research pathways are identified.
Chapter 2. Literature Review

2.1 Introduction and theoretical framework

This chapter situates the study within the literature relevant to the research questions. I justify the study of deep ecology in schools by establishing a gap in environmental education (EE) research. I review the key background to locate the study alongside similar terms like “education for sustainable development” (ESD) that emerged from United Nations meetings, and “education for sustainability” (EfS). The chapter compares the deep ecology philosophy to other ecosophies and similar concepts such as ecological intelligence and ecoliteracy. The chapter establishes the importance of the research and justifies the choice of the deep ecology lens as the overarching conceptual framework for the study. This epistemology sits alongside the ontological dimensions of the research (the study of being) (Crotty, 1998), by investigating the “most general features of what there is, and how the things there are related to each other in the metaphysically most general ways” (Hofweber, 2014). The study also follows the critical social research tradition (Harvey, 1990) by investigating the contemporary social order of society, an essential feature of the Deep Ecology Platform (Rothenberg, 1995). The theoretical framework is also underpinned by a critical-dialectical perspective that attempts to uncover the social forces that influence thinking amongst the environment club community about their place in the biosphere (Harvey, 1990).

The word sustainability has a long history which relates to the modern usage of the word (Grober, 2012). ESD is a recent concept, spanning from 1972 via declarations made at landmark United Nations meetings. A review of the history of sustainability provides background to the concepts and permutations of deep ecology that have emerged over the 40 years since its inception, and explores how these currently manifest within a model of EfS (Fien, 2001). Deep ecology is consistent with the earlier idea of “education for the
environment” (EfE) proposed by Fien (1993a), which can also be traced to “for preservation of the environment” (Lucas, 1972, p. 98), where EfE represents environmental education that translates into action to remedy environmental problems (Gough, A. & Gough, 2010). A. Gough and N. Gough (2010) describe another definition of EE – “education with environments” (EwE) - that requires a “more radical socially critical pedagogy” (p. 340), which will be examined later in the chapter.

Gough (1987) was critical of the in, about, for cluster as being anthropocentric:

While it has been recognised that environmental education ought not to be merely education in or about environments, I am not convinced that the popular slogan ‘education for the environment’ is much of an improvement. Apart from being somewhat patronizing and anthropocentric (who are we to say what is ‘good for’ the environment, and which environment is ‘the environment’, anyway), this slogan maintains the sorts of distinctions that work against a deeply ecological worldview – distinctions between subject and object, education and environment, learner and teacher. To have a profoundly ecological understanding of education we must shift our attention from the objects of environmental education (such as desired states of the environment or changed human attitudes) to interrelationships – to the interactions between people and environments that we call ‘learning’ and to the interactions between people and other people that we call ‘teaching’. (p. 50)

Gough (1987) introduced the concept of “education with environments” [authors plural], which is an ecological paradigm for EE that focuses on the interactions between humans and the environment, rather than on an epistemological paradigm that he claims is “a deeply flawed foundation on which to build educational systems and programs” (p. 56). “Education with the environment” is unlike conventional, theoretical learning that is reductionist, and it promotes thinking about the environment more than learning about the environment. More
importantly, N. Gough argues that there is more than one environment, “which environment is ‘the environment’, anyway” (p. 50). Recent literature on EfS (Bonnett, 2002) moves away from the epistemological basis for the term, describing it as a “frame of mind” (p. 12) and the formation of a “right relationship with nature” (p. 12). This relationship varies from anthropocentrism to biological egalitarianism and can incorporate the idea of an ecological self, but it does not invoke the expanded perception of Gough - a perception that aligns with deep ecology.

2.2 Education for sustainable development (ESD)

An examination of the development of environmental education in its various forms with the emergence of sustainability as ESD and EfS, makes it clear that deep ecology and ecocentrism have not been a feature of this history. There are also problems associated with EE terminology mainly because there are two threads to the discussion: one associated with United Nations meetings, reports, declarations, and recommendations; and another stream of thought from peer-reviewed journal articles and books. In this section, I present a summary of the material from both threads and provide an analysis of how they interrelate to one another.

2.2.1 Meanings of sustainability.

The sustainability education movement can be traced back to 17th century European discourse on timber production by John Evelyn (Grober, 2012), a founding member of the Royal Society (The Royal Society, 2016), in his 1664 book Sylva, published by the Royal Society (n.d.). Contemporary use of the word sustainability is ambiguous, with conceptual confusion leading to definitions of sustainability that have been “hijacked and robbed of its substance” (Grober, 2012, p. 18). This definitional confusion is essentially due to two levels of usage; the first (or shallow) meaning is “long lasting”, the second (deeper) is a “political
concept incorporating ecological, economic and social dimensions” (Grober, 2012, p. 18). Grober believed that the term sustainability “resists” definition and can only be understood through its long history.

2.2.2 A brief history of EE, ESD and EfS.

The environmental education movement in formal education grew out of emerging concerns about the declining state of the Earth in the 1960s (Gough, A., 1997; 2013), and educational institutions were seen as critical to solving these problems. Key concerns were pollution of the air, land and water, unchecked population growth and declining natural resources. However, the foundations of environmental education go back much further, perhaps even centuries (McCrea, 2006). There is a rich history in events of the “Dust Bowl” in America in the 1930s, which lead to The National Environmental Policy Act of 1969 being passed: “The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment” (McCrea, 2006, p. 4). In 1970, the U.S. Congress passed the National Environmental Education Act of 1970 that led to the formation of various government authorities to enact the legislation and it subsequently established the Office of Environmental Education.

The importance of environmental education was a key outcome of the inaugural United Nations conference on the human environment in Stockholm in 1972 (UNEP, 1972), a move that continues to be a crucial part of UN global action plans for ESD (Gough, A., 2016b), (although this is not core learning in the national curriculum for Australia). In 1974, a UNESCO/UNEP initiated task force of environmental educators and others was convened to investigate the state of environmental education around the world (Fensham, 1978). Their findings showed that environmental education was poorly organised and not widespread around the world, and that there was a need for international cooperation to develop this new area. A key international workshop on environmental education held in Belgrade in 1975
produced The Belgrade Charter that stressed the importance of environmental education. In Australia, the first national environmental education conference was convened in 1970 by the Australian Academy of Science which led to a statement that environmental deterioration was now one of the most important aspects of education for the future (Gough, A., 1997). The idea of EfE has been the focus of EE in Australia since 1970 (Gough, A., 1997). The evolution of EE to EfS has been mapped by Gough (2006), however the for the environment component in EfS remains unclear, deriving EfS from sustainable development, and defining it in anthropocentric terms that relate to future humans (Department of the Environment Water Heritage and the Arts, 2009).

This latter document adopted the ESD definition from the Brundtland Report (or World Commission on Environment and Development (WCED) Report) (Brundtland & World Commission on Environment and Development, 1987a) was built on the three pillars of economic growth, environmental protection and social equality. This Report promoted environmental education “to foster a sense of responsibility for the state of the environment and to teach students how to monitor, protect, and improve it” (Brundtland & World Commission on Environment and Development, 1987a, p. 113). The Report outlined the need for a change in values and attitudes toward the environment in order to achieve sustainable development, and it paved the way for EfS. In the context of this study’s research questions and deep ecology, both WCED and Naess argued for changes to the way that people thought about the Earth, although the philosophical and metaphysical aspects of deep ecology stand as points of difference between the two theoretical frameworks (Naess, 1986). This point is made not to diminish the WCED Report, but merely to show that its recommendations are social and economic, as well as environmental in nature.

Some scholars have argued that EfS is a significant evolution from learning the facts and figures about sustainability, to a more socially critical approach viewing EfS as a more
socially just worldview (Evans, Whitehouse, & Hickey, 2012). However, others criticised the term EfS as being too much like a vocational description of EE (see 2.2.3 below).

The 1977 Tbilisi Declaration, from the first UNESCO/UNEP Intergovernmental Conference on Environmental Education, recommended that primary school students have close contact with nature and have time for “the development of critical faculty” and “the transcending of cultural and scientific levels” (UNESCO, 1978, p. 20). The Tbilisi goals included the social, behavioural and ethical values that aligned with deep ecology, and these continued to be endorsed by the UN and UNESCO (Gough, A., 2006). Others have viewed EfS as a “vision and a mission of personal and social change” (Fien, 2001, p. 1), a view that has changed little in recent curriculum framework documents (Department of the Environment Water Heritage and the Arts, 2010). The definition of EfS in an national statement for Australian schools was “Education for the environment aims to promote a willingness and ability to adopt lifestyles that are compatible with the wise use of environmental resources” (Department of the Environment and Heritage, 2005, p. 6), a description that is not out of place with the deep ecology call for lifestyles that reject excessive consumerism.

2.2.3 Criticisms of sustainable development.

The concept of “sustainable development”, which was used interchangeably with “sustainability” in the literature (Tilbury, 1995; Tilbury & Mulà, 2009), became synonymous with the priorities and policies of neoliberal capitalism (Chester, 2011). Carruthers (2001) is also critical of the language of sustainable development:

The language of sustainability was once a discourse of resistance, fusing radical environmental consciousness with a critical rethinking of a failed development enterprise. It provoked challenging questions about scarcity and limits, affluence and poverty, global inequality, and the environmental viability of Westernization. By today, sustainable
development has been transformed, stripped of its critical content, and reconfigured for compatibility with the larger priorities of the post-Cold War era. (2001, p. 93)

Carruthers (2001) recast ESD as an anthropocentric, ineffective approach to environmental decay that is “made palatable to the widest possible audience” (p. 99). His criticism extended to the “Earth Summit” held in Rio in 1992 where “Agenda 21 boldly shed any vestige of the discourse of scarcity and limits. In order to achieve the broad support of national governments, the drafters recognized that economic growth would have to be recast from villain to hero” (p. 99). Porritt (2012) saw sustainability as a “strange bedfellow” to capitalism, but asserted that we must accept capitalism as the dominant paradigm within which sustainability must operate. At the same time, Scott (2002) asserted that blind acceptance of ESD was considered to be not serving the best interests of children by robbing them of the opportunity to explore and evaluate the idea for themselves. Parr (2012) believed that sustainability had been hijacked by capitalist and corporate interests as a kind of brand theft. However, there are also examples of companies taking corporate responsibility for their sustainable practices (Australian Centre for Corporate Social Responsibility, 2015). Capitalist economies are typically extractive with respect to natural resources, and ecological integrity and social equity usually have to be imposed by society from the outside by regulation or government (Ikerd, 2005).

In 2012, at the United Nations Rio+20 Earth Summit, an informal group met to discuss their concerns that the mainstream conference failed to address the dominant capitalist model (Thematic Groups of the Thematic Social Forum, 2012). Their criticisms of the UN approach to ESD were directed at Wall Street along with its attendant commodification, privatisation, and financialisation of nature and its functions:

This summit should have been called to face the deep existing imbalances between human beings and nature, brought about by the capitalist system and productivism, dogmatic belief
in the possibility of limitless growth, and anthropocentrism, which has made the human being lord and master of the entire planet. (2012, p. 7)

Their argument was not new. Worster (1995) had previously asked, “Is a sustainable society one that endures for a decade, a human lifetime, a thousand years?” (p. 419). Worster claimed that there was too much talk of resources and economics and not enough about Earth ethics and aesthetics, pointing out that sustainability for economists is about continuous growth in investments and profits, for politicians it is maintaining public support and holding on to power, and for social institutions it is the perpetuation of their own existence.

Scott (2002) also labelled sustainable development as political “fudge words” (p. 1) and EfS as a principle where the for “represents an instrumental view of education in the service of government in pursuit of the goal of sustainable development, and a denial of the essence of education within a liberal democracy which aims to aid learners to think for themselves” (p. 3).

The central tenet of Scott’s (2002) argument is consistent with that of the Thematic Groups noted above:

More appropriately, and more democratically perhaps, we ought to want schools to help learners develop critical understandings of sustainable development, and help them achieve levels of critical environmental literacy that will enable them to develop and continually adapt their own understandings and make up their own minds as to how (and whether) to change the ways that they live. (pp. 2-3)

Scott’s comments accord with the idea that environmental education should be about a liberal democracy (Scott, 2002), consistent with a socially critical model where environmental education learning occurs within a “context of power relations, rules, expectations, historical narratives, and perceptions of group and individual interests” (Gough, S., 2002, p. 2). In
terms of the research questions for this thesis, the capitalist model of ESD is relevant to the thesis because it describes a resource-hungry world that clashes with deep ecology.

2.2.4 United Nations meetings.

This section reviews key UN meetings important to this thesis, starting in 1972 with the Stockholm Declaration, a landmark for a “roadmap” for ESD that moves through the Decade of Education for Sustainable Development (DESD 2005-2014), to the Global Action Program (GAP) on ESD as the follow-up to the DESD (UNESCO, 2014b). The UN meetings described below are based on this “roadmap”, but they also describe critical outcomes that impact on EE that are relevant to deep ecology and the research questions of the thesis. The historical account of EE and how UNESCO and the UN have influenced the sustainability debate have been comprehensively described elsewhere (Gough, A., 1997; 2013; 2015).

2.2.4.1 Overview of the United Nations sustainability goals.

The importance of EE from the Stockholm Declaration to resolve environmental issues was reiterated at the 1977 UNESCO-UNEP Intergovernmental Conference on Environmental Education in Tbilisi (UNESCO, 1978). However, the emphasis moved to education for sustainable development at both the 1992 Earth Summit in Rio de Janeiro, and at the 2002 United Nations World Summit on Sustainable Development (WSSD) held in Johannesburg (Gough, A., 2016a; in press). A key outcome from the WSSD was the decision “to proclaim the ten-year period beginning on 1 January 2005 the United Nations Decade of Education for Sustainable Development [DESD]” (United Nations, 2002, p. 1). According to A. Gough (2015), along this journey ESD became increasingly anthropocentric:

Somewhere between the environmental education statements from Belgrade (UNESCO 1975) and Tbilisi (UNESCO 1978) and the ESD statements from Johannesburg (United Nations, 2002) and about the decade (UNESCO 2004, 2005), a concern for the environment
disappeared and the total focus became the human condition, or what Nancy (2007, 87) calls *denaturation*. (2015)

The anthropocentric nature of UN policies is evident in recent documents too. For example, the report of the Rio+20 meeting, *The future we want* (United Nations Division for Sustainable Development, 2012; United Nations General Assembly. Sixty-sixth session, 2012) prioritised:

- biodiversity;
- *climate change education*;
- disaster risk reduction;
- *cultural diversity*;
- poverty and long-term debt reduction;
- gender equality;
- health promotion;
- *sustainable lifestyles*;
- peace and human security;
- water;
- *sustainable urbanization*;
- enhanced teacher training for sustainability;
- development of sustainability curricula; and
- institutional adoption of sustainability practice.

Italicised priorities above are consistent with deep ecology philosophy. The others are all inherently about making the environment suitable for more humans. This will be elaborated later in the literature review on the component ideas of deep ecology that align with UN outcomes.

**2.2.4.2 The 1972 Stockholm Declaration.**

Stockholm Declaration as a “watershed in international environmental policy because it was the first U.N. conference focused broadly on the environment” (p. 107), adding that “the most significant outcomes of the conference were the establishment of the U.N. Environment Programme (UNEP), an increase in worldwide environmental awareness, and the legitimizing of environmental policy and agencies in national governments” (p. 107). Of the 26 proclamations in the Stockholm Declaration, many referred to the Earth as a finite resource and the importance of Man [sic] reducing his impact on the planet (United Nations Environment Programme, 1972). While it named overpopulation as the primary reason for environmental degradation, it adopted an anthropocentric viewpoint in much of the text of the declaration:

To defend and improve the human environment for present and future generations has become an imperative goal for mankind - a goal to be pursued together with, and in harmony with, the established and fundamental goals of peace and of worldwide economic and social development. (p. 3)

2.2.4.3 The 1977 Tbilisi Declaration.

The 1977 Tbilisi Declaration was the first intergovernmental conference on environmental education organised by UNESCO. The goals of Tbilisi follow the UN pattern of concern that focuses on humans and it is relatively anthropocentric in its outlook:

- Foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas
- Provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment
- Create new patterns of behaviour of individuals, groups and society as a whole toward the environment. (UNESCO, 1978, p. 26)

The focus of these aims was “to help social groups and individuals acquire an awareness of and sensitivity to the total environment and its allied problems” (UNESCO, 1978, p. 26), and
to “consider the environment in its totality - natural and built, technological and social (economic, political, technological, cultural-historical, moral, aesthetic)” (UNESCO, 1978, p. 27). The Tbilisi outcomes could be considered as biocentric by considering the “total environment”, an outlook that Capra (2005b) described as using a systems or integrated picture of the environment. This definition was also widely seen as “Education for the environment” (Gough, A., 2016a) but after Tbilisi, EE was replaced with ESD in future UN meetings. This signalled a change from environmental repair and protection to a focus on balancing this with human development: “The emphasis is also now on issues related to improving the lives of people everywhere” (Gough, A., 2016a, pp. 3-4).

### 2.2.4.4 Brundtland Report 1987, “Our Common Future”.

The Brundtland or World Commission on Environment and Development (WCED) Report (also called Our Common Future) had an overarching (anthropocentric) focus of meeting the needs of the present without compromising the needs of the future generation, using a primary framework of sustainable development (Gough, A., 1997). The Report viewed education as a way of tackling poverty, health, and social disadvantage of women, but it did so using a definition of sustainable development that was “accommodating technocentrism” or “environmentalism as plan” (Gough, A., 1997, p. 31). The idea that the needs of the present will not compromise the needs of the future are driven by technological fixes and social changes that make better use of limited natural resources. The underlying reason for these changes is to allow for continued economic growth without diminishing the standard of living of current and future humans. In this regard, the Report is not about preserving ecosystems and it assigns instrumental value to nature (as opposed to intrinsic value). The WCED was not the first time the expression sustainable development was used (Borowy, 2014), but it was clear from the work of the Commission that it meant that economic and environmental issues had to be reconciled with one another.
As with previous UN reports, EE in the Brundtland Report was seen as a vehicle for social change for human benefit, and does not advocate lifestyle changes that reduce human impact on the Earth. Ecosystems and the non-living world do not feature in the Report, and the proposed technological changes are consistent with shallow ecology. These conclusions are supported by the views of Huckle (1991):

[The Brundtland Report] appears radical in that it challenges the standard agenda of environment and development, recognises the need for social change to enable sustainability, and recommends a return to the agenda of social concern and multilateralism. At the same time it appears conservative in that it seeks solutions through reform or a modified version of "business as usual" which could leave existing structures of power intact. (p. 52)

In the same paper, however, Huckle (1991) was optimistic about a solution:

Technocentric forms of environmental education, sometimes labelled education about the environment (Huckle, 1983), are likely to dominate the new agenda, but because social reproduction in schools is not smooth and uncontested, more ecocentric or radical forms (education for the environment) may find a place. (p. 54)

2.2.4.5 Earth Summit 1992, Rio de Janeiro.


- Improve basic education.
- Shift education toward ESD.
- Develop public understanding and awareness of ESD.
- Introduce training for ESD (p. 7).

*Agenda 21* broadly looked at patterns of consumption of natural resources and tied this in with sustainable practices that allowed for economic, social and environmental sustainability.
In contrast to the main meeting at Rio de Janeiro, the 1992 *Treaty on Environmental Education for Sustainable Societies and Global Responsibility*, presented at a plenary session of the International NGO Forum, “offer[ed] a much more holistic view of education that is socially critical and reconstructionist and Gaian in approach” (Gough, A., 1997, p. 35). This comment is close to the Naessian view of ecology.

### 2.2.4.6 Decade of Education for Sustainable Development (DESD).

The 2002 United Nations World Summit on Sustainable Development (WSSD) was seen as necessary to re-assess the implementation of *Agenda 21* and to re-evaluate the challenges to this goal (United Nations, 1992). The intention to bring biodiversity, climate change and deforestation to the fore gave this conference a clear ecological focus (United Nations Department of Public Information, 2002). In this regard, the WSSD moved toward ecocentrism and focused less on the needs of future humans. A recommendation from Johannesburg (WSSD) was that the United Nations General Assembly adopt a Decade of Education for Sustainable Development (DESD) starting in 2005, and this was agreed to in December 2002 (United Nations, 2002).

A mid-decade review of the DESD found that developing nations were at a disadvantage due to more pressing problems (such as HIV/AIDS), and that not all countries chose to interpret ESD in the same way (UNESCO, 2009). The Bonn Declaration provided an action plan for ESD and implemented the remainder of the Decade (Wals & Nolan, 2012). The meeting also acknowledged that knowledge, technology and skills already existed to achieve sustainable development. The Bonn Declaration underlined the relevance of ESD education:

“Investment in education means investment in the next generation and with it an investment in the source of future prosperity, future awareness and future possibilities for action” (UNESCO, 2009, p. 18). In summary, the Bonn meeting continued the anthropocentric bias in UN reports on ESD.
The 2014 UNESCO World Conference on Education for Sustainable Development (ESD), held in Aichi-Nagoya, Japan (UNESCO, 2014b), marked the end of the UN Decade of ESD (2005-2014) and launched the Global Action Programme (GAP) on ESD (UNESCO, 2014d). This had the aim of promoting “action in all levels and areas of education and learning to accelerate progress toward sustainable development” (UNESCO, 2014a). The GAP promoted ESD via a two-pronged approach:

1. Integrating sustainable development into education; and,

Corresponding to this approach, the Programme has two objectives:

1. reorient education and learning so that everyone has the opportunity to acquire the knowledge, skills, values and attitudes that empower them to contribute to sustainable development; and,
2. strengthen education and learning in all agendas, programmes and activities that promote sustainable development. (UNESCO, 2014a, p. 2)

The full report from the Nagoya meeting (Shaping the Future We Want) claimed that a great deal of progress had been made integrating ESD into formal and non-formal education (UNESCO, 2014c), and that this education should commence in early childhood education and continue through primary and secondary school, and on to vocational and tertiary education. Ban Ki-moon, UN Secretary General, gave a video message to the Nagoya delegates, calling for education to figure more prominently in the Post-2015 Sustainable Development Goal (SDG) Agenda (Asia South Pacific Association for Basic and Adult Education, 2014), making the comment that “there is no plan B because we do not have planet B” (Anon, 2014a, p. 1).
2.2.4.7 Summary of UN implications for this thesis.

The Stockholm Declaration (UNEP, 1972) promoted environmental education as a strategy for achieving environmental protection and conservation at the same time Naess presented his concepts of shallow and deep ecology (Anker, 2008). The presence of anthropocentrism in the UN declarations was clear from the unilateral reference to preserving resources for “the future”, and for our children and grandchildren (Brundtland & World Commission on Environment and Development, 1987b; United Nations, 2012), and in the relative absence of preserving resources for other living things, and the nearly complete omission of preserving nature for nature’s own sake (the argument of intrinsic value of nature). The introduction of education for sustainable development at Rio in 1992 (United Nations, 1992) continued the anthropocentric theme in UN outcomes and emphasised human domination over the Earth (Gough, A., 1997). This is not to imply that the work of the UN has no value: “Each of the various United Nations sustainable development reports acknowledge the importance of education at all levels in achieving a sustainable future” (Gough, A., 2016a, p. 4). Referring to the objectives from Agenda 21 to promote sustainable development as a means to change attitudes, values, skills and behaviour toward the environment, A. Gough (2016a) added: “In this instrumentalist view, education for sustainable development (ESD) is seen as the means by which schools and communities can (and should) work toward creating a sustainable future” (p. 4). UN materials, since the Stockholm Declaration, are focused on poverty, basic education, child mortality and the welfare of women, but still retain an anthropocentric concern for future humans rather than a deep ecology focus on whole ecosystems. Previous critiques of ESD by Jickling (1992), Scott (2002), Worster (1995), Carruthers (2001), and others (Thematic Groups of the Thematic Social Forum, 2012), supported the research questions of this study by exploring ecocentric alternatives to UN sustainability policies.
2.3 Deep ecology and the deep ecology movement

Before analysing the literature, I outline the deep ecology worldview and establish a theoretical framework for the study. Deep ecology is an environmental philosophy historically associated with the deep green (or radical) aspect of politics. This section (Section 2.3) provides some context for this statement and argue that these labels for deep ecology are no longer accurate, and require a more articulated view of the philosophy.

2.3.1 Ecological philosophies and worldviews.

The ecophilosophy of deep ecology and the elements of its platform have spread into many disciplines, including environmental education (Greenall Gough, 1993), science education (Byrnes, 1997), Earth education (Van Matre, 1979), world religions (Katz, 2001), geography and town planning (Booth, 2013), ecofeminism (Bird, 2011), theology (Sponsel, 2011), philosophy (de Jonge, 2004; Guilherme, 2011), social work (Besthorn, 2012), ethics (Kober, 2013), and environmental management (Booth, 2013). Deep ecology was coined by Norwegian philosopher Arne Naess (1973) to describe a deeper, more connected approach to the Earth, and he used the term “ecosophy” to encapsulate this branch of philosophy:

By an ecosophy I mean a philosophy of ecological harmony or equilibrium. A philosophy as a kind of sofia wisdom, is openly normative, it contains both norms, rules, postulates, value priority announcements and hypotheses concerning the state of affairs in our universe. Wisdom is policy wisdom, prescription, not only scientific description and prediction. The details of an ecosophy will show many variations due to significant differences concerning not only ‘facts’ of pollution, resources, population, etc., but also value priorities. (p. 99)

The word ecosophy emerged from Naess’s thinking about the metaphor of a mountain being alive: “a model of a nature in which we can fully exist only with fabulous awe” (Naess & Rothenberg, 1989, p. 3). Ecosophy is a total view of the environment and seeks to clarify our
place within nature, and to examine problems at the juncture of philosophy and ecology through a personal code of values and view of the world that guides our decisions about how we place ourselves in nature. Drengson (1999) provided another interpretation of Naess’s ecosophy that further explained the context of the term:

The aim of ecophilosophy is a total or comprehensive view of our human and individual situation. Comprehensive includes the whole global context with us in it, sharing a world with diverse cultures and beings. We move toward a total view via deep questioning - always asking why - to ultimate norms and premises, and via articulation (or application) to policies and practices. (p. 2)

Drengson commented that Naess had a long career as a philosopher of science and logic, devoting much of his life to world peace, social justice, and the practice of Gandhian non-violence. Naess’s definition of ecosophy derives from his background in formal logic, but a more accessible description comes from Naess’s biographer and friend David Rothenberg (2010):

Consider nature, consider humanity. It is not enough to say we are part of nature, we must redefine humanness so this is really true. The more we know of nature, the more we describe it, grasp it, and celebrate it, the more greatly human we will become. This is an ecological philosophy. It is a Naessian view. He may never have been rigorous or exact about it, but his commitment is as inspiring now as it was while he was alive. (p. 3)

Naess preferred to see himself as a teacher who encouraged students to find their own ecosophy; their own special place where they could have a joyful life. His solitary climbs into the mountains had a powerful and lasting influence on his relationship to nature, and his transpersonal ecology was a product of this introspective part of his life. In a way, it was a transcendental and enlightening experience that he was determined to share with the world.
Warwick Fox’s doctoral dissertation was a comprehensive study of a deep ecology approach to ecophilosophy (Fox, 1988). He described the birth of deep ecology and the influence of deep ecology on both popular and academic thought, presenting it as a standard reference point for ecophilosophical thinkers interested in solutions to environmental problems. Fox identified Naess’s original paper as having a latency period (1973-1980), a honeymoon period (1980-1984) with mainly positive responses, and a mature period (1984-1988), when critical reviews of deep ecology emerged. Fox showed that not all academics have been in favour of deep ecology, such as the vitriolic opposition to *misanthropy* from the social ecologist Murray Bookchin, and the equally polarised *ecotage* and *Monkeywrenching* by Dave Foreman (as cited in Fox, 1988) who was the architect of the ecopolitical group called *Earth First*. Another critic was the French philosopher Luc Ferry who argued against deep ecology and saw ecology “as a terroristic movement that resembles other totalitarianisms” (Conley, 1997, p. 14). According to Conley (1997), Ferry’s arguments originated in his neoliberal re-interpretation of the Parisian 1968 civil unrest, but she believed that he misrepresented the ecological consciousness of the period. There were also feminist critiques of deep ecology because of “the feminist contention that both reform environmentalism and deep ecology are inadequate means for ending the human domination of nature, because both approaches ignore the decisive phenomena of patriarchalism and androcentrism” (Zimmerman, M. E., 1987, p. 22). A recent review of ecofeminist literature came to the conclusion that gender does influence many aspects of sustainability (Meinzen-Dick, Kovarik, & Quisumbing, 2014), including closeness to nature, rights to resources, means to exploit these resources, and the adoption of sustainable practices. There is a vast body of ecofeminist literature, much of it focusing on arguing that deep ecologists have neglected the problem of androcentrism in the deep ecology critique (Sturgeon, 1997), but this expansive body of material is beyond the scope of this literature review.
In the last two decades, these arguments have been replaced by power struggles within academic environmental philosophy that have seen deep ecology marginalised (Hawkins, 2014a). According to Hawkins, some of this consequence was due to post 9/11 fear-mongering that had aligned deep ecologists with eco-terrorism, presumably because they lack “clean-cut American patriotism” (Hawkins, 2014a, p. 212). The recent history of deep ecology is discussed in the next section.

2.3.2 The deep ecology worldview.

The ontological structure of this thesis is built on the premise that the participants will hold environmental beliefs that align somewhere within the spectrum from an anthropocentric position to an ecocentric ideology consistent with deep ecology. The theoretical framework functions to shape the research questions, guide the data generation, and provide an appropriate lens for the analyses of the data. Interest in deep ecology as an ecophilosophy flourished throughout the 1980s and 1990s (Naess, 1995) and it became the principal focus of two new journals, *Ecophilosophy* and *The Trumpeter: Journal of Ecosophy* (Fox, 1990c) and occasionally *Environmental Ethics*. Some of the focus on deep ecology in the latter journal (and other academic sources) is around the argument by ecofeminist scholars that deep ecology is essentially androcentric and patriarchal (Diehm, 2002; Fox, 1989; Salleh, 1992; Warren, 1990; Zimmerman, M. E., 1987). Since the 1990s, papers on deep ecology have been sporadic in the literature but in 2014, *The Trumpeter*, published a special 30th anniversary edition on the theme, “Whatever happened to deep ecology?” (Kowalsky, 2014) and this is discussed later in this chapter.

Deep ecology argues that there is a limit to the use of natural resources by and for humans (both present and future humans), and discourages unchecked population growth because it is not sustainable for the planet. There is concern from some authors that sustainability (as promulgated through school policy and practice) has become too anthropocentric by talking
about natural resources being conserved “for our children” (Worster, 1995, p. 419). This idea of conserving resources for future humans is essentially human chauvinism, driven by the idea that humans must dominate the Earth. It was made clear from the Brundtland report that attention had to be given to catering for a doubling of world population (WCED, 1987), with many references to “our common future” and “borrowing from future generations”. Capra (2005a) also takes the view of sustainability as meeting the needs of the current generation “without diminishing the needs of future humans” (p. xiii). This study asks questions of the participants regarding the importance of sustainability in the school community, investigating whether this means sustainability for the human race or sustainability for the Earth.

### 2.3.3 Locating deep ecology.

One way of positioning deep ecology within the political landscape is within green politics (see Table 2.1). The first green parties emerged in the 1970s (Spretnak & Capra, 1986) and deep ecology was associated with the radical left “deep green” or socialist arm of green politics, sometimes referred to as the “dark green”. Deep ecology is regarded as a central part of green political thought:

> The core green values are ecocentric, that is, they start from concern about non-human nature and the whole ecosystem, rather than from humanist concerns. They invoke, in ‘deep’ ecology, the idea of bioethics. Bioethics say that nature has intrinsic worth, in its own right, regardless of its use value to humans. Humans are therefore morally obliged to respect plants, animals and all nature, which has a right to existence and humane treatment. (Pepper, 1996, p. 15)

Another view of environmental politics is that, since both communism (red or left-wing politics) and capitalism (blue or right-wing politics) emphasise “means of production”, these need to be transcended in modern green politics by introducing an ecologism or radical green
theory (Dobson, 2007). Dobson (2007) argued that the green movement can sit in terms of the left or right wing of politics: “In some respects we can talk of the green movement quite happily in terms of left and right because the terms we use to discuss the difference between the two can easily be applied to it” (p. 19). Dobson (2007) expanded on “left” and “right” in this context:

The left has consistently argued that the world is there to be remade in the image of ‘man’ (usually) in accordance with plans drawn up by ‘men’ (usually), and in which the only reference to a natural order is to an abstract one outside of time and place. The radical green aspiration to insert the human being in its ‘proper place’ in the natural order and to generate a sense of humility in the face of it appears to be ‘right-wing’ in this context. (p. 19)

Dobson’s view on deep ecology is that it gives a political voice to nature that overrides human interests - a description consistent with the deep ecology philosophy. On the other hand, other literature on the ecopolitics of deep ecology (Wall, 1999) indicated that it is no longer attached to extremist groups, instead being associated with non-violent, direct action. Other green political theoreticians have moved away from the ecocentric model and are more concerned about the “hard green” or “ecological realist” approaches that exploit doom and gloom, focusing on humans and not the human/nature connection (Barry, 2014).

Table 2.1 expands on ecopolitics by representing deep ecology within the landscape of educational, environmental and political ideologies, and is based on a table by Fien (1993a), as modified by Edwards (2011). In an effort to locate deep ecology within these interpretations, it was clear that deep ecology could not be compartmentalised within the cells of the tables created by the aforementioned authors. The fifth column in Table 2.1 (posthumanist/relational materialist/radical) is my addition to the Fien model, provided to incorporate the entry of posthuman discourse into environmental education (Gough, N., 2015), and represents a significant shift from the socially/critical ideology of prior literature:
Holding the idea of ‘human’ under erasure, I suggest that challenging hierarchical anthropocentrism (i.e., challenging the assumption of human superiority) does not prevent us from acknowledging an ‘irreducible anthropocentrism,’ that is, accepting that we necessarily experience the world with species-specific biophysical limitations and possibilities. However, we must also consider how an understanding of irreducible anthropocentrism might be changed by accepting that we increasingly experience the world as posthumans, with perhaps (eventually) fewer species-specific biophysical limitations and with further possibilities provided by biophysical extensions and enhancements. (Gough, N., 2015, p. 8)

Adding the “posthumanist/relational materialist-radical” derived from the need to embrace recent educational ideologies that “challenge the habitual anthropocentric gaze we use when analysing educational data” (Hultman & Lenz Taguchi, 2010, p. 525). “We put to work concepts that open up possibilities to understand the child as emergent in a relational field: a space in which non-human forces are equally at play and work as constitutive factors in children’s learning and becomings” (Hultman & Lenz Taguchi, 2010, p. 527). This is supported by a description of human relationship with nature:

Posthuman/place relations are not about individual subjects autonomously forming and developing relations with the world but, rather, about realizing that these relations always already exist, and might be as much influenced by the behavior of other materials in the places we inhabit as they are by our intentional or unintentional actions (Gough, N., 2015, p. 8).

The latter description is an evolution of the Fien model (1993a), and provides a suitable location for deep ecology.

In addition to the above changes to the Fien/Edwards model in Table 2.1, the cell in the Fien/Edwards model:
“Liberal education for the environment” (identifying attitudes, values and beliefs through the case study of local environmental issues)” (Edwards, J., 2011, p. 13), now reads “Liberal education for the environment” (Some authors say this is anthropocentric because who says what is good for the environment?).

The above sentiment from N. Gough (1987), some years before Fien’s work and articulated earlier in the chapter, is used to underpin N. Gough’s (1987) use of the preposition with: “As a foundation for educational inquiry, an ecological paradigm should give us cause for optimism that we might someday learn to live, and live to learn, with [author’s italics] environments” (p. 50). The pathway to education with environments is the adoption of “ecological theories of perception” (p. 56) so that learners might acquire acute senses to extract information from their environments.

In his paper, “Why I don’t want my children to be educated for sustainable development: Sustainable belief”, Jickling (1994) challenged the “for” in ESD:

We would not normally speak of educating ”for” anything. To talk of educating for sustainable development is more suggestive of an activity like training or the preparation for the achievement of some instrumental aim. It is important to note that this position rests on several assumptions. First, sustainable development is an uncontested concept, and second, education is a tool to be used for its advancement”. (p. 6)

Jickling (1994) rationalised his views:

[E]ducation is concerned with enabling people to think for themselves. Education for sustainable development, education for deep ecology, or education ”for” anything else is inconsistent with that criterion. In all cases these phrases suggests a pre-determined mode of thinking to which the pupil is expected to prescribe. (p. 6)
Jickling’s paper had previously appeared in the *Journal of Environmental Education* (1992), which prompted a rebuttal from van Rossen (1995). Her main concern was the semantics of “sustainable development”, and her core argument was that “since UNCED in Stockholm, 20 years ago, we have recognised that environmental problems are inseparable from human welfare and the economy. In terms of sustainability, there is an increasing realisation that things cannot just go on the way they are” (p. 74). van Rossen (1995) also took an anti-philosophical, anthropocentric view of education for sustainable development:

I don’t believe that we have the luxury of time to direct education of our children to treat all views of sustainability equally, and to teach them to use philosophical techniques which enhance their ability to participate in a debate about sustainable development—as advocated by Jickling. (p. 79)

On the 20th anniversary of the 1992 Earth Summit, Jickling and Wals (2012) published a debate over Jickling’s 1992 paper in which Jickling reiterated his views and Wals recounted the “successes” of EE, EfS and ESD. Both came to some agreement that educational development in children should not be constrained by narrow definitions of ESD or EfS that reduce nature to having instrumental value *for* humans. The implications for Table 2.1 of the work of Jickling, and his capacity to counter anthropocentric definitions of education “for” sustainability or EfS, is that “Liberal education *for* the environment” is not an ecocentric ideology and it failed to provide the value that exists in education *with* environments. Where Edwards (2011) had the following cell, “Critical/Socially-critical education *for (with)* the environment”, I have adopted the reasoning of Gough (1987) to position education *with* environments closer to ecocentrism, as a postmodern/relational educational ideology, and aligned it with Gaianism in keeping with the Lovelock’s later definition of the Earth as a whole evolving system (2000).
<table>
<thead>
<tr>
<th>Environmental/ political ideology</th>
<th>Educational ideology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technocratic</strong></td>
<td></td>
</tr>
<tr>
<td>Science is the answer/Resource s are plentiful-Cornucopian. (environmental problems can be solved through science and technology. Sustainable capitalism). Blue-green politics.</td>
<td>Vocational/ neo-classical (prepare students for their future work)</td>
</tr>
<tr>
<td>Management will fix eco-problems. Accommodation/ Managerialism (environmental problems can be averted by good management of human–environment relationships)</td>
<td>Liberal/ progressive (prepare students for their life in society)</td>
</tr>
<tr>
<td>Communalism/ Ecosocialism (solve social, economic and political problems first). Red/green politics.</td>
<td>Socially critical (prepare students for their role in creating society)</td>
</tr>
<tr>
<td>Gaianism/ Utopian. The earth self-regulates in a state fit for life as a whole evolving system.</td>
<td>Posthumanist/relational materialist/radical (the non-anthropocentric gaze; non-human forces influence learnings and becomings)</td>
</tr>
<tr>
<td>Ecocentric</td>
<td></td>
</tr>
<tr>
<td>Kinship/deep ecology. (environmental problems require radical changes to consumerism). Dark or deep green politics.</td>
<td>Liberal education for the environment (identifying attitudes, values and beliefs through the case study of local environmental issues)</td>
</tr>
<tr>
<td>Education with environments. Sensitive relationships with environments. De-objectifying nature</td>
<td>Liberal education in (through) the environment (student-centred and experiential learning in environments outside the classroom that use the environment)</td>
</tr>
<tr>
<td>Deep ecology. Kinship with the earth. The widest possible identification with nature.</td>
<td>Critical/ Socially-critical education for the environment (learning through decision-making, participation and action)</td>
</tr>
</tbody>
</table>

Table 2.1. Location of deep ecology in the ideology landscape
Having restructured the Fien/Edwards models/tables, a place now appears clear for deep ecology, and that is the location that N. Gough (1994) assigned to kinship/deep ecology: “I would prefer us to work toward the sense of kinship with nature that characterises Aboriginal perspectives. In Western terms, this is the ethical position now known as ‘deep ecology’” (p. 5), and it occupies a new row created below Gaianism. Lovelock’s definition of Gaia given above is not the popular definition of a “living Earth”, but a more scientific, systems view, in keeping with his training as an atmospheric physicist. Deep ecology does not fit into Lovelock’s scientific view of the Earth as a self-regulating system if reference is made to N. Gough’s (1994) view of environments:

Some who cherish outdoor environments construct a more reverential relationship: they worship nature. Nature is still imagined as an object but it is an object of intrinsic value—valued for its own sake and treated as holy or sacred, like a cathedral in which to worship or a shrine to which one makes pilgrimages. (p. 5)

The cell for kinship/deep ecology has the widest possible identification with nature, and “occupies a space in which non-human forces are equally at play and work as constitutive factors in children’s learning and becomings” (Hultman & Lenz Taguchi, 2010, p. 525). This location, I propose, is a better place for deep ecology and overcomes the dated and problematic idea that deep ecology is necessarily a radical ecology.

2.3.4 The deep ecology movement.

Deep ecology asks searching questions, making us accountable for actions through adopting a total view of our place in the environment (Naess & Rothenberg, 1989). Naess’s aim was to find more profound solutions to the growing environmental crisis and this was the function of deeper questioning, but he did not always make the process entirely clear (Rothenberg, 1993). Deep ecology has been the subject of numerous publications yet the real task of cultivating a
non-dominant ecological consciousness still escapes many people (Luke, 2002), and has not yet fully entered the curriculum. The aim of this research is to address this deficit in the literature.

**2.3.4.1 Deep ecology: The principles.**

Deep ecology first appeared in 1973 (Naess), and is regarded (by some) as one of the most important approaches to environmental philosophy in the last 50 years (Barnhill, 2010). The original form of the paper was first presented at the 3rd World Future Research Conference in Bucharest in September 1972, but only survived in the archives in Romania until it was later translated (date unknown) into English (Anker, 2008). One motive for Naess presenting the paper at Bucharest was to counter the view that technology could solve environmental problems, a view that was being promoted at the conference by a group of scientists sponsored by the Club of Rome to produce the Limits to Growth report (Anker, 2008).

Naess described shallow ecology as the “Fight against pollution and resource depletion” (1973, p. 95) as a contrast to his notion of deep ecology. His original paper defined deep ecology as having seven key characteristics:

1. Rejection of the man-in-environment: “(Hu)man is seen as being in a “relational, total-field image.” (Naess, 1973, p. 95-96), which essentially places (hu)mans in a relationship with the environment.

2. Biospherical egalitarianism, which expands the concept to all living things and mentions respect for non-human animals by placing them on an equal footing to humans.

3. The idea of diversity and symbiosis and protection for endangered species and specifically from the hunting and killing of whales and seals.

4. Adoption of an anti-class posture where the idea of the exploiter and the exploited is no longer viable; a premise that is proposed to underpin ecological stability.
5. Fight against pollution and resource depletion, but not to the detriment of the total stand taken in the other six points. For example, if anti-pollution measures cause the price of human necessities to increase, and this sets up class differences, then this is contrary to point four above and by default serves shallow ecology. Deep ecologists have a duty to reject jobs that serve employers who employ shallow ecology in the fight against pollution and resource depletion.

6. The complexity-not-complication principle refers to looking at the biosphere not as an immensely incomprehensible (complicated) set of ecosystems, but as a generally complex set of relationships that warrant surveillance and monitoring for aberrations of function.

7. Local autonomy and decentralization. This is a rudimentary notion that hierarchies can drain the impetus of any group to do what in contemporary terms we say is to minimize your ecological footprint, or at the very least (avoid) becoming parasitic on the resources and funding to remedy some ecological crisis.

These principles shift the emphasis from humans being of prime importance above all other elements of the biosphere, to one where the living and non-living components of the Earth itself have intrinsic value. Another way of viewing this is to say that ecosystems need to be sustained and nourished for the sake of the Earth without reference to humans, and that sustainable development of resources to accommodate as many humans as possible is beyond the limits of the planet.

2.3.4.2 Transpersonal ecology/psychology and metaphysics.

Fox (1990a) referred to transpersonal ecology as Naess’s popular sense of deep ecology, which he contrasted with his formal sense of ecology (where progressively deeper questions are asked to reach an ultimate truth about how we live in the world), and Naess’s
philosophical sense of deep ecology (which referred to his concept of Self-Realization). Self-Realization sidesteps any intrinsic values that metaphysics offers and Naess sees it as the highest norm regarding the psychological-cosmological framework of wide and deep identification (Fox, 1990b). Fox (1988) devoted an entire chapter of his thesis to problems associated with the term “deep ecology” because it had been found to “mystify rather than enlighten, and to alienate potential supporters – even among environmental activists” (p. 208), it had a “ponderous and pretentious ring” (p. 209), and because it bothered professional philosophers for being “pejorative and self-congratulatory” (p. 209). Fox (1988) then turned to transpersonal psychology as an alternative approach to deep ecology, concluding “one’s egoic, biographical, or personal sense of self, the clearest, most accurate, and most informative term for the sense of deep ecology is, in my view, ‘transpersonal ecology’” (p. 310). He later clarified this to eliminate any notion of the experience being anthropocentric and consolidated it as a thorough transformation or transcendence beyond the individual or the selfish self (Fox, 1990c). Davis (2011) described transpersonal ecology as being close to nature, being at one with the universe, feeling sacredness in the wilderness, and feeling harmonious with particular places. Rush (2000) referred to Naess’s gestalt experience as an “ontological understanding of who we are and of the character of the world” (p. 43).

Since Naess’s work is based heavily on Spinoza’s metaphysics, it is important to explore how metaphysics plays a critical part in deep ecology. Mathews (1991) questioned the difference between cosmologies and metaphysics, and argued that cosmology is the actual world of forces, fields, minds and spirits, a layer within metaphysics, whereas the latter included the abstract and the possible worlds. She also called it the “ultimate nature and structure of reality. Metaphysical questions are foundational to civilisation, indeed to all culture; why is there something rather than nothing” (Mathews, 2008, p. 51). de Jonge (2004) argued that, in Spinoza’s metaphysics, the interchangeability of “God or Nature” (Deus siva
Natura) with substance is confusing and that deep ecologists have failed to ground their theories in a metaphysics of non-anthropomorphism and ecological holism. Regardless of this (and other) criticisms, de Jonge did conclude that the deep ecology philosophy can be grounded in Spinoza’s metaphysics. Deep ecology, de Jonge concludes, needs an ontology based on deep emotions and love for nature, and she therefore proposes Self-Realization as a way to bring meaning to life.

2.3.4.3 Importance of Devall and Sessions to deep ecology.

Given that deep ecology has polarised a number of ecophilosophers and other researchers, it is important to understand why some authors propelled it into the limelight. The earliest of such efforts are attributed to Bill Devall and George Sessions, who shared an office at Humboldt State University in northern Carolina in 1968-69 (Fox, 1988). In the period 1979-1980, they single-handedly promoted Naess’s work, and more specifically his work on Spinoza, into the academic limelight in North America (Fox, 1990c). It was Naess’s portrayal of Spinoza, both as a foundation for deep ecology and as a way of life, that resonated with Devall and Sessions (Fox, 1990c). Arne Naess and George Sessions did not meet until 1980, but in 1984 while Naess and Sessions were on a camping trip in Death Valley, they formulated the Deep Ecology Platform (DEP) on which all of the biosphere is proposed to unite (McLaughlin, 1995b):

1. The well-being and flourishing of human and non-human Life on Earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the non-human world for human purposes.
2. Richness and diversity of life forms contribute to the realisation of these values and are also values in themselves.
3. Humans have no right to reduce this richness and diversity except to satisfy vital needs.
4. The flourishing of human life and cultures is compatible with a substantial decrease in human population. The flourishing of non-human life requires such a decrease.

5. Present human interference with the nonhuman world is excessive, and the situation is rapidly worsening.

6. Policies must therefore be changed. These policies affect basic economic technological and ideological structures. The resulting state of affairs will be deeply different from the present.

7. The ideological change is mainly that of appreciating *life quality* (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between big and great.

8. Those who subscribe to the following points have an obligation directly or indirectly to try to implement the necessary changes.

Largely due to the efforts of George Sessions, deep ecology moved from the initial paper in an obscure journal to being the benchmark for defining the different varieties of ecological philosophies (McLaughlin, 1993).

**2.3.4.4 Critiques of deep ecology.**

Murray Bookchin’s (1987) vitriolic attack on deep ecology is without doubt, amongst followers of deep ecology and social ecology, one of deep ecology and Naess’s best known altercations, as exemplified by the following quote: “Deep ecology is so much of a black hole of half-digested, ill-formed, and half-baked ideas… this mindless use of ecology to describe anything of a biospheric nature, does it not completely degrade the rich meaning of ecology” (p. 3). Bookchin’s (1988) view was anti-capitalist and he saw social ecology as the means to deconstruct feudal hierarchies and free the oppressed and exploited. He accused deep ecology
of conflating humanity into crude groups and of being over-philosophical by nose-diving into Buddhism and Taoism. Bookchin (1993b) added that social problems were the real source of our ecological problems because of economic, ethnic, cultural, and gender conflicts: “What literally defines social ecology as "social" is its recognition of the often overlooked fact that nearly all our present ecological problems arise from deep-seated social problems” (p. 1).

Bookchin’s critique of deep ecology is based on the view that it is a “mindless dogma” whose followers are “irrational” and “theological” (Bookchin, 1993a, p. 47). Another core argument from social ecology is the view that deep ecology’s concern with anthropocentrism is flawed because it simply inverts the “opposition between humans and nature” (Morris, 1993, p. 37).

Messersmith-Glavin disagreed with the anti-deep ecology arguments from social ecology (2011). Others took the middle ground by accepting the value of the non-anthropocentric content of the deep ecology philosophy (Conkin, 2007), at the same time saying the Deep Ecology Platform “is too equivocal to provide very clear guidelines for environmental policies” (p. 261).

McLaughlin (1993) claimed that economic growth is the cause of environmental decay and suggested an “inclusive ecological ideology” as the way for humanity to be embedded in nature “by noticing our essential relatedness to the rest of nature, we may increase our appreciation of the unity of humanity with the rest of nature” (pp. 145-147). He also believed there was a mid-way point between those who sought to prioritise social justice over ecological disasters, and the environmentalists who were blinkered by social injustice. McLaughlin (1995a) later proposed a radical ecocentrism through the restructuring of an industrial society away from economic growth to benefit both humanity and the environment. He described radical environmentalism as the confluence of two streams with deep ecology being a plausible path to transforming an industrial society:
Some within the nature tradition now recognize that creating satisfactory relations with the rest of nature requires changing society, and some within the social tradition are realizing that the creation of a just society requires resolving the ecological crises of industrial society”.

(McLaughlin, 1995a, p. 258)

McLaughlin (1995a) held the view that “there is a recurrent fantasy that some kind of technological invention will suffice to resolve our problems” (p. 259), a position likely to be supported by both social ecologists and deep ecologists.

Bookchin’s colleague (Biehl, 1997), maintained the divide between deep ecology and social ecology for environmental philosophers (Clark, 2010). Clark (2010) reported on his discussions with Naess about Bookchin’s attacks on deep ecology, and noted that Naess welcomed the debate, stating:

I do not like the term ‘egalitarianism in the biosphere’ any more. I reject the idea of equality as used for what I call a right to live and blossom. ‘There is a right that all living beings have, the right to live and blossom.’ The rights of one of these beings are not equal to the right of any other, nor not equal. The quantitative or topological relationship is misplaced. The right is the same. (Clark, 2010, p. 24)

Naess’s analysis of social ecology demonstrated acceptance of the theory, but he had some confusion about its aims:

I am confused about the central issues dealt with in [social ecology]. Is “social ecology” a name of one ecosophy or a class with basic common characteristics? I hope it is meant as a class-name, otherwise a Gleichschaltung [enforced conformity] is implied considering that there still are different cultures and people with great differences of backgrounds within a culture – and of course strong terminological idiosyncrasies. So, my conclusion is: of course it is a class name. (Clark, 2010, p. 25)
Naess’s response to social ecology is confusing in itself, perhaps driven by the desire to retain a philosophical meaning for the word ecosophy. Clark too was disturbed by the writings of Bookchin, reporting to his colleague Gary Snyder that he was “very troubled by the direction of Bookchin’s thinking and actions” (Clark, 2010, p. 20). The writing that Bookchin showed to Clark was a chapter proof titled “Thinking ecologically. A dialectical approach” (1995), where Bookchin reiterates his sentiment that deep ecology is a mish-mash of philosophy, Taoism, Buddhism, Heidegger, Spinoza and Paul Ehrlich.

Slocombe (2002) summarises the critical differences and similarities between social ecology and deep ecology, concluding:

The first major point to note is that we are not comparing like with like. Social ecology is a comprehensive analytical perspective in that it analyses the features of the contemporary system to highlight the underlying environmental crisis, and articulates an alternative society. Deep ecology is very different; it takes an ontological approach in that it proposes an alternative worldview, and inherent in that are the changes needed for a more benign society. (p. 10)

In concluding this section, Arne Naess was a political activist (Fox, 1992) who promoted social change toward a less consumerist society. He held views that he believed were not inconsistent with social ecology. For the purposes of this research, it is more productive to focus on the areas of confluence between the two ecologies rather than on the idea that only one of these worldviews can be accepted.

2.3.4.5 Recent discourse in deep ecology.

The ideas of environmental ethics and ecophilosophy have been around for some time (see Fox, 1990c; VandeVeer & Pierce, 1994), and some have wondered why deep ecology became so popular, to which Fox (1988) stated that it was simply an idea ready for its time.
Discussions continue today about deep ecology and these are essentially about the same issues such as the separation of humans from nature, and the separation of humans from one another (Messersmith-Glavin, 2011). However, in the 25 years since Warwick Fox wrote his thesis, much of the controversy has left the debate (and not necessarily just because some of the key players have since died).

In 2014, a special 30th anniversary edition of The Trumpeter Journal of Ecosophy, titled “Whatever happened to deep ecology?” contained ten papers offering different answers to this question, although most seem to offer more problems for deep ecology than solutions. For example, Cavazza’s (2014) use of the political ecology of Bruno Latour undermined the metaphysics of deep ecology and rejected the notion of “wisdom”, the latter of which is curious since the etymology of the word philosophy is the Greek sophie for “lover of wisdom”. The paper by Abram (2014) supported a contrary view to Latour, arguing that the metaphysical experience should be expanded along a “third dimension” that gives humans greater depth within the environment. Hawkins (2014b) analysed why deep ecology “had to die” (p. 221) and argued that the post-9/11/2001 years have been “fear-laden” (p. 212) for academia and within environmental philosophy circles, primarily making deep ecology the scapegoat for ecoterrorism:

It was my experience that, during the immediate post-9/11 years, a fear-laden atmosphere developed within academia, such that anyone hesitant to wave the flag and “circle the wagons” against any and all possible threats to “our group” risked being suspected of disloyalty, leading to a blanket of self-censorship descending over the university community. (p. 212)

Deep ecology subsequently died, she argued, because of a power struggle within environmental philosophy:
The first clear-cut evidence that came to my attention of a move to “kill off” deep ecology, however, was the banishment of the entire “Deep Ecology” section from the fourth edition of Zimmerman’s anthology (Zimmerman et al., 2005, 2001, 1998, 1993), the earlier editions of which I had used year after year in my teaching. (Hawkin, 2014b, p. 212)

Her second reason described the relationship to 9/11/2001:

It was left to Callicott, perhaps still smarting from his own social censure, to explicitly state that “after September 11, 2001, responsible environmental philosophers wish to distance themselves from militant ideologies associated with groups that have used illegal and even violent means to achieve their ends,” singling out animal rights as an “increasingly militant movement” but also calling deep ecology “vaguely anti-intellectual” and noting that its platform had been adopted by “members of the radical green movement, including its covert operatives, the ‘ecowarriors’ of Earth First! in the 1980s” (Callicott 2005, p. 6). (Hawkin, 2014b, p. 213)

A key proponent of deep ecology, George Sessions (2014), offered another explanation in the special issue:

A so-called “new conservation” movement has recently emerged that claims the traditional conservation/environmental movement (and deep ecology) had it all wrong. (p. 106)

Sessions (2014) elaborated on a new group of “Bright Greens” as being behind the demise of deep ecology:

Recently, a so-called “Bright Green Environmentalism” has arisen which has much in common with the New Age movement. Michael Schellenberger and Ted Nordhaus, of “The Death of Environmentalism” fame, appear to identify with the Bright Greens, when they criticize the goals of the traditional environmental movement. Such critics reject the “Dark Green” (i.e., deep ecological) position that civilization has to be scaled down, and the Earth’s
wildness and biodiversity protected. For Bright Greens, global warming doesn’t require major changes in society – we can technologically engineer our way past it, with alternative energy and by redesigning industrial society – and keep our high levels of consumption, endless growth, and all the rest. (p. 110)

Sessions provided other evidence of deep ecology that was under attack from writers who thought that nature was at an end, delivering a wandering critique that did not entirely deliver deep ecology unscathed from the attacks.

The above summary of the special edition of the *Trumpeter Journal of Ecosophy* provided context for this study by presenting the most recent views on deep ecology, explaining why there is a gap in the literature on the topic since the turn of the century.

**2.3.4.6 Other opponents/proponents of deep ecology.**

While support for deep ecology continues today as the salvation for humanity’s environmentally destructive practices (Drengson, Devall, & Schroll, 2011), other authors view deep ecology as being no longer of interest to environmental philosophy, questioning whether “it is of any philosophical interest (as opposed to political interest stemming from its role in the emergence of several Northern environmental movements)” (Sarkar, 2012, p. 61).

Tatray provided an extensive overview of the debate around the definitions of deep ecology (2006), mainly focusing on the criticisms from environmental ethics around the nondualistic metaphysics of deep ecology. Guha’s (2005) criticism of deep ecology was partly based on the claim that its anthropocentric-biocentric binary does little to remedy the two fundamental problems for the Earth: overconsumption in Western societies and growing militarisation (2005). Guha referred to the “bogy of anthropocentrism” and asserted that deep ecology was based on “narrow and inequitable conservation practices under a newly acquired radical guise” (2005, p. 105). Guha claimed that deep ecology (in its American form) had infiltrated many areas including academic, political and social spheres, and had become too large an entity,
but failed to understand the impact of a “conservation elite” on the lives of the poor in developing nations.

Deep ecology has also been associated with religion (Barnhill & Gottlieb, 2001), an interest that emerged amongst scholars of religion out of the detrimental impact that humans are having on the Earth, and a need to provide religious alternatives to the worship of money, fame, political power and other gratuitous social successes (Gottlieb, 2001). Gottlieb sees deep ecology in a positive light from the point of view of religion: “deep ecology occurs within the discursive, emotive, cognitive, and at times even institutional space of world religions” (Gottlieb, 2001, p. 17). However, the ecophilosopher Katz (2001) counter-argued that, from the point of view of Judaism, there was an uneasy tension with deep ecology:

Deep ecology selects as fundamental value the fulfillment, flourishing, and realization of the Self – but this realization-value is based on characteristics of human life and human experience. Thus, the process of identification and Self-Realization are clearly anthropocentric in character, structure and goal. (p. 163)

In this section, I have outlined some of the ecophilosophical debates over the last three to four decades and have acknowledged the differences in points of view, from which I conclude that there is little common ground amongst the parties involved. In this study, I have chosen to work with a model of deep ecology that I propose will fit with what teachers and students already understand and support; a model that embodies the core values of deep ecology such as anti-anthropocentrism, anti-consumerism and wilderness preservation.

2.3.4.7 Spinoza, deep ecology, Self-Realization and planetary thinking.

The best approach to understanding Naess’s use of Spinoza’s concept of *conatus* (from the Latin *conari*, meaning to endeavour), which is the term used in his major work *Ethics* (Spinoza, n.d.). *Conatus* is typically explained as a “basic motivation that is
considered to constitute the essence of all things, namely, the endeavour to persist in their own being” (Fox, 1988, p. 175). It has more relevance to this thesis when it is referred to as the “power or essence” (de Jonge, 2004, p. 69) of any being. Mathews (1991), provided an equally eloquent description: “the conatus consisted in the unfolding or motion of a thing toward an independently or externally defined goal (where the external author of such a form or goal was of course presumed to be God)” (p. 109). Naess adopted Spinoza’s idea that the universe is a unity and that there is a comprehensive structure of the self, but accords more so with the conatus of all forms of life: “perseverare in suo esse, to persevere in ones own (way of) being, not merely being alive” (Rush, 2000, p. 30), which is what Naess calls his Self-Realization. The concept of self has long been a source of interest to social psychologists (De Lamater, Myers, & Collett, 2015) and is relevant to the sorts of actions, beliefs and locations of the student as a social being, and aspects of the identity of self are relevant to the third research question.

Arne Naess did not leave any procedure or manual for Self-Realization or for the attainment of a gestalt state. His inspiration came from Buddhism and Spinoza. Naess was also a follower of Gandhi, all of which complemented his love of mountains. Naess saw the mountains (nature) as his father (his real father died when Naess was young). The personal details of his life have been published (see Drengson, 2005; Rothenberg, 1993; 2010; Slaven, 2009) and need not be repeated here. What is important is that Naess felt that, only when he stood next to a mountain did he feel fully human. The mountain was Naess’s path to monism; being at one with nature. Naess (2005h) summarised this line of thinking through his description of the relationship he had with the mountain, when he went climbing at age fifteen:

The effect of this week [encountering an old man in the mountains] established my conviction of an inner relation between mountains and mountain people: a certain greatness, a cleanness,
a concentration on what is essential, a self-sufficiency; and consequently a disregard of luxury, of complicated means of all kinds. From the outside, the mountain way of life seemed Spartan, rough, and rigid, but the playing of the violin and the obvious fondness for all things above the timberline, living or “dead,” bore witness to a rich, sensual attachment to life, a deep pleasure in what can be experienced with wide-open eyes and mind. (p. 367)

de Jonge (2004) launched a sweeping critique of deep ecology, questioning why a philosophy of ecology needed to be invoked rather than an environmental ethic alone. He believed that the philosophical views and lifestyle of deep ecology were in large part a moral decision, and that this “pose[d] a problem for the deep ecologist” (de Jonge, 2004, p. 9). The Stanford Encyclopedia of Philosophy lists Deep Ecology under Environmental Ethics and provides a synopsis of approaches to environmental crises that accords with the purpose of Mathews’ work “to find a metaphysical and ethical expression for the intuition of ‘oneness’ and interconnectedness, and Spinoza and Einstein providing a starting point” (Mathews, 2010, p. 2). Other authors used the idea of “planetary” or “whole Earth thinking”:

A crucial task of whole Earth thinking is to account for interdependence and self-organizing dynamics of Earth’s systems including its living systems (biosphere) and its systems of water (hydrosphere), rock (lithosphere), air (atmosphere), and even human consciousness (noosphere). (Mickey, 2016, p. 5)

Naess (2005c) explained in detail how his philosophy developed and, while heavily influenced by his experiences from psychoanalysis, it is consistent with a set of values and rights not unlike an ethical view of what is right and wrong, or what actions are required or activities (like whaling) that should cease. Rachel Carson’s Silent Spring (1962), which is widely regarded as an ecological awakening to the planetary poisoning by humans, has values and proposed actions that accord with the Deep Ecology Platform (Naess & Sessions, 1995). Another document of note is the Limits to Growth report of the Club of Rome
(Meadows et al., 1972), which models the consequences for humanity of unrestrained use of natural resources, a theme contained within the deep ecology philosophy. Boyden, Dovers & Shirlow’s (1990) analysis of the threats to the biosphere came to the conclusion that cultural and social shifts were needed to give people a sense of belonging, involvement and purpose, adding that “changes in educational programmes may come to be seen as an essential part of the transition to an ecologically and humanely desirable society” (pp. 258-259). Returning to de Jonge’s criticism of Naess’s (supposed) mis-interpretation of Spinoza in 2.3.4.2 above, the link between metaphysics and ethics made by Spinoza is central to Naess’s Self-Realization (Rush, 2000), and Naess himself wrote that there necessarily had to be a wide gap because “man’s [sic] predicament today differs from that in the seventeenth century, there are some similarities that suggest a basic continuity through the centuries” (Naess, 2005j, p. 386).

The radical group, Earth First, sits at an extreme end of the spectrum, employing violence and risk to life via tree spiking (Lange, 1990). de Jonge claimed that this form of extreme activism called CD or civil disobedience is part of the Deep Ecology Platform (2004) and in doing so undermines Naess’s broad position. Naess adopted the opposite extreme of activism because he came very early in his life under “the strong influence of a Gandhian ethics of nonviolence” (Naess, 2005g, p. 314). This, however, needs to be put into the context of the Alta confrontation of 14 January 1981 during which Naess chained himself to a thousand other protestors to try and prevent the construction of the Lapp dam in far north Norway (Fox, 1988). It is pointed out by Rush (2000) that Naess’s interpretation of Spinoza was not to withdraw into passivity because we are small and ineffectual, but to realise that the universe is large and that Spinoza calls for activeness.

Providing this background to Naess’s political activities provides context for the analyses of data later in the thesis, especially where responses might be aligned with red, blue or green politics. Naess’s actions are also relevant to the discussion on student agency.
2.3.4.8 Deep ecology, metaphysics and secondary schooling.

Metaphysics is relevant to this research because of Naess’s grounding of his ecophilosophy in the metaphysics of Spinoza (de Jonge, 2004), whose work spanned ethical, metaphysical and political dimensions (Huenemann, 2008). de Jonge (2001) argued that the major tenets of deep ecology required Spinozian metaphysics to escape the social and political tensions that had surrounded deep ecology. Others have argued that “deep ecology proposes to heal this division [between humans and nature] by a ‘unifying process’, a metaphysics that insists that everything is really part of and indistinguishable from everything else” (Guilherme, 2011, pp. 61-62), and to see this linked to every aspect of deep ecology, including Self-Realization.

Metaphysics has been described as “the study of ultimate reality” (van Inwagen, 2015, p. 1), the appearance of things, and includes issues like free will, rational thought and truth. Other descriptions of metaphysics say it is about transcending the apparent world and finding some deeper truth (van Inwagen, 2013). Bakan’s (2001) definition is helpful: “We allow that metaphysical is the study of the real, in the way in which epistemology is the study of knowledge, ethics the study of the good, and aesthetics the study of the beautiful” (p. 531).

Metaphysics is about trying to make sense of the world around us, and acting as an observer of the workings of nature and the cosmos (Moore, 2011). The literature is sparse on the topic of metaphysics in secondary education, a gap addressed by this study.

2.3.4.9 Neophilia and excessive consumerism.

Early in the implementation of this study there was evidence that some students influenced parental buying behaviour, and there were other students who believed that there was excessive consumerism. Studies on intergenerational influence on buying behaviour failed to clarify how this influence operates (Viswanathan, Childers, & Moore, 2000), but families have shared values about their buying behaviour. Previous research on consumerism and green behaviour in children assume a direction of influence from parents or society at large
toward the young person’s consumer choices (Grønhøj & Thøgersen, 2012; Lee, 2014; Yan & Xu, 2010). Parental influence over adolescents is only one of a number of factors that regulate children’s beliefs and behaviours (Youn, 2008).

In terms of “green consumerism”, producers of goods and services respond to collective action from consumers to make environmentally friendly products by changing their business model or various aspects of their production process (Chander & Muthukrishnan, 2015). Green behaviour promotes community acceptance, for example of renewable energy in the form of wind power (Thøgersen & Noblet, 2012), but the behavioural model is far more complicated and depends on whether or not a person is a radical green consumer; the model also necessitates a definition of what is environmentally sound (Moisander, 2007). Moisander explained:

_A radical green consumer refuses to buy anything that is not absolutely necessary. An alternative view is to acknowledge that such a radical environmentalist approach to consumption is not easy to adopt in our increasingly convenience- and consumption-oriented society._ (p. 405)

Part of being an “environmentally concerned consumer” is the capacity to purchase and own/operate goods, which is not something that would normally be attributed to teenagers in full-time schooling. Green consumers need the knowledge, commitment and opportunity to buy green products, but they can be limited by poor packaging and labelling that obscures capacity for recycling and the presence of impurities or contaminants (Maniatis, 2015).

2.3.4.10 Guattari and Dewey: the other ecosophies.

Naess was not the only scholar to devise an ecosophy; Felix Guattari’s (2000) approach of the three ecologies is described as an ecological philosophy that “engages with the material, social, and ideological ‘registers’ of life” (Greenhalgh-Spencer, 2014, p. 324) and is
presented as a lens to “illuminate pedagogical practice”. Much of Guattari’s work originated from the book by Gregory Bateson, *Steps to An Ecology of Mind* (Taffel, 2008). Guattari (p. 52) explained some of his position on ecology:

> Ecology must stop being associated with the image of a small nature-loving minority or with qualified specialists. Ecology in my sense questions the whole of subjectivity and capitalistic power formations, whose sweeping progress cannot be guaranteed to continue as it has for the past decade. (p. 52)

Guattari’s work takes ecology away from the usual concern for the natural environment, into a necessary part of poststructuralist living, as a decentred socialism that ties quality of life to a new type of ecological ideology (Taffel, 2008). However, while Guattari’s ecosophy does fulfil a role in moving toward valuing the non-human world, his emphasis on social problems differs from what can be seen as the metaphysical aspects of deep ecology.

Guattari came to ecology in the 1980s from a trans-disciplinary background and it is clear that his “eco-logic is by definition activist”, and is only one part of his many interests in sociopolitics (Genosko, 2009, p. 79). Genosko (p. 17-18) elaborated Guattari’s *The Three Ecologies*:

> His [Guattari’s] own warning about ‘ecosophy’ in *The Three Ecologies* is heeded: ‘Rather than being a discipline of refolding on interiority, or a simple renewal of earlier forms of “militancy,” it [a new ecosophy] will be a multifaceted movement, deploying agencies and dispositives that will simultaneously analyse and produce subjectivity.’ If, as Guattari wrote, ‘schizoanalysis only poses one question: how does one model oneself?’ (p. 17-18)

Guattari’s overarching concern in his work was the “production of subjectivity”, but he was also concerned largely about “interiority”:
State thought is stratified thought. Its basis is the double-articulation of State power and universal reason, each of which enables and augments the other: the power of the State provides reason with a reality and a proper space of its own, an “interiority,” as Deleuze & Guattari call it. (Holland, 2013, p. 33)

Guattari’s work in ecosophy is more strongly linked to the mechanisms of the state, politics and the military (Genosko, 2009) than that of Naess, even if Naess’s call for action and his correspondence with politicians are taken into account. There is no conflict between the two ecosophies, and it is perhaps not unusual that both philosophers had strong interest in psychoanalysis, or that subjective experience forms part of their work.

Guattari settled on the three ecologies as the delineation between ethical, aesthetic and political foundations for his trans-disciplinary writing. In the lead up to the 1992 Paris elections, Guattari hoped that “disenchanted voters would gravitate [toward] ‘another vision of the future’ contained in ecology’s inventive political articulations of the everyday and planetary” (Genosko, 2009, p. 72). For Guattari there were three fundamental types of ecology “environmental, social and mental. These types – biospherical, social relations, human subjectivity – are also figured as registers” (Genosko, 2009, p. 74). Guattari had a dislike of “technocratic solution-mongering – for instance, the American model of emissions trading” (Genosko, 2009, p. 75), a view not dissimilar to Naess’s rejection of shallow ecology where pollution is seen as a problem to be solved with science. Naess grounded his philosophy in the work of Spinoza (Naess, 2005j) and his concept of Self-Realization was influenced almost entirely by Gandhi (Naess, 1988). Spinoza’s monism and Gandhi’s maturation of the self are key ingredients in the Deep Ecology Platform that provide unique models for embracing ecological philosophy.

A pedagogical terrain for deep ecology can be found within the philosophy of education, particularly Dewey’s dissertation on education and culture (Garrison, Neubert, & Reich,
The roots of environmental education can be traced to the liberal-progressive philosophy of Dewey (Gough, A. & Gough, 2010). According to Garrison et al. (2012), Dewey saw humans as part of nature:

Since his early acquaintance with Hegel, Dewey had realized that nature and culture are not opposite but relational to each other. He was convinced that humans as cultural beings are a part of nature. They act within nature, with it, and partly also against it at the same time. (p. 1)

This view accords with the monism of deep ecology (Naess & Sessions, 1995). Dewey also held the view that the individual (or self) is co-evolving with the environment and he viewed the environment as the total of all that is experienced by the self. Dewey contributed insight into the unfolding of the self by stating that education was an “unfolding of latent powers toward a definite goal” (Dewey, 2012, p. 79). This is seen as a drawing out of the student and a developing of the mind, which is not dissimilar to Naess’s deeper questioning toward a gestalt state of existence (Naess, 2005f). From this perspective, this study proposes an additional approach to the philosophy of education, one that sees deep ecology as an ecosophy for students willing to focus their minds on metacognition rather than on discipline-based thinking.

2.3.4.11 Biospherical egalitarianism and Intrinsic Value Theory.
Biospherical egalitarianism is a term defined by Naess (1973) as “a deep-seated respect, or even veneration, for ways and forms of life” (p. 95). An example of biospherical egalitarianism is the catchment management strategy of allowing environmental water flows along catchments - a land management strategy to maintain river health along the full length of the river ecosystem. In deep ecology, biospherical egalitarianism extends to the non-living parts of ecosystems, such as the mountains so beloved by Naess, and the oceans, rivers, glaciers, and so on that form wild nature and with which we interact and see as an extension
of humans. The theory usually associated with biospherical egalitarianism is *Intrinsic Value Theory*, used by John Dewey (Ott, 2010) and others (Mikkelson, 2014; Minteer, 2001) to determine the value of nature. There is a large body of literature around the issue of moral goods and values, much of which are philosophical, technical arguments that are debated in academic environmental ethics journals (McShane, 2007; Preston, 1998). Some of these discuss biospherical egalitarianism. For example, the conference paper by B. Smith (2013), “The rights of rocks: Toward an environmental ethic without intrinsicality”, received a critical and somewhat icy response from a university audience in Boston (personal communication). Ecofeminists have taken issue with Naess’s use of the term because an “ecofeminist ethic recognizes that a ‘care and justice-through-care and appropriate reciprocity and friendship attach to primary relationships’, not simply abstract ‘relators’” (Kheel, 2008, p. 192, emphasis in the original). Perhaps assigning value to mountains is an idea that not all scholars believe to be rational; it is difficult to say from the literature, but it is an important part of deep ecology.

In this study, I use Naess’s “intuition” to value all of the natural world, living and non-living, whether it is a virus or a mammal, a microbial parasite or an obligate anaerobe, and I adhere to Naess’s (1984) idea of intrinsic value that “there is vast room for difference” (p. 202). This approach agrees with the view from Fox, that:

> deep ecologists agree with Birch and Cobb’s insight that ‘human beings are more deeply moved by the way they experience their world than by the claims ethics makes on them’.

Thus when contemporary environmental philosophy is dominated by the question ‘How do we construct an adequate environmental ethic?’, deep ecology asks the question ‘How do we cultivate a deep ecological consciousness?’” (Fox, 1984, p. 204).
2.3.4.12 The Catholic church, interfaith and anthropocentrism.

In this research, participants were asked about anthropocentrism and other issues associated with deep ecology such as consumerism, resource use, and human domination of the Earth. Given that one of the schools in this research is a faith-based (Catholic) secondary college, I outline here the emergence of interfaith ecotheology and connect this literature to the theoretical framework of deep ecology, focusing on the first research question on anthropocentrism. There is previous work showing that various religions are embedding sustainability into their ecumenical practice (Lawson, 2012).

It is relevant to note that Pope Francis (2015) said in his 2015 *Encyclical* that “the Bible has no place for tyrannical anthropocentrism (p. 50). Anthropocentrism has also been linked to “human welfare with economic growth, human safety and materialistic comfort” (Nazir, 2009, p. 8), and has been described as part of the fabric of culture and society that fails to see the real threats to the environment as those based on anthropocentric “myths” (Bowers, 1995). The words of Pope Francis are not the first attention given to issues of social and environmental justice by the Catholic Church; Pope Leo XIII spoke over a hundred years ago of the great injustices of the wealthy controlling capital and labour (1891), and Pope John Paul II (1990) linked this “collective selfishness, disregard for others and dishonesty” (p. 1), to the moral problem of an ecological crisis:

Certain elements of today’s ecological crisis reveal its moral character. First among these is the indiscriminate application of advances in science and technology. Many recent discoveries have brought undeniable benefits to humanity. Indeed, they demonstrate the nobility of the human vocation to participate responsibly in God’s creative action in the world. Unfortunately, it is now clear that the application of these discoveries in the fields of industry and agriculture have produced harmful long-term effects. This has led to the painful realization that we cannot interfere in one area of the ecosystem without paying due attention
both to the consequences of such interference in other areas and to the well-being of future
generations. (p. 2)

Pope John Paul II later stated that the root cause of environmental problems is the failure of
people to understand the anthropocentrism of the Genesis narrative, stating that it is grounded
in human sin and greed: “In his desire to have and to enjoy rather than to be and to grow, man
consumes the resources of the Earth and his own lie in an excessive and disordered way”

While papal messages about the environment are still framed within religious doctrine
(Benedict XVI, 2010), the anthropogenic harm to the Earth remains an ongoing concern for
the Catholic Church:

Man’s inhumanity to man has given rise to numerous threats to peace and to authentic and
integral human development – wars, international and regional conflicts, acts of terrorism,
and violations of human rights. Yet no less troubling are the threats arising from the neglect –
if not downright misuse – of the Earth and the natural goods that God has given us. (Benedict
XVI, 2010, p. 1)

The recent groundwork for papal messages comes from Ecumenical Patriarch Bartholomew I
of Constantinople, referred as “The Green Patriarch”, who has been praised for his efforts to
save the environment (Bartholomew & Chryssavgis, 2012), framing this in terms of human
stewardship over God’s creation (Bartholomew, 2015). Much of the material from the above
religious figures draws links between human destruction of the environment and the poverty
that this causes through land degradation to crops and the wellbeing of agrarian societies.

Faiths other than Catholicism engage in protecting the environment as part of their
teaching to followers, one of the earliest of such efforts is The Interfaith Partnership for the
Environment (IPE) founded in late 1986 as a “UNEP project to inform North American
congregations about the serious environmental problems facing life on Earth” (United
Also in 1986, was a meeting in Assisi of the world’s major religions (Christianity, Buddhism, Islam, Hinduism and Judaism) to “make statements concerning the environmental nature of the religious traditions” (Bergman, 2015, pp. 391). The Assisi Declarations and the UNEP project are key events in the establishment of the field of ecotheology, an academic discipline established to investigate how religions connect their core teachings and beliefs to environmental discourse and action. The Assisi Event was attended by the Pope, the Dalai Lama and the Archbishop of Canterbury, and led to the formation of the Network on Conservation and Religion (Anon, 2014b).

Another example of a faith that respects nature is the Forest Sangha worldwide Buddhist monastic community (Sucitto, 2014), who promote “living simply” as part of their push to tackle climate change, extinction of species, overpopulation and pollution. The Sangha live close to the Earth and do practical work like tree planting, but do not invoke the biblical version of stewardship over the Earth as promoted by the Catholic Church. GreenFaith, founded in 1992, is one of the oldest groups to organise religious-environmental partnerships for Jewish and Christian followers in the U.S. (n.d.-b). Within GreenFaith there is now an ecological/sustainability network for worshippers of Islam (EcoMENA, n.d.), who follow stewardship principles similar to the Catholic Church. The GreenFaith site (n.d.-c) also hosts Jewish environmental teachings similar to those of the Catholic Church, but the emphasis in Judaism is that humans do not own the Earth and have no right to destroy God’s creation:

God created the universe. This is the most fundamental concept of Judaism. Its implications are that only God has absolute ownership over Creation (Gen. 1-2, Psalm 24:1, I Chron. 29:10-16). Thus Judaism’s worldview is theocentric not anthropocentric. The environmental implications are that humans must realize that they do not have unrestricted freedom to misuse Creation, as it does not belong to them. (GreenFaith, n.d.-c, p. 1)
In Judaism, the *halakhah* (Jewish law) prohibits wasteful consumption, so in this regard, they are echoing the practices of the Forest Sangha, and agree with the principles of voluntary simplicity. Other faiths have similar ecological aims, including The Presbyterian Church (2010), who have a commitment to addressing the problems of overconsumption and overpopulation (1996). At least ten other faiths have adopted positions on environmental matters, with most viewing human greed, overconsumption, overproduction and anthropocentrism as principal causes of degraded ecosystems (GreenFaith, n.d.-a). Yale University are coordinating a worldwide alliance between religion and environmental programs (The Forum on Religion and Ecology at Yale, n.d.), and offer assistance to eleven religions to integrate ecological ideas into their religious projects and practices.

What Naess (1984) made clear in deep ecology philosophy was that:

> The common platform within the deep ecological movement is grounded in religion or \[emphasis added\] philosophy. In order to clarify the discussion one must avoid looking for one definite philosophy or religion among the supporters of the deep ecology movement. (p. 201)

Naess (1984) asserted that his “common platform” embodied all religions and “the basic views of Spinoza, Whitehead, Heidegger or others” (p. 201). This idea forms the basis of Naess’s Deep Ecology Platform, where Buddhism, Christianity and philosophy are placed at the base or entry level to his philosophy (Naess, 2005a).

### 2.4 Earth Education and connecting to nature

Earth Education (EE™) describes itself as the educational arm of deep ecology devoted to environmental education with an emphasis on feeling, understanding and direct interaction with nature. Their programs are targeted at children in primary school and early secondary school. Their educational philosophy is summarised as follows:
While providing academic challenges, we instill a caring attitude and provide fundamental knowledge of how the systems on the Earth work. Our programs also immerse children in a safe and natural environment where they are nurtured and can develop a deep appreciation for the precious plants and animals that live on the Earth through thought provoking experiential activities. (Teaching Responsible Earth Education, n.d.)

Their programs are largely based on children using their senses outdoors to come to appreciate the Earth’s cycles (Van Matre, 1979), so that it provided a useful comparison for the data generated using the deep ecology lens in this study.

Their programs were designed to teach the students to live lightly on the Earth and to live in harmony with nature. The program uses magic and gnomes in a whimsical way that aims to capture the imagination of young children (Van Matre, 1990). Noel Gough (1987) described incorporating EE™ approaches into pre-service and in-service teacher education programs and provided a balanced evaluation of EE™ techniques and strategies. His findings were mixed but he did like the share and do of EE™ compared with the show and tell of the more conventional EE lessons. It is, however, widely known that the leader of EE™, Steve Van Matre (1990), decries environmental education stating that “we think we are an alternative to it” (p. v) and he declared that his attack on environmental education was a response to the ineffectiveness of mainstream environmental education in addressing the environmental crisis.

EE™ provided a different, perhaps more magical and mystical experience of the environment compared to a typical environmental education curriculum, but the National Audubon Society’s nature study experiences were equally grounded in storytelling, role-playing and sensitising children to the natural world and it has received international recognition (Cornell, 1979). Van Matre is not alone in distancing himself from formal EE, with Maurice Holt likening environmental education to straightjacket nature studies and...
calling it “deterministic” and “extremely potent, very seductive, but it’s educational poison” (2005, pp. 58-59). David Orr (2004) added to the critique by stating that formal education will “render students narrow technicians who are morally sterile, and that it will deaden their sense of wonder for the created world” (pp. 24-25).

Returning to the deep ecology principles and the types of experiences that Naess spoke of in his writing about Spinoza and Gandhi, the magical and mystical alternative offered by EE™ uses similar language to that of Naess when he spoke about his relationship to mountains. Connecting to nature is a critical part of a child’s life learning (Chawla, 2015), and there is now some effort to provide developmentally appropriate experiences for children to bond with the natural world (Cross, 2011). The emphasis here is an ethical one whereby the teaching of values via exposure to appropriate experiences, understandings and enjoyment of nature is now of importance to environmental education (Callenbach, 2005).

In an interview with Jickling (2000), Naess explained his views of connecting to nature in urban areas:

We can do it in cities. You can do it along railways, highways. Everywhere there is something that is essentially nature. You don’t see any human purpose in it. It’s there on its own—and it’s ugly or it’s beautiful—but it’s there and its complexity is unlimited. To see something where you do not need to take any stand toward a purpose, or utility, or even beauty, is a good thing. Even if you go to look at an art exhibit you are constrained, you are expected to like something and dislike something. Whereas if you look at the sky—there are a fantastically lot of different clouds in Norway—you are free, and therefore free to strengthen the imagination. More and more I look at clouds. I did it as a boy and now at the age of 88 I get back to clouds—changing, changing, changing. There must be much more of that in school—keeping imaginations intact. (p. 54)
In the same interview Naess encouraged the development of ecological wisdom over knowledge:

You learn as a child that there is something called knowledge, and soon children learn about scientific knowledge as something opposed to myths and the undue influence of feelings, and values. And, you easily get to overestimate the importance of scientific knowledge in a vital question, which is always also a value question. As to ecology, we have had for a long time more than enough ecological knowledge about how to mend our ways. So, in some senses it is a blind alley to ask for more knowledge; wisdom is what we need. (2000, p. 55)

One focus of this research is how students in environment clubs at schools connect to nature, either through their family (parents, grandparents, guardians and siblings), through the projects and experiences created by the sustainability coordinator at the school, via their memories of nature experiences at primary school, or through an innate love for nature and wildlife. This connectedness is then related to environmental hope (Dunaway, 2015; Hathaway, 2010; Li, C. J. & Monroe, 2015; Orr, 2011), ecological wisdom (Drengson & Devall, 2010; Mickey, 2016; Naess, 2005e), the ecological self (Mathews, 1991; Seed, 2006), environmental philosophy (Drengson, 1997; Kowalewski, 2002), and ecological literacy (Orr, 1992; Stone & Barlow, 2005). In the following sections, I discuss each of these key constructs.

2.5 Ecoliteracy, and ecological intelligence

This study investigates if students, teachers, and other members of the school community, embrace ecocentric or anthropocentric beliefs consistent with the binary of Naess’s shallow versus deep ecology (1973). This could be seen as a form of ecological literacy, however, deep ecology’s objectives are not exactly the same as those proposed by the proponents of ecoliteracy (Goleman, Bennett, & Barlow, 2012), which combine social, emotional and
ecological intelligence into a single ecological intelligence or ecological sensibility. Goleman et al. (2012) propose “practices of emotionally and socially engaged ecoliteracy” (p. 12), of which empathy for all forms of life equates to biological egalitarianism in deep ecology terms.

A recent review of environmental literacy, ecological literacy and ecoliteracy revealed a complex aetiology for these terms and raised concerns about their definitions being “muddled” and lacking in meaning (McBride, Brewer, Berkowitz, & Borrie, 2013): “Numerous scholars have argued that the terms environmental literacy or ecological literacy have been used in so many different ways and/or are so all-encompassing that they have very little useful meaning” (p. 1).

Kahn (2010) argued for a critical, more radical eco-pedagogy as a “socially constructive force” that determined human knowledge. The understanding of ecocentric pedagogy adopted for this research does not borrow from the Freirean-derived ecopedagogy that radically opposes neoliberalism and imperialism (Kahn, 2010), but rather it takes a Naessian view that education should be Earth-centred. Orr and his colleagues (2005) define ecoliteracy in a way consistent with ecocentrism “connections between head, hand, heart, and cultivation of the capacity to discern systems” (pp. x-xi), but there appears to be little clarity about the term “ecoliteracy” as noted by McBride (2013). Ecocentrism has been embodied for some time in outdoor education as the goal to “realise the individual’s full potential of mind, body and spirit” (Knapp, 1990, p. 29-30). Ecocentrism also has socio-political dimensions because we need changes in attitudes and behaviours in the form of social change to drive reform at the school level (Greenall Gough, 1990).

In summary, the terms ecoliteracy and ecological are used to define behaviours, values and emotions that overlap in relatively insignificant ways with deep ecology, and therefore can be seen as parallel ideologies that still have remnant traits of anthropocentrism.
2.6 Environmental stewardship

One concept of environmental stewardship stems from the ecumenical teaching at Catholic schools “God entrusts us with the world and with the responsibility to reverence, develop, heal and celebrate life” (Catholic Education Office Sandhurst Diocese, 2014a, p. 51). The Catholic church argues that care of the Earth has its roots in the middle ages (Queensland Catholic Education Commission, 1989) and some authors view it as “woven into the fabric of the curriculum and the daily practices of Catholic schools across the world” (Riley & Danner-McDonald, 2013p. 32). Environmental stewardship is included in the 1999 National Goals for Schooling (Adelaide Declaration), which called for students to leave school with “an understanding of, and concern for, stewardship of the natural environment, and the knowledge and skills to contribute to ecologically sustainable development” (Ministerial Council on Education Employment Training and Youth Affairs, 1999, p. 229).

Environmental stewardship is also referred to in the goals of the Australian government’s national statement on environmental education for schools “Sustainability also seeks to promote stewardship of the environment, encouraging everyone to assume the responsibility of being a caretaker or custodian for the environment” (Department of the Environment and Heritage, 2005, p. 4). Here, stewardship is defined as:

The responsibility of being a caretaker or custodian of the environment by managing activities with due respect for the health of that environment. It means taking care of what we have not only for ourselves, but also for those who come after us. (Department of the Environment and Heritage, 2005, p. 27)

The origins of environmental stewardship in the United States have been attributed to the “land ethic” in the 1949 essays of Aldo Leopold (Schelly & Price, 2011), and is seen as:
Distinct from the popular environmental concepts of preservation, conservation, and sustainability, although it is similar in many ways to conservation and sustainability. Yet stewardship has unique contributions to and implications for consideration of the world’s green energy choices. (Schelly & Price, 2011, p. 1)

Others see sustainable environmental stewardship as central to a stable global economy (Jain & Kedia, 2011), and the key to this stability is good business leadership that is not driven just by profit (Alexander, 2011).

In summary, the concept of environmental stewardship is embraced by a variety of sectors of society, and it has features in common with environmental citizenship.

2.7 Environmental activism in school students

Naess was an environmental activist (Naess & Rothenberg, 1989) so this study takes the view that student activism is consistent with the deep ecology call for direct action. Mackay’s (2012) work proposes that the child’s right to act for the environment begins in kindergarten. The term “environmental activism” is defined as “an individual’s developed, relatively stable, yet changeable orientation to engage in various collective, social-political, problem-solving behaviors spanning a range from low-risk, passive, and institutionalised acts to high-risk, active, and unconventional behaviors” (Corning & Myers, 2002, p. 704). This is relevant to the life trajectories of secondary school students in environment clubs (Fisher, 2016), transformations that lead to commitment and concern for the environment. Fisher, however, describes why there is a problem creating an environment for student activism:

Much of the interest on youth and climate change has focused on the pedagogy of climate change or on young people’s attitudes or perceptions. Although this research is important, there has been little investigation on the life trajectories of youth committed to climate activism. (2016, p. 3)
Fisher (2016) explains why he supports the Corning and Myers’ definition (2016, p. 3):

This definition is appropriate for climate activism because it allows activists to be committed yet open to change as situations change, it allows for a variety of contextually appropriate actions, and it requires collective and socio-political aims. However, determining what is and is not political is not always easy. What are often considered more individualized and personal behaviors may have activist aims when connected to collective and political goals.

The data generated from the interview responses will be analysed for agreement with the definition of Corning and Myers and the description given by Fisher.

2.8 The New Environmental Paradigm (NEP) Scale

The “New Environmental Paradigm” (Dunlap & Van Liere, 1978) was originally developed as a postal survey to measure people’s ecological attitudes. Most of the NEP questions align with the Deep Ecology Platform by investigating ecocentrism and anthropocentrism. The NEP Scale and its derivatives have been widely used (Dunlap, 2008), and it has been adapted (shortened to ten questions and renamed the “New Ecological Paradigm”) for measuring pro-environmental attitudes and beliefs in Grade 5 primary school students (Manoli, Johnson, & Dunlap, 2007), showing that an amended form of the Scale can provide reliable data from children.

Not all reports of the Scale are favourable; some authors criticise it for not taking cultural factors into account and that it cannot be universally applied for researching environmental attitudes (Bostrom, Barke, Turaga, & O'Connor, 2006). A large-scale statistical study in Romania and Portugal using the NEP in face-to-face interviews showed that the scale lacked “internal consistency” and did not perform satisfactorily (Denis & Pereira, 2014). Another large study in Sweden found Schwartz’s Scale of Altruism to be a better indicator of “pro-environmental behaviour” than the NEP (Wiidegren, 1998). Results from the above three
studies are not surprising given that the interpretation of NEP results varies according to the socio-demographic setting for the measurement of the NEP (Arcury, Johnson, & Scollay, 1986).

Despite these mixed reviews, the New Ecological Paradigm is a useful standard against which the data generated from this thesis can be compared, and the final ten questions from the modified NEP scale of Manoli et al.’s (2007) study provide some relevant reference points for this thesis (p. 9):

1. Plants and animals have as much right as people have to live.
2. There are too many (or almost too many) people on Earth.
3. People are clever enough to keep from ruining the Earth.
4. People must still obey the laws of nature.
5. When people mess with nature, it has bad results.
6. Nature is strong enough to handle the bad effects of our modern lifestyle.
7. People are supposed to rule over the rest of nature.
8. People are treating nature badly.
9. People will someday know enough about how nature works to be able to control it.
10. If things don’t change, we will have a big disaster in the environment soon.

The literature also showed that factors such as age, culture and gender are important in measuring pro-environmental behaviour. For example, preschool children value nature and have positive attitudes toward water, paper and electricity recycling (Kahriman-Ozturk, Olgan, & Tuncer, 2012), but their reasoning for these attitudes are still anthropocentric “The most probable reason for this attitude can be explained by children’s cognitive level. Preschool children are in the pre-operational stage and they are not capable of thinking from the perspective of the environment” (p. 644). Primary school children are aware of threats to the environment but lack an understanding of complex environmental issues (Weeks, 2010).
In a New Zealand study at a vocational training institution using a five-point NEP Scale, investigators found that anti-anthropocentrism was greatest amongst learners in the age range 30-39, whereas 15-19 year olds had the least anti-anthropocentric score (Shephard, Mann, Smith, & Deaker, 2009). Another New Zealand telephone study of 600 adults using the NEP scale agrees in part with the above (Shephard et al., 2009).

Shephard et al.’s (2009) data on gender showed a narrow, statistically significant gap between males and females, with females showing slightly more pro-ecological NEP scores. All of the participants from the veterinary nursing group and a majority of the hospitality students were female participants; a factor that the authors recognise limited their interpretation of the overall NEP scores.

There are also socio-economic factors that influence NEP scores. For example, a study of university students showed economic progress as having greater value to the participants than environmental wellbeing (Chang, 2015) “The negative correlations of the new ecological paradigm with material goals support the argument that the new environmental/ecological paradigm is derived from affluence-based postmaterialist values” (p. 609). In a Turkish study (Taskin, 2009), NEP scores are more anthropocentric in vocational (usually single-sex) schools when compared with students in private schools, an effect the author postulates may be due to the Islamic focus in textbooks:

>This outcome also is not surprising because the textbooks were developed for the benefits of human beings. For instance, phrases such as ‘human beings use animals’ or even ‘animals and plants were created for human needs’ can easily be found in science textbooks. (Taskin, 2009, p. 494)

In a Finnish study of high school students there was little or no interest in pro-environmental behaviours (Keser, Ozcinar, Kanbul, Uitto, & Saloranta, 2010), a result that does not agree with a Malaysian study (Karpudewana & Keong, 2013). A study by Chan (1996) contradicts
Keser et al.’s findings and reports that students are pro-environmental, but that materialism and the desire for modern consumer goods are counter-opposing forces that many students are grappling with in their lives. There is other data showing that many American Millennials (born 1982-1999) have been declining in their concern for the environment (Twenge, Campbell, & Freeman, 2012), a view challenged by Berkman from the United States-based *Alliance for Climate Coalition* (2012), who cited the mass rallies for the climate as evidence against the findings of the former study.

2.9 School environment clubs

2.9.1 History and function of environment clubs.

Environment clubs have been around for more than a century, with the oldest starting in 1883 in Mumbai, India (the Bombay Natural History Society) (Roberts, 2009). Soon afterwards in 1892, the Sierra Club was founded in the United States by the conservationist John Muir. This is the United States’ largest and most influential environmental organisation (Sierra Club, n.d-c), with extensive connections to other governmental and non-governmental agencies (NGA) responsible for EE (Sierra Club, n.d-b). The Sierra Club encourages youth to participate in the Inner City Outings Program, a program for low-income, inner city youth with trips to the wilderness (Sierra Club, n.d-a). For older youth in high school or college, the *Sierra Student Coalition* (SSC) provides an opportunity for youth to become effective environmental leaders (Sierra Student Coalition, n.d). There are other national organisations in the United States that promote EE to a broader audience that includes schools (4-H clubs, n.d.; Aldo Leopold Foundation, n.d.; Green Schools Alliance, n.d.; National Environmental Education Foundation, n.d.). Environment clubs in schools were promoted in *Scientific American* (2008) and *The Wild Class* has been promoted in some elementary schools in the United States (Greenspan, 2005). Other initiatives for EE in the United States promote club-
like environmental stewardship that fit within the same types of activities and projects as environment clubs (tree planting, recycling) including climate change education (Alonso, 2014; EarthTeam, 2015).

There is a range of activities in other countries – many associated with the international Green Schools and Eco-Schools movements. New Zealand has a nation-wide EE program promoting sustainability in schools (Enviroschools, n.d.). There are parallel EE programs in schools in England (Eco-Schools England, n.d.), Eco-Clubs in India (Bhattacharya, 2010; Botanic Gardens Conservation International, n.d.; Hillwoods Academy, 2010; Indian Central Board of Secondary Education, 2010), in Japan (Japan Environment Association (JEA) Junior Eco-Club Project, 2004), Abu Dhabi (Sustainable Schools Team, n.d.), and a growing number of environment clubs in Australian schools (NSW Office of Environment and Heritage, n.d.-d). Clubs have been formed under the New South Wales initiative in a number of state schools (NSW Office of Environment and Heritage, n.d.-a; n.d.-b; n.d.-c; n.d.-e). The World Wildlife Fund has developed a network of Eco Clubs around the world that schools can adopt (World Wildlife Fund, 2016). In Canada, the view is that NGOs face funding problems and the belief is that “committed teachers facilitating environmental clubs in elementary schools in Ontario is our best hope for connecting a generation of children with their planet” (Flynn, Berry, Saker, Kavanagh, & Currie, 2002, p. 6).

Environment clubs can contribute to schools but they have in the past been seen as offshoots of science, relegated to the periphery of school environmental work (Robertson & Krugly–Smolska, 1997):

The literature review suggests that most researchers are coming to agreement that environmental education must be viewed by teachers as something that goes well beyond science. Their agreement, however, has apparently meant little to teachers. (p. 321)
One way of overcoming this bias is to run the environment club after school (Aguilar & Krasny, 2011). Indeed, for many environment clubs the goal is to integrate EE into existing school programs, but in practice they are an extra-curricular activity. In fact, it has been shown in over a dozen countries that environment clubs can be incorporated in both extra-curricular and cross-curricular programs (Fien & Heck, 2003). However, the development of a national system of environment clubs in schools can be straightforward: India has a vast network of over 86,000 Eco-Clubs run by the National Green Corps (NGC) (Roberts, 2009), but there are major operational problems that:

- relate to communication breakdowns, reporting problems, funding issues, training deficiencies and inconsistencies, lack of follow through by several managing agencies in the hierarchy and NGC structure, and problems and inconsistencies with resource materials. (p. 458)

Other studies of environmental clubs show that the activities of the club depend on what is defined as “the environment” and what is meant by “environmental activities”. In a Nigerian study (Ana, Oloruntoba, & Sridhar, 2009), environmental activities included waste management practices, traffic noise, and air quality, but also included less typical parameters such as personal hygiene, general sanitation, classroom hygiene and excreta management. Improving the “environment” in the latter study referred to the buildings and surrounds of the schools in the study and not the greater outdoors or natural world as might be expected. The students in the latter situation were mostly used as free labour and many of the activities were cleaning and domestic chores. A similar situation was found in a Kenyan study (Toili, 2007), where environmental activities also included menial work like clearing cobwebs, garbage and graffiti removal, cleaning toilets, classrooms, dormitories and houses, and gardening work like pruning hedges, weeding, and planting. Environment club participation in the activities outlined in the latter study (not surprisingly) was 2.5% of the sample population; 12.1% of
the sample were assigned environmental duties as punishment and a minority of club students demonstrated concern, responsibility or commitment to the environment.

Another Kenyan study (Mwangangi, 2012), found that environment club students did do some of the above cleaning and hygiene work, but they also enjoyed growing and planting trees, plant and animal surveys, and nature trail activities. A study of Canadian elementary school students in environment clubs defined the environment more widely (Flynn et al., 2002), taking in environmental concerns at a global level. Chawla and Cushing (2007) concluded that for elementary school environment clubs activities should be about the school and local neighbourhood, with national and global concerns being more appropriate for secondary school students. The authors wrote that environment clubs enabled young people to “exercise control of their environment and other elements of their lives” (p. 442) and fostered responsible environmental behaviour. Another Canadian study of four environment clubs found that students were motivated to join by a sense of social responsibility, wanting to help and “make a difference”, and to make the school a nicer place to study (Lousley, 1999). This study showed that club students considered “how they positioned themselves at times within, and at times in opposition to, mainstream environmental discourses” (p. 299). Lousley also found that students view environmental issues as complex, ethical problems that can be “negotiated between mainstream messages and the politics of identity” (p. 300).

Lousley challenged the notion that club projects (such as recycling) are “making a difference” (p. 300), arguing that these projects promote consumerism in the guise of environmental activism, and reduce environmentalism to “a set of impotent, eco-correct behaviours all-too compatible with the culture of schools” (p. 300).

2.9.2 Establishing an environment club.

In general, the steps of forming an environment club typically begin with seeking permission from the appropriate government education department, followed by appointing a teacher as
club coordinator, and conducting student elections to fill the positions of president, vice-
president and secretary of the club (Climate CoLab, n.d.). This grossly simplifies the task and 
there are other guidelines that provide a more enriched approach to the establishment of an 
environment club (Plan-It-Eco, n.d.). Once an environment club is established, it can have a 
significant impact on the whole-school culture of sustainability:

The students in my study consistently explained their motivation to join their club with 
reference to a sense of social responsibility — phrased as ‘wanting to help’ or ‘doing 
something for society’ or ‘making the school look nicer’ — and to the attraction of a social, 
fun, ‘hands-on’ atmosphere. Equating their environment club with other school clubs in 
which they were involved, such as yearbook, band, art mural projects, or AIDS awareness, 
the students emphasized how clubs provide opportunities to engage in meaningful projects 
and ‘make a difference’. (Lousley, 1999, p. 296)

This is not to say that setting up primary and secondary school environment programs is easy 
in every country. In the African country of Mali, as part of a three-country study (Mali, 
Tanzania and Zambia) funded by the EU Training and Information Programme on the 
Environment (TIPE), there were problems to be overcome:

Training, curriculum materials, and other resources are clearly important ingredients. In these 
schools, the provision of wire fencing, wheelbarrows, hoes, and shovels was as important as 
the provision of books. However, the leadership of a single dedicated administrator seemed to 
make the critical difference between a weak community link and a strong one. (United States 
Agency for International Development. Bureau for Africa. Office of Sustainable 
Development, 2000, p. 10)

In Tanzania, the outcomes of TIPE were more successful:
All of the clubs espouse a strong participatory approach that provides opportunities for learning and initiative unavailable to students in the structured Tanzanian classroom. All organisations channel youth’s energy and idealism into concern and initiative for the environment that promises to bear full fruit in adulthood. The potential of children as outreach agents is also clear. (United States Agency for International Development. Bureau for Africa. Office of Sustainable Development, 2000, p. vi)

In Zambia, the pros and cons of the *Chongolo Clubs* provided enlightening views of the competing forces at play in setting up school environmental programs:

The powerful basic ingredients of the Chongololo program explain much about why these clubs have thrived: a history of government and nongovernment backing; partnerships with major conservation partners; professional materials in an information-hungry context; the added reach of radio; past leadership training; and a growing contingent of alumni who are ready to pass on their enthusiasm to the next generation of members. (United States Agency for International Development. Bureau for Africa. Office of Sustainable Development, 2000, p. 25)

Thus there are some basic rules that can be followed to set up a club and get it running as either a curricular or (more likely) extra-curricular level. Much can be learned from previous ventures across many countries to steer the venture toward success and to avoid pitfalls along the way, but it does seem that there is a lot of positive work that can be done by school environment clubs (Verma, 2016).

As environment clubs are a focus for this research, the above findings from the literature will provide a useful frame of reference for the analyses of the research schools’ experiences.

**2.9.3 Social and cultural capital: friendships and ecological resilience.**

Explaining the behaviour of the environment club students and their attitudes toward being in the club is another important aspect of the study. It is expected that students in secondary
school environment clubs will build *cultural capital* in relation to other students outside the club (Gee, 1999), and *social capital* determined by socio-economic class and institutional support, can also be important (Stanton-Salazar, 1997). Social capital can be used for “social progression and the accomplishment of goals” (Harper, 2008, p. 1033), providing that students overcome any class barriers that might limit their participation in an environment club (Stanton-Salazar, 1997). Gee (1999) referred to social capital as “social goods” (p. 2), by which he meant “anything that people believe to be a source of power, status or worth” (p. 2).

*Social Influence Network Theory* (Friedkin & Johnsen, 2011) also predicted that environment club students will form social bonds that give them new skills to negotiate environmental issues. Similarly, developmental psychology research had indicated that close friendships provide social, cognitive, emotional and academic benefits that are essential to the development of self-worth, empathy and the acquisition of social skills in teenagers (Way & Silverman, 2012). Furthermore, Way and Silverman’s (2012) claimed that girls form close friendships more easily than boys.

Part of the journey for environment club students is the formation of *identity* (or *self*) - a process characterised by a sense of inner wholeness and direction in their life, and by feeling loved, skilled, unique and independent (Ewen, 1998). There are various ways that behavioural scientists and philosophers use the word *self* (Leary & Tangney, 2014). Understanding the self as “experiencing subject” (the inner psychological entity) and the self as “executive agent” (core decision-making, planning and defensiveness) are most useful for interpreting the data in this study. Other researchers have used Martin Buber’s “I-Thou” philosophy to describe the experience that people have “of and not about” nature (Metcalf & Game, 2014).

Another important construct for this study is resilience. Psychological resilience is the “integration and optimization of cognitive processes and abilities, and emotions to positively...
affect performance, well-being, and response to stress” (Robson, 2014, vii.). Others have defined it as optimism or the capacity to rebound from adversity (Galambos & Leadbeater, 2000; Williams, 2005), or as flexibility in thinking (Williams, 2011). Resilience in an educational setting is seen as “refer[ring] to both a process and outcome of coping in response to risk, adversity, or threats to wellbeing. It involves the interplay between internal strengths of the individual and external supporting factors in the individual’s social environment” (Johnson, B., 2008, p. 386).

Resilience and agency work together to fulfil the deep ecology call to action, and in the words of Naess, “if you could do something, do it” (Rothenberg, 1993, p. 122). Previous research acknowledged that youth have a role to play in intentional, conscious efforts to protect the environment (Schusler, Krasny, Peters, & Decker, 2009). A study in New Zealand concluded that children as young as three to four year-old children in kindergarten have a right to know about environmental problems, and also have the right to take action to solve problems within the scope of their learning environment (Mackey, 2012).

The literature on resilience is important for this study as it provides a basis for analysing student responses to hypothetical situations involving dissimilar others; or more specifically, other students that do not support sustainability initiatives at their school or perhaps students that break school sustainability rules (like littering or recycling).

2.9.4 Intergenerational influences along the child/parent axis.

Previous research has established that students discuss environmental issues with their parents (Ballantyne, Connell, & Fien, 1998; Sutherland & Ham, 1992), and that such interactions are not new and not always from parent to child. Children’s role in educating parents about the environmental action are seen as crucial to environmental action in society at large (Uzzell, 1999) because the traditional top-down model or asymmetric model for environmental change does not work.
Indeed, the concept that parents control their children’s behavior is naïve and oversimplistic, as is the idea that socialisation is normally unidirectional from parent to child (Ambert, 1992). Parental engagement with their child’s school is a critical factor for their wellbeing, their motivation for learning, their academic achievement, and for their socialisation at the school (Emerson, Fear, Fox, & Sanders, 2012). Values transmission is now regarded as a multi-directional process involving schools, peers, and the wider community (Knafo & Galansky, 2008), and is broadly classified as either active (direct influence over another), or passive or circumstantial (influence over another). Child-parent transfer is more likely in adolescents if the issues are relevant to their lives. It is further recognised that intergenerational influence might be an effective way of promoting a positive environmental ethic in the community, and that the child-parent axis might be a promising way to realise this social influence (Ballantyne et al., 1998). The early literature on intergenerational learning showed that children are the real catalysts of environmental action (Uzzell, 1994) and institutions like schools are portrayed as hierarchical structures that form barriers to environmental reform.

Other research claimed that environmental education programs designed to raise environmental awareness, can generate a flow of influence from student to parent (Ballantyne, Fien, & Packer, 2001), as well as promoting family discussions about the projects being undertaken by the child. One quantitative study of knowledge flow from child to parent gave positive test results for child-parent transmission, but did not postulate a mechanism for such an effect (Vaughan, Gack, Solorazano, & Ray, 2003). Intergenerational environmental education is governed by a number of factors including parental involvement in student activities, children’s status within the family, school outreach to the community, and teacher enthusiasm (Duvall & Zint, 2007). Duvall and Zint (2007) reviewed seven programs designed to influence parental knowledge of the environment, concluding only a modest
influence on knowledge, behaviour and attitudes. A recent study in two secondary schools in the Republic of Seychelles reported the presence of child-parent knowledge transfer in a wildlife club setting (Damerell, Howe, & Milner-Gulland, 2013), but the methodology in the study was unclear and no explanation for the mechanism of knowledge transfer was given. Observations of families participating in activities at a nature centre showed evidence of the intergenerational/child-parent transmission (Zimmerman, H. T. & McClain, 2013), whereby children and parents collaborated to produce negotiated outcomes over the activities at the centre. The authors in the study attributed the transmission to the mutual desire of children and parents to maintain family harmony.

It has been established from other research with sustainability-oriented families, that children have situated identities that are a product of a household ecology (Payne, 2005), though they are largely influenced by parents who have a strong sense of agency. Payne’s (2005) study was about parental influence and how their children reacted to, or contested, household environmental commitments and values, rather than the intergenerational/child-parent transmission. In a study of the effect of the Brundtland Green School Project on parental environmental behaviours, intergenerational influence was not significant (Legault & Pelletier, 2000). A study by Payne (2010), however, showed that children in sustainability-oriented families were “(self)aware and proud of their own sustainability (and family) differences” (p. 223), and formed part of a complex socio-ontological structure referred to as the ‘post-modern oikos’ (however Payne’s study focused on family dynamics and not on school/home interactions).

The findings from previous research serve as a useful benchmark for the analyses of data in this study that relates to transmission of knowledge, attitudes and emotions from the school environment club to the parents.
2.9.5 Student as ecophilosopher.

Ecophilosophy is viewed by some as essential to teaching and learning:

At this stage in its history, it is difficult to identify an issue of greater importance for humankind than its relationship with its environment, nor one that is more fraught. It must be a unique phenomenon—on Earth at least—for a species to be contemplating the possibility of its self-extinction. Yet as evidence mounts daily to confirm that human action is affecting the environment in ways that are both unprecedented and unsustainable, the issues raised appear ever more complex and the way ahead far from straightforward. Given that the consequences of this situation has to be faced in increasingly acute forms by the citizens of the early twenty-first century, clearly it would be irresponsible for education somehow to attempt to remain aloof from the issues that this state of affairs throws up. (Bonnett, 2003, p. 551)

Schools have an essential role to play in fulfilling these aims (Standish, 2003) and to raise the standard of EE to include controversial discussions about the relationships that humans have to nature, and to promote deeper thought about the consequences of our actions on the planet (Bonnett, 2003).

The idea that children can be philosophers is not new (Haynes, F., 2014; Kennedy, N. S., 2012; Tschaeppe, 2012), however, there has been little, if any, research on ecocentric philosophies in schools, and on how secondary school students view themselves using the deep ecology lens. There is also an array of thinking skills programs, of which Lipman’s Philosophy for Children (P4C) is possibly the best known (Trickey & Topping, 2004), and collectively they harness skills that are consistent with the deep ecology principles (Naess, 1973) and the Deep Ecology Platform (Naess & Sessions, 1995). There is growing evidence that philosophy is an important component of school education, with successful programs being implemented throughout the United Kingdom (Bartley & Worley, 2012), where primary school children as young as eight years are successfully involved in classroom
philosophy (Bartley & Worley, 2011), and in Australian schools (Federation of Australasian Philosophy in Schools Association, 2014; Victorian Curriculum and Assessment Authority, 2014). There is also an active program in the United States for teaching philosophy to children (Teaching Children Philosophy, 2014) and a primary school program in ethics in Australia (Primary Ethics, 2014). Philosophy has become popular in England where it is claimed that it promotes abstract thinking, the art of discussion, and expands students’ vocabulary (Brett, 2003). Others have called it the holy grail of education because it creates active, creative and democratic thinking, at the same time as increasing a sense of self-worth in students (Cohen & Naylor, 2008).

Of particular relevance to this study is Lipman’s pedagogical dimension to the philosophy of education, the community of philosophical inquiry (Kennedy, D., 2012), which lends itself to a similar normative discourse that can be found in deep ecology (Drengson & Devall, 2010).

2.10 Chapter summary

This chapter provided an historical perspective of EE in the last four decades, outlining the key outcomes of relevant UN meetings on EE over that period, and by also reviewing relevant literature from environmental ethics, philosophy, and politics, including cultural influences, and the development of social and deep ecology. The theoretical framework for the chapter (as outlined in 2.1) is largely drawn from deep ecology, but parts of the deep ecology philosophy overlap with the UN charters and with other academic disciplines, including environmental ethics (as with intrinsic value). Since the study is one largely of the dynamics of school environment clubs, the review necessarily taps into the wealth of material from environmental NGOs, and this serves as the foundation for the analyses of data from the environment club participants. There is a further dimension to deep ecology that requires recognition, and this relates to the idea of intrinsic value (Fox, 1990c). Defining an intrinsic
value for non-human nature is one of the central problems of environmental ethics (Callicott, 1995), largely because there is an assumption that if only sentient beings can perceive nature (Holmes, 1993), then what is the value of nature when it is not experienced by humans.

Participants in this study are asked about the value of nature but any analysis grounded in environmental ethics is beyond the scope of the thesis.

In this chapter, Naess’s (1973) deep ecology philosophy is used to underpin a theoretical perspective for the formulation of the research questions, and I draw upon the 8-point platform (Basic Principles of Deep Ecology) formulated in 1984 (Devall & Sessions, 1994), to shape and derive the interviews questions (and also to categorise the responses). I also draw from the literature on the New Environmental Paradigm to ratify my interview questions. The research design and methodology of this study are discussed in the next chapter.
Chapter 3. Research Design and Methodology

3.1 Research aims

The purpose of this research was to investigate ecophilosophical approaches to sustainability practices that were consistent with a deep ecology philosophy. The study also looked for evidence of anthropocentric beliefs and practices at school and at home. Within these broad questions, specific questions targeted ecocentric themes such as wildlife preservation, biospherical egalitarianism, habitat destruction, connectedness-to-nature, “Spaceship Earth”, and ecological resilience. Participants in this research included environment club students, sustainability coordinators and other teachers that were associated with school sustainability initiatives.

3.2 Methodology and research approach

A qualitative interpretive approach was adopted for this study: “The core understanding [of this methodology] is learning what people make of the world around them, how people interpret what they encounter, and how they assign meanings and values to events or objects” (Rubin & Rubin, 2012, p. 19). The methodological approach adopted for this research was qualitative and interpretive because it was concerned with understanding what was happening in school communities in relation to deep ecology principles.

Given the selection of an interpretative approach, interviews were chosen as the primary means of data collection. The advantages of interviews are that “researchers can reach areas of reality that would otherwise remain inaccessible such as peoples’ subjective experiences and attitudes” (Perakyla & Ruusuvuori, 2011, p. 529).

In formulating the research approach, I focused on how the participants situated themselves within the school sustainability milieu, how they saw a place for themselves
within world ecosystems, and how they were affected by events that impacted the environment. My intention was to investigate their biographical trajectories, and to understand their sense of agency within the greater ontology of environmental sustainability, but also in relation to others outside of the sustainability community at the school. The lens of deep ecology was used to analyse participants’ ideas about issues such as biodiversity, resource sharing with other species and the abiotic components of ecosystems, and humans that buy excessive amounts of consumer goods. In each interview, attention was given to the metaphysical aspects of deep ecology, looking for evidence of connectedness to the Earth.

In the development of the questions for the open-ended interviews, I took account of the social context of the study (a busy school environment), focused on the participants needs (confidentiality and ease of understanding the questions), and planned to generate data via field notes, audio tapes and school record (Creswell, 2009). Unlike quantitative research, where the researcher collects data to refute or support a hypothesis, this study was interested in the narrative views of the participants, the socio-cultural meaning of the data generated, and developing an in-depth picture of the experiences of the participants. A qualitative methodology was justified because it was seen as the most appropriate way of answering the research questions because it “reaches into the assumptions about reality that we bring to our work” (Crotty, 1998, p. 2). The study bears all of the features of a qualitative study, such as ontology, epistemology and an inductive methodology based on critical perspectives of social reality (Hesse-Biber, 2011). This thesis focused on the social meaning participants attributed to their experiences in the sustainability community at school and at home; a philosophical investigation of their social reality (ontology). The study aimed to inductively generate holistic explanations for participant responses to the interview questions by integrating their opinions and experiences with their knowledge of ecocentric ideology. The inductive approach is exploratory in that it gathers data directly from the members of the school
sustainability community, seeking to understand their motivations, aspirations and interactions as they relate to the natural world and their lives within the environment club community.

3.2.1 Research approach.

The overall approach for the research is represented by Figure 3.1 using the strategies of inquiry described by Crotty (1998):
Following Crotty, the research design:

- starts with an epistemology - a theory of knowledge (deep ecology) that is

<table>
<thead>
<tr>
<th>Epistemology</th>
<th>Ways of understanding, knowing and looking at the world</th>
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<tbody>
<tr>
<td></td>
<td>The theory of knowledge embedded in the theoretical perspective</td>
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<td></td>
<td>Deep ecology</td>
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<table>
<thead>
<tr>
<th>Theoretical perspective</th>
<th>The philosophical stance informing the methodology</th>
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<td></td>
<td>Deep ecology</td>
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<table>
<thead>
<tr>
<th>Methodology</th>
<th>Strategy, plan of action, &amp; rationale of the method</th>
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<tr>
<td></td>
<td>providing context and grounding for the research process</td>
</tr>
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<td></td>
<td>Interpretive research</td>
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<tr>
<th>Methods</th>
<th>The techniques and procedures used to</th>
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<td></td>
<td>answer the research questions</td>
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<tr>
<td></td>
<td>Open-ended interviews, questionnaires, open-ended non-</td>
</tr>
<tr>
<td></td>
<td>directive inquiry, thematic analysis</td>
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</tbody>
</table>
embedded in the theoretical perspective;

• adopts the theoretical perspective of deep ecology as the philosophical stance informing the methodology;

• employs a methodology (interpretive research based on open-ended non-directive inquiry) as the overall strategy of inquiry or plan of action that directs the research methods; and,

• uses methods that are appropriate to generate evidence to answer the research questions (interviews, questionnaires, case studies).

This research design draws on the inductive method (Wallace & Van Fleet, 2012) where the researcher looks for patterns in the data to form ideas and generate hypotheses for what is happening in schools and homes regarding the research questions (see Figure 3.2). It is important to have this strategy of inquiry in place (Guest, MacQueen, & Namey, 2012) in preparation for the thematic analysis that follows in chapters 4, 5 and 6.

Figure 3.2.

*Analytical inductive process used in the research framework*

(Adapted from (Hesse-Biber, 2011).)
The research approach as shown in Figure 3.1 comprised the four stages of thought used in this thesis to build an appropriate framework from which the research questions may be answered. The critical tradition as derived from Hegel and Marx was best positioned to document other peoples’ perspectives and practices and the institutions associated with their lives (Hammersley, 2013). This research adhered to this tradition by directing its focus toward illuminating the sociocultural and political landscapes that oppress/emancipate individuals, help/subvert the pedagogies, and reveal/conceal the truth. The focus of this research was to open a window into the distinctive personal and cultural lives of the participants. This was achieved by working closely with the data to test out ideas about what the data meant, and in the process inductively analysing the data to formulate hypotheses and theories about the research setting and its participants (Hesse-Biber, 2011). Another process that assisted with this study was reflexivity (Hesse-Biber, 2011), a method where the “researchers recognize, examine, and understand how their own social background and assumptions can intervene in the research process. The researcher is a product of his or her society and its structures and institutions just as much as the researched” (Hesse-Biber, 2011, p. 120). Reflexivity was considered in this study by way of me, as researcher, attending the monthly EcoGroup at Karatjurk (one of the schools in this study) over 18 months. This provided a valuable opportunity for reflection about this research as it was located at a school involved in this study, provided insight into the workings of the EcoGroup, valuable experience of the interactions between teachers, parents and students, and provided a perspective that illuminated the sustainability culture beyond the research involvement. This made me aware of the set of attributes that I brought to the study and made the data generation and analysis discursive (I used active prompts and probes to encourage participants to elaborate on responses), as opposed to confessional (as in a traditional model in journals for data collection).
3.2.2 Ontological assumptions of the research.

The study was concerned with if and how ecocentric and anthropocentric beliefs came to be in the school community and in the curriculum. If they do exist, can it be certain that the research was conducted so as not to influence this feature of the data? Constructing a cognitive framework of commitments, beliefs, values, methods and outlooks was a necessary step in this process. The following ontological foundations were used for the methodology:

- Curricula were not just determined by patterns of social control, but could also mould students and teachers into dominant social groups (Kemmis, Cole, & Suggett, 1983); in a sense maintaining class divisions and acting as social regulators of school outcomes (Willis, 1977).
- Environmental problems cannot be solved by scientific, technological nor economic means alone (Fien, 1993b). Lifestyle changes geared toward biocentric or ecocentric outcomes needed to be explored.
- There might be a limit to students’ capacity to explore the ecophilosophical ideas, but these are part of deep ecology and it was necessary to investigate this idea.

3.3 Research design

Deep ecology is one of the most influential ecological philosophies (ecosophies) to emerge in the last 45 years (Benton, 2007; Eckersley, 1992) and is used in this study as a theoretical framework, and as a basis for the interview questions created for the study. As discussed in the previous chapter, other ecosophies have been devised (Guattari, 2000) and other approaches to ecology have evolved (such as social ecology); the latter of which is critical of deep ecology. However, the deep ecology lens provided the most appropriate filter for addressing the research questions, and is used in this study because it allowed for the exploration of ideas that are widespread in EE in general (biodiversity, wilderness protection), and in environmental politics in particular (i.e., changes to lifestyles in countries that consume excessive natural resources; student agency over environmental issues), at the same time opening up a new vista of metaphysics in EE (i.e., connectedness to nature; the
ecological self; environmental hope; Self-Realization). Studies on connectedness to nature and programs to get children out of classrooms and into nature are now common, but little is known about how this process of connection to nature happens at the cognitive level. The Naessian model of Self-Realization could be used to explain connectedness to nature, by accepting that nature has intrinsic value in its own right and by utilising the process of deeper questioning of the ontology of human existence. The research design in this study asked participants questions that might reveal how this happens within the social, cognitive and affective domains of EE. The analyses that follows in subsequent chapters elaborates on how these three domains interact, and offers explanations for what is actually happening in school environment clubs, and how the biographical trajectories of the students were influenced by the club milieu.

3.3.1 School recruitment and background.

The selection strategy of finding potential schools for this study involved contacting the Victorian Association of Environmental Education (VAEE), who provided a list of names of schools that could broadly be classified as having a sustainability focus. From this list, three schools were identified in the Melbourne region, all of which have active sustainability programs. These participating schools were a convenience sample in that not all schools approached were willing to part of the study.

The first school to be included in the study, Bunjil Secondary College, was selected primarily because of the enthusiasm of the sustainability co-ordinator. A second essential reason was the fortuitous agreement by the principal that the indispositions that might be caused by the research were acceptable interruptions to the daily routine of the school.

Bunjil Secondary College also had a reputation amongst the members of the Victorian Association of Environmental Education as being an exemplary case of sustainability practice in schools. Of significance, were the numerous environmental, and other, awards won by the
co-ordinator, the principal and the school, at state, national and international levels. The data generated from Bunjil showed some interesting trends in peer perceptions of the sustainability co-ordinator that are discussed in Chapter 4.

Waa College was initially approached because, like the other two schools, their environment group was an active sustainability club, but with a dual campus setting. Years 7-10 students were located at the junior campus and students in Years 11-12 were approximately 700 metres away at the senior campus. This gave an interesting perspective of the effect of campus culture on responses from the participants. The discussion of the data addresses these differences and the analysis presented a cross-campus, dynamic of sustainability. Another desirable outcome of the inclusion of Waa was the generation of data from a faith-based school with a school-wide social justice program. Valuable insights into the workings of the Roman Catholic religion as it affected the thinking and approach to sustainability in schools are a feature of the analysis. This also led to some understanding of the key role played by both the Catholic Archdiocese of Melbourne and the Roman Catholic Diocese of Sandhurst in Victoria in the production of sustainability policies and teaching materials. These findings are discussed in Chapter 6.

Each school became part of the study once the principal granted permission. All schools had a reputation for excellence in education for sustainability, and peers at each school saw the co-ordinators as a key driving force for sustainability at the school.

The three participating schools were all located within the metropolitan region of Melbourne and were unremarkable in the sense that they were not in disadvantaged demographic regions, nor in prestigious locations, and none were from the private school sector.
In summary, one of the schools was a secondary co-educational government school (Bunjil); one was a Catholic secondary co-educational school (Waa) and one was a single-sex government secondary school (Karatjurk). (Note all school names are pseudonyms.)

They have been given pseudonyms for anonymity using the names of indigenous supernatural beings:

Bunjil (The Eagle) Secondary College.
Waa (The Crow) Secondary College (Catholic school).
Karatjurk (The Pleiades “Seven Sisters”) Secondary Girls’ College.

Each of the schools had a sustainability coordinator and a student environment club. The background to the coordinator selection is given elsewhere (Section 3.3.5), to which it should be added that their time allowance for the job was six to eight hours per week. This time allocation was always far less than the actual time spent fulfilling the role. The coordinators were highly motivated to spread the sustainability message amongst staff and students, and across the entire school community (including parents). Some of this time was used to plan and administer school environment policy, organise and run club meetings (either before school or during lunchtimes), implement sustainability solutions (recycling, waste monitoring, energy audits, etc.), and manage the ResourceSmart AuSSI Vic program at the school.

3.3.2 Participants in the research.

Before commencing the research study, discussions about potential interviewees were conducted with the coordinators at each school, from which we concluded that the most likely candidates for the study would be students in the environment club, because they were the most likely to have an interest in the environment. Each coordinator held a club meeting to explain the commitments to the study (which followed the protocol in the PICF forms - see Appendix H), which also involved a 30-minute interview based on set questions that were known in advance. Participation was voluntary and subject to parental approval where
students were under the age of eighteen. The coordinators personally followed up any club members that had not attended the recruitment meeting, to make the invitation available to all club members.

Efforts were made to include members of the wider school community, including teachers, principals and parents, to address the question of their role in producing a sustainability culture at each school. This proved to be largely unsuccessful because of the time constraints on principals and difficulties in accessing parents. However, I was able to obtain a case study interview with the principal of one school (Bunjil) that provided insights into her position on sustainability and a perspective on what needed to be done to make the sustainability vision a reality. Efforts to recruit parents were more difficult, but after some negotiation, three parents agreed to participate in the study. Two, Ruth and Martin, were the parents of two boys Luke and Brandon (Bunjil). The other family was from Karatjurk and comprised the mother Crystal, her daughter Claire (Karatjurk), and son Thomas (who was at another secondary school because Karatjurk was a girls’ school). The categories of participants are shown in Table 3.1. Throughout this thesis, I refer to schools and individuals by pseudonyms to maintain their right to confidentiality and anonymity.

### Table 3.1.
*Categories of participants in the research*

<table>
<thead>
<tr>
<th>School*</th>
<th>Female student</th>
<th>Male student</th>
<th>Teacher</th>
<th>Principal</th>
<th>Parent</th>
<th>Sibling</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>KGC</td>
<td>9</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>BSC</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>WSC</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Totals</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>45</td>
</tr>
</tbody>
</table>

*See Tables for school codes listed below in 3.4.3*
3.3.3 Environment clubs and coordinators in schools.

Each of the three schools in the study had a sustainability coordinator and a student environment club. The students in the club were entirely made up of volunteers although many of the students joined because of the influence of friends already within the club. In at least one case, the student had a sibling who was in the sustainability club. Each coordinator was a classroom teacher who had been given some time allowance for their role as sustainability coordinator. It was evident from the responses of the students that they perceived that the coordinators had a predisposition for the role and embraced the duties with some passion and commitment. The coordinators were all classroom teachers who had been given some time allowance for their role as sustainability coordinator. The coordinators were highly motivated to spread the sustainability message amongst staff and students, and across the entire school community (including parents). Some of this time was used to plan and administer school environment policy, organise and run club meetings (either before school or during lunchtimes), implement sustainability solutions (recycling, waste monitoring, energy audits, etc.), and manage the ResourceSmart AuSSI Vic program at the school.

In one school (Karatjurk), the club extended to a collective of students, teachers, parents and friends of the school that met monthly after school hours to support the coordinator (the EcoGroup). This group was the central forum for discussion of new initiatives in sustainability at the school (such as purchasing solar cells) and was the primary outlet for news about events. The same school ran a regional environmental day once a year and invited like-minded students from the local catchment area to participate and listen to speakers on a variety of topics. The schools had environment captains and vice-captains as part of the extra-curricular activity on offer to students. At Karatjurk, some students were supported to attend the Australian Youth Climate Coalition and these students reported their findings back to the collective.
The dominant characteristic of the coordinators was a willingness to walk the talk and to act as role models for students and other teachers. This wasn’t always perceived as such by their colleagues and there were some unexpected tensions associated with time allowance given to coordinators. Some effort was made during the interview (via prompts and probes) to determine the impact on students of having prior experience of sustainability practices at primary school. This emerged shortly after the interviews commenced, from which the idea of ecologically primed students (eGen) developed. The study also generated data on the influence of the home on students’ environmental values and vice versa.

3.4 Research methods

3.4.1 Nature of the interview questions.
The deep ecology philosophy and the Deep Ecology Platform incorporate ecological, ethical, philosophical and social stances that are anti-anthropocentric and assign intrinsic value to nature. Questionnaires and semi-structured interviews were the two main data generating tools used in this study to investigate these stances. The questionnaires addressed the key areas of deep ecology including wilderness protection, biospherical egalitarianism, the intrinsic value of nature, lifestyles that harm the Earth, ecological wisdom and empathy for the Earth. The interviews were open-ended, within the constraints allowed by the schools (30 minutes per student), to encourage participants to provide open-ended answers to each question. All interviews were audiotaped and later transcribed. In addition, field notes were taken by the researcher, handwritten during each interview, with the aim being to supplement the audio data from each participant. Together, these research tools yielded rich data and most participants were willing (and some were quite enthusiastic) about the questions, giving elaborations that were valuable to the final analysis of the data.
3.4.2 Questionnaires.

The questionnaires were written as scripts for asking open-ended questions during the interviews, and were designed to avoid narrow, yes/no answers, and encourage the participants to elaborate on their views. Whilst all of the questionnaires had the same themes around the research questions, it was necessary to tailor the questions for each group (students, teachers, parents, principal). All of the questionnaires utilised the deep ecology lens and followed a similar pattern and sequence to allow for comparisons between students, teachers, coordinators and other interviewees. However, in addition to the questionnaire for the students (see Appendix A) and the teachers (see Appendix B), two geography teachers (who were not part of the environment club) were provided with customised questionnaires to link deep ecology to geography teaching and learning (see Appendix C). One principal agreed to be interviewed using a short questionnaire customised to investigate deep ecology from a senior management perspective (Appendix D). Also, three parents participated as part of two family case studies, and were provided with customised questionnaires (see Appendix E).

The questionnaires were based on the research questions and were designed to evoke “a more free-ranging and unpredictable response. Questions like these can be motivating for the participant, and they enable the researcher to trawl (my italics) for the unknown and the unexpected” (Gillham, 2007, p. 34). When administering the questionnaires, the key strategy was to open up and “develop the interview” (Gillham, 2000b, p. 42), whereby the interviewee is encouraged to develop or determine their own answers, and to elaborate their answers where necessary. Every effort was made to make the interviewees feel at ease (for example, by providing a comfortable environment, and ensuring participants that their responses were private and confidential).
In summary, the open-ended questionnaires (Appendices A-G) were designed to elicit responses to reveal the beliefs and emotions of the study group toward the key concepts. My primary considerations in designing the questionnaires were drawn from Gillham (2010):

- Do no harm to the participants.
- Address each of the research questions as directly as possible.
- Know the limitations of my understanding based on my own background.
- Appreciate the makeup and lives of students at each school in the study to avoid bias.
- Write questions that will generate honest, targeted responses.

The questions for the teachers asked if there is a place for deep ecology in the classroom, whereas the students’ questions focused on the motivations and emotional responses to environmental issues. When the principal agreed to be part of the study, her questions were more about the types of support she could offer to teachers and students to embed sustainability and deep ecology into the school curriculum. The questions for parents were designed to reveal factors at home that might contribute to sustainability practices, and to determine if parents noticed if their child had become more interested in sustainability practices at home.

3.4.3 Interview structure.

The interview time allocated for students was 30 minutes, with all of the interviews conducted at the school, spread across two days. These arrangements were set down by the school administration to fit around the timetable, and to minimise disruption to students. The sustainability coordinators agreed to 45-60 minute interviews, scheduled after school (or other free time) where they could go over time if mutually desired. The interviews for all teachers and coordinators were under 60 minutes except for Wayne (1 hour, 22 minutes) and Brad (1 hour and 12 minutes). The interviews with Bunjil parents, Ruth and Martin, were also scheduled as 45-60 minutes, and held after school at their request, to accommodate their
work and family commitments. The interview with Karatjurk parent, Crystal, was held one evening at her home, where I also interviewed her daughter Claire and son Thomas. The Bunjil principal, Kara, was interviewed, although this was brief (thirty-four minutes) due to several interruptions from the administrative staff that took Kara’s attention away from the questions.

There were nine questions in the student questionnaire, and the motivation behind each question is explained below. The opening question (Question 1) for each student was an icebreaker, where I asked the participant to “tell me a little bit about yourself. How did you become involved in the environment? Etc.”. To understand how ecocentrism might permeate the schools sustainability community, the next question to the students was about them becoming sustainable; how did they see this process in the context of their family, the school and their friends? At the same time, I was interested in how they situated themselves within the school/home sustainability dynamic. How did being part of environment club help them build their identity and organise their lives? For the principal and other teachers not directly involved in the environment club, I simplified this to questions asking about their role in the school and if they had any connection to the environment club.

Question 2 was designed to elicit an emotional response to environmental damage, and was specifically targeted toward the anthropocentrism and ecocentrism in research question one. It also generated data toward research question two, by revealing participant connectedness to nature. Questions 2 and 3 of the interview questionnaire invited students to reflect on their success or failure to achieve sustainability outcomes, and on the way they felt about solving environmental problems. This also linked to Question 4 where I asked students how they dealt with *anti*-green others. Questions 3 and 4 were both about student agency over environmental issues - data from which contributed to all of the research questions. Questions 5 and 6 targeted the first research question by assessing participants’ views of
anthropocentric values. Question 7 moved toward the metaphysical part of deep ecology, thus addressing research question two.

The questionnaires targeted a number of specific areas:

- The milieu of the student, peers, teachers, and family.
- Participant introspection on their roles in sustainability.
- Alignment to ecocentric ideology.
- Participant capacity/resilience to tackle environmental problems.
- Opinion about traditional landholders rights and roles.

For the principal, there was an additional dimension to the interview:

- Aspects of leadership and the management team conducive to sustainability practice.

The parents in the family case studies were also asked if there were any identifiable aspects of the school sustainability program that influenced the home environment, or vice versa. I asked the sibling (Luke) in the Bunjil school family case study if his brother’s (Brandon) participation in the environment club had affected his attitudes toward sustainability. I asked the same of the brother (Thomas) of Claire who attended Karatjurk Girls’ College.

3.4.4 Deep ecology spectrum (DES) instrument.

A third data production tool, the Deep Ecology Spectrum (DES), was developed in response to Naess’s (1973) binary of shallow ecology (anthropocentrism) versus the deep, long-range (ecocentric) view. The Naessian binary is summarised in Figure 3.3.

During preliminary discussions with staff at the schools about the sorts of questions that would be asked of them, I found that asking a participant to say whether they were ecocentric or more anthropocentric in their beliefs was not a straightforward task. Surely a range of responses to such a binary question was possible? And if so, how was it best represented?
It became apparent during the Waa interviews that the Naessian binary was inadequate at determining how participants aligned themselves to anthropocentrism or ecocentrism. The Deep Ecology Spectrum (Figure 3.4) was devised to resolve this shortcoming and was employed in the study to give participants the opportunity to explain their position on the DES.

The DES scale data in the study was calculated from 25 participants at Bunjil and Karatjurk, with twelve responses from Bunjil participants, twelve from Karatjurk participants, and one response from Waa (Margaret). The DES was not developed until after the interviews at Waa were completed, at which time the binary of ecocentrism versus anthropocentrism proved to be an inadequate model.
The advantages of the DES over the binary view was that it was simple and rapid to administer (usually taking only 2 minutes), and it allowed the participants to give a rich interpretation of their alignment along the scale. In this sense, there was no right or wrong answer, and the scale could have multiple interpretations but it always illuminated the participant’s position regarding ecocentrism. The DES is inspired by the electro-magnetic spectrum but assesses environmental attitudes in a similar fashion to the New Environmental Paradigm (NEP), with similar modifications to that used by Manoli (2007) - see 3.4.5 below. The DES responses from the students are presented in each school’s story in Chapters 4- 6.

3.4.5 Data thematic analysis.

From the data collected via interview and questionnaire, there was a wide range of environmental ideas and beliefs from the participants that could be grouped into themes, using modifications to the NEP by Manoli (2007) and others (Noe & Snow, 1990). Nine of the NEP questions were used in the analysis of the data in this study as indicators of pro-environmental behaviour:
1. The balance of nature is very delicate and easily upset.
2. When humans interfere with nature, it often produces disastrous consequences.
3. Humans must live in harmony with nature in order to survive.
4. Mankind is severely abusing the environment.
5. Mankind was created to rule over the rest of nature.
6. We are approaching the limit of the number of people the Earth can support.
7. To maintain a healthy economy, we will have to develop a steady-state economy where industrial growth is controlled.
8. The Earth is like a spaceship with only limited room and resources.
9. There are limits to growth beyond which our industrialised society cannot expand.

(pp. 23-24)

These indicators are used in this study for analyses of the schools (see Chapters 4-6), and are organised into eleven groups containing common ideas:

1. School/home interdynamics – positive, neutral and negative interpersonal dynamics (student, parent, sibling).
   a. Does the home environment mediate ecocentric beliefs (such as being brought up on a farm or visiting grandparents on their hobby farm)?
   b. Do parents from ethnic or rural backgrounds have a desire to give their children the same experience as they did of caring for animals?
   c. Do club students influence their parents along the child-parent axis to adopt ecocentric behaviours?
   d. Can we use cultural heritage to support the Earth?
2. Lifestyles and social decisions that protect the Earth and its resources.
   a. Ecocentric lifestyle - reduced resource use (ecological footprint).
   b. Anthropocentric and consumerist lifestyles (excessive resource use).
c. Population management issues (Should population growth be controlled?).

d. Living ethically to preserve habitat (i.e., Rainforest vs. Palm Oil).

e. Neophilia - buying excessive amounts of consumer goods and succumbing to the peer-driven desire for new gadgets.

3. Sharing the Earth.

a. Are there limits to the use of natural resources, and therefore a limit to the growth of population on the Earth?

b. Does the Spaceship Earth idea have a place in the sustainability forum in schools?

4. Rights of non-human life forms and the abiotic parts of ecosystems.

a. Biospherical egalitarianism - Are animals and ecosystems just as important as humans?

b. Sharing the Earth to maintain wilderness and critical habitat.

c. Connecting human action to impact on wildlife and ecosystems (i.e., plastic rings killing penguins).

d. Does nature have intrinsic value independent of its utilitarian value to humans?

5. Empathy for, and connectedness to nature, and a love for wildlife.

a. Damaging the Earth hurts humans and “hurts” the Earth.

b. Global environmental disasters affect students no matter where they are in the world.

c. Being in nature, experiencing wilderness, and visiting or camping in national parks engenders connectedness to the Earth.

6. Do environment clubs engender agency and resilience in students?
a. Does being in the club empower the student to speak out, defend or act for the environment?

b. Is the sustainability coordinator a good example of how to act sustainably?

c. Do students adopt more socially critical stances as they acquire greater knowledge about environmental issues?

d. Do environmental critics intimidate students in environment clubs?

e. Ecological resilience - Do you ever become despondent about environmental decay or is there sometimes a positive spin on the situation?

7. Does being a member of the environment club enable you to be more critical? Does the club promote agency over self and others?

   a. Do you feel a stewardship over the environment as part of your role as member of the environment club?
   
   b. Do you think that your efforts to protect the Earth are worthwhile?
   
   c. Are you willing to take direct action to save the planet?

8. Socio-ontological features of environment clubs and those outside of the club.

   a. Being a member of the environment club - sustainability projects and events. Making a difference.
   
   b. Ecological self - Do you identify as an ecological being?
   
   c. Does it help if a friend joins the environment club along with you?
   
   d. Perspective on other students (i.e., not in the environment club) and anti-green sentiment. Changing their views.
   
   e. Reasons for joining the club?
   
   f. Is there any peer pressure operating around the environment club?
   
   g. Is it difficult to balance the pressures of having a social life against the commitments to the environment?
h. Perspective on other teachers (i.e., not part of the environment club).

i. Are there teachers that think that sustainability, ecocentrism, or environmental issues are not core business for teachers? Do they see it as over-crowding the curriculum and being “bolted on”, not to be taken seriously?

   a. Do you think the Earth is a living entity that deserves greater protection from human impact on its ecosystems?
   b. Is it possible to think of yourself as part of the Earth, almost like one large organism?
   c. Do you feel more connected to nature when you are out in the wilderness?

10. Impact of feeder primary school sustainability involvement.
   a. If you learnt sustainability at primary school, did this make it easier to integrate into the secondary school environment club?
   b. How important was your family experiences in preparing you to be an environment club student?
   c. If you have learnt sustainability at home, at primary school and at secondary school, does this make you better able to protect the planet and connect to the Earth?

11. The deep ecology spectrum (DES) score (see 3.11.3 for details).

3.5 Preliminary work for the research

3.5.1 Ethics approval process.

Approval was sought and gained for the conduct of this research from RMIT University Human Ethics Committee, DSC College Human Ethics Advisory Network (CHEAN).

(Project number: 0000016119-01/14, granted December 24, 2013). Ethics approval was also
sought and gained from the Catholic Education Office of Melbourne (CEOM), Project #1974, granted 28/01/2014 and the Department of Education and Early Childhood Development (DEECD), granted 17/03/2014, Approval # 2013_002248.

The approval letters can be found in Appendix G.

3.5.2 Letters of invitation to schools in the study.
Following ethics approval, letters of introduction were mailed to school principals and sustainability coordinators of the selected CEOM and DEECD schools. Letters seeking permission from parents of the environment club students were distributed via the coordinators, along with information on the study (see PICF forms discussed in Section 3.5.3 and presented in Appendix H). The parents’ covering letter briefly explained the need for the research at the school and an abbreviated version of the PICF statement.

3.5.3 Participant Information Consent Forms (PICF).
Individualised participant information consent form (PICF) documentation was devised for students, teachers, principals and parents, using an RMIT University template.

The PICF (see Appendix H) document explained the aims of the project to the participants, provided the names of the researchers involved in the study, and gave some background to the concepts of deep ecology.

3.5.4 Transcription of audiotapes.
The audio material was transcribed by a professional transcribing service into a time- and date-stamped written record of the interview. The transcribing team were instructed to flag poorly audible responses, vernacular and unfamiliar proper nouns for my later attention. To ensure anonymity, all participants were given an alias and code (i.e., Luke ST01SC03= student 1, school 3). The transcribed audio files (as .doc files) were then crosschecked and
confirmed by me to edit into final transcripts of the interviews, removing spelling errors and correcting place names amongst other ambiguous spellings.

To guarantee confidentiality, all written records are stored in a locked room and locked cabinet and only I have access to this data. All electronic data is accessible only on a password-protected desktop computer, and on my password-protected laptop computer.

3.5.5 Applicant debriefing.

Following data production, the sustainability coordinators at each study school were contacted by letter (see Appendix I) to thank them for their participation in the research and advise that the data generation phase of the study was complete. Participants were invited to provide any feedback (positive or negative) about the study. Also included was a debriefing information sheet to be distributed to each of the participants in their school to advise them of the conclusion of fieldwork, and of their rights under the RMIT Ethics Committee (CHEAN) guidelines (see Appendix J). At the time of writing there have been no response from any of the participants.

3.5.7 Design conclusions.

Representing gender, age, and secularity were all considered in the study, as was demographics, and non-government versus government schools. The data generated covered all of these factors within a qualitative framework. While this might be seen as a limitation of the study, even if the participants were not selected, the data still provided a snapshot of sustainability practices in each school. The number of people interviewed was lower than that sought from the CHEAN (ethics committee) documentation, primarily because the students were selected from the sustainability clubs at the schools. The ages and sexes of students in the study were a reflection of the general population of the students in the clubs, but there was nothing to suggest that the composition of the clubs differed substantially from the
general school population. The only exemption from this general observation was in the case of the senior campus at Waa, where students were more focused on their academic studies than both their counterparts in other schools (where no split campus existed) or their fellow students at the junior campus. This observation is noted in the results sections (Chapters 4 to 6) and attended to in the discussion chapter (Chapter 7).

3.6 Data analysis

3.6.1 Interpretive analysis.

The approach to data analysis was adapted from Boeije (2010), Hesse-Biber (2011) and Minichiello et al.(1990), and was oriented toward themes and categories that arose from the data - as Boeije stated (2010), “everyone has to start with reading the data and then separating the data into meaningful parts” (p. 94). Using interpretive analysis as a qualitative methodology facilitated the move from broad meanings of the data to specific codes that unveiled what was happening in the research setting, and could be organised to support explanations for the data. The analyses involved coding for patterns of similarity, difference, frequency and perhaps correspondence (Saldana, 2009). The reason for this is that qualitative researchers often do not follow a predefined protocol:

By reading and rereading their empirical materials, they try to pin down their key themes and, thereby, to draw a picture of the presuppositions and meanings that constitute the cultural world of which the textual material is a specimen. (Perakyla & Ruusuvuori, 2011, p. 530)

The method in this thesis followed that of Rubin and Rubin (2005) because it looked for shades of meaning and inherent complexity in the data. The aim was to draw together a coherent account of what the data imparted in terms of descriptions, themes and ideas that spoke to the research questions.
Evidence from open-ended questions was typically complex, so the treatment of data from this method needed to fit this kind of complexity. With the audio interviews in this study, the first step was a thorough familiarisation with the responses, but even at this early stage there was a need for coding. The responses to each question were coded to align with the research questions (Hesse-Biber, 2011). At this stage, there was an intuitive dimension to the analysis because it relied upon my knowledge of the research setting, the background of the participants, and the general direction of sustainability practices in the school community. The end product of this process was a set of field notes in very short form that took account of the key features of each interview. Concurrently with the initial coding, there was a semantic approach because every aspect of the auditory data (including pitch, pitch contour, timbre, prosody, hesitation, filled pauses) revealed important contextual details about the participant, their disposition and their general orientation toward the interview (Graddol, Cheshire, & Swann, 1987).

Following this initial coding, the next stage was to construct mind maps of the highlights of each interview, with crucial responses receiving special attention. The mind maps were pivotal in seeing the global picture for each interview, and from this the patterns in the data became clear. From the patterns, a more focused coding was used to build and clarify concepts by examining each bit of data and comparing it with every other bit of data, to build a clear working definition of any emerging concepts. Ultimately, the theories that emerged “rested on the views, attitudes and definitions of (the) informants” (Minichiello et al., 1990, pp. 102-103). Details of the analytical approach are given in Chapter 4.

3.6.2 Flow chart of data analysis.

Figure 3.5 shows the protocol utilised for analysing the data generated from the interviews. Along with the audio mp3 interview files, detailed field notes were taken, and data on the student came from school records and teachers. The flow chart shows the stages of approach
to the data from the early listening to tapes, production of mind maps through to the preliminary coding, and followed by revised coding, recognition, clarification, synthesis and nuancing phases. The final theories are a composite picture primarily from the audio transcripts, which were cross-checked and enhanced by the field notes and the listening phase, and together with the school data building a nuanced picture of the social trajectories of students, and the inter-dynamics of sustainability practice across the school.

**Figure 3.5.**
Data analysis protocol
3.6.3 Codes and details of participants.

These details of the participants are provided in the following three tables along with a description of the year level and role of the participant in the environment club.

Table 3.2.
*Pseudonyms for participants. Bunjil Secondary College*

<table>
<thead>
<tr>
<th>No.</th>
<th>Pseudonym</th>
<th>Status/Interview Date</th>
<th>Year/ Rank</th>
<th>Details of role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Samantha</td>
<td>SS 28/04/2014</td>
<td>9</td>
<td>Member of sustainability group at school.</td>
</tr>
<tr>
<td>2</td>
<td>Brian</td>
<td>SS 28/04/2014</td>
<td>9</td>
<td>Member of sustainability group at school. Junior School Captain.</td>
</tr>
<tr>
<td>3</td>
<td>Allison</td>
<td>SS 28/04/2014</td>
<td>8</td>
<td>Member of sustainability group at school.</td>
</tr>
<tr>
<td>4</td>
<td>Luke</td>
<td>SS 28/04/2014</td>
<td>7</td>
<td>Member of sustainability group at school.</td>
</tr>
<tr>
<td>5</td>
<td>Jenna</td>
<td>SS 28/04/2014</td>
<td>11</td>
<td>Not a Member of sustainability group at school.</td>
</tr>
<tr>
<td>6</td>
<td>Lucas</td>
<td>SS 30/04/2014</td>
<td>12</td>
<td>Member of sustainability group at school in Yrs. 7-12.</td>
</tr>
<tr>
<td>7</td>
<td>Brandon</td>
<td>SS 30/04/2014</td>
<td>9</td>
<td>Member of sustainability group at school.</td>
</tr>
<tr>
<td>8</td>
<td>Natalie</td>
<td>SS 30/04/2014</td>
<td>12</td>
<td>Member of sustainability group at school. Deputy School Captain.</td>
</tr>
<tr>
<td>9</td>
<td>Emma</td>
<td>SS 30/04/2014</td>
<td>12</td>
<td>Member of sustainability group at school. Sustainability Captain.</td>
</tr>
<tr>
<td>11</td>
<td>Nancy</td>
<td>TT 30/04/2014</td>
<td>TT</td>
<td>Maths/Science colleague of Wayne.</td>
</tr>
<tr>
<td>12</td>
<td>Diana</td>
<td>TT/Admin 30/04/2014</td>
<td>TT</td>
<td>Head of Curriculum.</td>
</tr>
<tr>
<td>13</td>
<td>Kara</td>
<td>PR 06/06/2014</td>
<td>PR</td>
<td>Principal of the school.</td>
</tr>
<tr>
<td>14</td>
<td>Martin</td>
<td>PA 19/03/2015</td>
<td>PA</td>
<td>Parent of the schoolchildren Luke and Brandon.</td>
</tr>
<tr>
<td>15</td>
<td>Ruth</td>
<td>PA 19/03/2015</td>
<td>PA</td>
<td>Parent of the schoolchildren Luke and Brandon.</td>
</tr>
</tbody>
</table>

SS=student, SC=sustainability coordinator, TT=teacher, PR=principal, PA=parent, SB=sibling
Table 3.3.
*Pseudonyms for participants, Karatjurk Girls’ College.*

<table>
<thead>
<tr>
<th>No.</th>
<th>Pseudonym</th>
<th>Status/Interview Date</th>
<th>Year/Rank</th>
<th>Details of role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Megan</td>
<td>SS 04/06/2014</td>
<td>9</td>
<td>Member of sustainability group at school. Joined in Yr. 8.</td>
</tr>
<tr>
<td>2</td>
<td>Gabriella</td>
<td>SS 04/06/2014</td>
<td>12</td>
<td>Member of sustainability group at school, Captain of environment team. Joined in Yr. 8.</td>
</tr>
<tr>
<td>3</td>
<td>Mary</td>
<td>SS 04/06/2014</td>
<td>8</td>
<td>Member of sustainability group at school. Joined in Yr. 7.</td>
</tr>
<tr>
<td>4</td>
<td>Kayla</td>
<td>SS 04/06/2014</td>
<td>9</td>
<td>Member of sustainability group at school. Joined in Yr. 7. Middle school captain</td>
</tr>
<tr>
<td>5</td>
<td>Lauren</td>
<td>SS 04/06/2014</td>
<td>9</td>
<td>Member of sustainability group at school. Joined in Yr. 8.</td>
</tr>
<tr>
<td>6</td>
<td>Grace</td>
<td>SS 04/06/2014</td>
<td>10</td>
<td>Member of sustainability group at school (Member between Yrs. 8-9). Now busy with choir.</td>
</tr>
<tr>
<td>7</td>
<td>Rebecca</td>
<td>SS 04/06/2014</td>
<td>11</td>
<td>Member of sustainability group at school, Co-Vice Captain of environment team. Joined in Yr. 9. Capt. Environ team at PS)</td>
</tr>
<tr>
<td>8</td>
<td>Amber</td>
<td>SS 04/06/2014</td>
<td>11</td>
<td>Member of sustainability group at school, Co-Vice Captain of environment team. Joined in Yr. 9.</td>
</tr>
<tr>
<td>10</td>
<td>Angela</td>
<td>TT 11/06/2014</td>
<td>TT</td>
<td>Outdoor and environmental education teacher. Worked in Africa as a tour guide. Taught in UK &amp; NZ.</td>
</tr>
<tr>
<td>11</td>
<td>Christina</td>
<td>TT 25/04/2014</td>
<td>TT</td>
<td>Senior Geography teacher.</td>
</tr>
<tr>
<td>12</td>
<td>Crystal</td>
<td>PA 17/12/2014</td>
<td>PA</td>
<td>Parent of Claire and Thomas. Member of the EcoGroup.</td>
</tr>
<tr>
<td>13</td>
<td>Claire</td>
<td>SS 17/12/2014</td>
<td>SS</td>
<td>Member of sustainability group at school. Sibling of Thomas</td>
</tr>
<tr>
<td>14</td>
<td>Thomas</td>
<td>SB 17/12/2014</td>
<td>SB</td>
<td>Sibling of Claire.</td>
</tr>
</tbody>
</table>

SS=student, SC=sustainability coordinator, TT=teacher, PR=principal, PA=parent, SB=sibling

---

2 An after school sustainability group of teachers, students, parents and community.
Table 3.4.  
*Pseudonyms for participants. Waa Secondary College*

<table>
<thead>
<tr>
<th>No.</th>
<th>Pseudonym</th>
<th>Status/Interview Date</th>
<th>Year/Rank</th>
<th>Details of role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rachel</td>
<td>SS 06/05/2014</td>
<td>9</td>
<td>Member of sustainability group at school. Sustainability Co-Captain.</td>
</tr>
<tr>
<td>2</td>
<td>Alec</td>
<td>SS 06/05/2014</td>
<td>9</td>
<td>Member of sustainability group at school. Sustainability Vice-Captain.</td>
</tr>
<tr>
<td>3</td>
<td>Tara</td>
<td>SS 06/05/2014</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Courtney</td>
<td>SS 06/05/2014</td>
<td>7</td>
<td>World traveller. Member of sustainability group at school.</td>
</tr>
<tr>
<td>5</td>
<td>Steven</td>
<td>SS 06/05/2014</td>
<td>7</td>
<td>Member of sustainability group at school.</td>
</tr>
<tr>
<td>6</td>
<td>Colin</td>
<td>SS 06/05/2014</td>
<td>8</td>
<td>Member of sustainability group at school.</td>
</tr>
<tr>
<td>7</td>
<td>Anna</td>
<td>SS 13/05/2014</td>
<td>12</td>
<td>Member of sustainability club in Yrs. 10-12.</td>
</tr>
<tr>
<td>8</td>
<td>Adrian</td>
<td>SS 13/05/2014</td>
<td>11</td>
<td>Member of sustainability club in Yrs. 8-10.</td>
</tr>
<tr>
<td>9</td>
<td>Veronica</td>
<td>SS 13/05/2014</td>
<td>10</td>
<td>Member of sustainability club in Yrs. 8-10.</td>
</tr>
<tr>
<td>10</td>
<td>Jared</td>
<td>SS 13/05/2014</td>
<td>12</td>
<td>Member of sustainability group at school. Sustainability Co-Captain</td>
</tr>
<tr>
<td>11</td>
<td>Jack</td>
<td>SS 13/05/2014</td>
<td>10</td>
<td>Member of sustainability club in Yrs. 7-10.</td>
</tr>
<tr>
<td>12</td>
<td>Michelle</td>
<td>SS 13/05/2014</td>
<td>10</td>
<td>Member of sustainability club in Yrs. 7-10.</td>
</tr>
<tr>
<td>13</td>
<td>Brad</td>
<td>SC 06/05/2014</td>
<td>SC</td>
<td>Sustainability coordinator at school. Science teacher.</td>
</tr>
<tr>
<td>14</td>
<td>Michael</td>
<td>TT 06/05/2014</td>
<td>TT</td>
<td>Head of Music/Arts. Worked in Borneo.</td>
</tr>
<tr>
<td>15</td>
<td>Sean</td>
<td>TT 13/05/2014</td>
<td>TT</td>
<td>Maths/IT teacher. Not a sustainability person.</td>
</tr>
<tr>
<td>16</td>
<td>Margaret</td>
<td>TT 26/06/2014</td>
<td>TT</td>
<td>Senior Geography teacher. Not a sustainability person.</td>
</tr>
</tbody>
</table>

SS=student, SC=sustainability coordinator, TT=teacher, PR=principal, PA=parent, SB=sibling
3.6.4 Recognition phase of coding.

The first stage of coding was *recognition*, in which concepts, themes, events and topical markers were identified in the interviews.

- A *concept* was any idea in the statements that related directly to the research questions; such as the notion that humans were using disproportionately too much of the Earth’s resources.
- *Themes* were summary statements about responses to key issues from the participants (for example, what the participants thought about global issues/environmental disasters like oil spills that kill wildlife and destroy habitat).
- *Events* were things that have taken place, such as regular meetings of the sustainability club.
- *Topical markers* were the names of people, places, organisations, dates, laws, rules, or anything that acts that bind the narrative together.

3.6.5 Clarification and synthesis phase.

This phase brought together the concepts, themes and events to see if there were different versions of the story that could be put together to understand the overall narrative. There might have been parallel ideas flowing together in the narrative but the goal was to seek a common vision of the trajectories of the participants by means of *elaboration*. This was essentially a phase where the ideas began to be refined and focused.

3.6.6 Nuances and final synthesis.

*Nuancing* involved looking for the subtle differences in answers to questions between participants. Where relevant, the nuances are highlighted later in this chapter. *Final synthesis* was where the data analysis about a school, a group (students versus teachers), the DEECD, the VCAA or ACARA, operated to influence the overall culture of the school community.
3.7 Factors impacting and limitations of the research

Only students who were members of the school sustainability club were interviewed (and not all of them) and only teachers who volunteered to be interviewed were included. Very few teachers were interviewed at each school. Students, teachers and principals were only interviewed once – thus this research provides a snapshot rather than an in-depth understanding (perhaps except for Karatjurk where I attended the sustainability club meetings over 18 months). There was no validation of the questionnaires. There was no participant checking of interview responses.

Not all schools or participants provided useful data for every coding theme, in large part because the questions were open-ended and encouraged expanded responses. At the time of interview, the focus was on following the line of questioning prepared in advance, but some participants at times drifted off topic, a situation managed by guiding the interviewee back to the topic. Sometimes that did not work and the interview had to press on regardless, because of the school timetable and the need for participants to attend scheduled classes. Once a program of interviews had been timetabled, it was essential to adhere to the time allotted by the school for the research project. Another problem encountered was poor quality answers in a few responses, which I concluded was due to a lack of understanding of the concept of the question. These problematic responses were not apparent until the data analysis and have not been used in the analyses of findings in Chapters 4, 5 and 6.

3.7.1 Study limitations.

Factors that pre-empted the methodology were the structure of sustainability practices in schools, the changes in school governance away from a centralised authority, and the implementation of the ResourceSmart AuSSI Vic. program. These factors combined to make access to teachers and students constrained by time and this prevented any longitudinal study, necessitating a tight interview schedule and minimal interruption to schools. This did not
adversely affect the scope and depth of the study. It meant that a broader range of topics needed to be covered in a 30-45 minute interview with little room for lengthy answers, but sufficient time for the participants to give a complete answer to any question. Interviews with teachers were longer because of additional questions.

3.7.2 Data quality and validity.

A limitation of the study was that participants’ responses were taken at face value, but this problem is not new to interviewing in the social sciences (Gillham, 2000b). The issue at hand is not so much as one of trustworthiness but more about whether the subjective view was subordinate to the objective view. Gillham stated that “one can take the stance that interviewing gives you access to a person’s subjective world and that the ‘objective’ phenomena are about something else. It is evident that they must be [different]” (Gillham, 2000b, p. 93). The question of validity of the responses was also relevant; validity of the data was best assured by taking a multi-method approach (Gillham, 2000b). This was addressed in this study by cross-referencing to field notes and re-listening to audio-taped files for nuances of voice to confirm participants’ affect in their responses (Gillham, 2000a). The risk of problems with the validity and truthfulness of the data were minimised by following existing protocols for writing questions (Gillham, 2007). I acknowledge that there was no work conducted to establish external validity of the data. Participants were not invited to check their interview transcripts (i.e., answers taken at face value), largely because at the time of analyses of the data, many of the students had graduated from their school and would have been difficult to re-interview.

There is a view by some authors that qualitative data analysis can be described in unnecessary detail when compared with quantitative, “experimental or quasi-experimental studies” (Krane, Andersen, & Strean, 1997, p. 214). Krane et al. (1997) argued that “there are multiple ‘truths’ emanating from the different sociocultural situations faced by individuals”
that there are many acceptable research methodologies in qualitative research, and that “[q]ualitative researchers are trained to acknowledge their biases” (p. 216). These views were also supported by other authors (Biddle, Markland, Gilbourne, Chatzisarantis, & Sparkes, 2001):

It is also worth noting that commentators on methodological issues have associated a tendency to document certain forms of protocol with a research community that is tied to positivist doctrines (Heron, 1996; Sparkes, 1998b). This latter view is linked to the contention that protocol detail often illustrates how a research project has complied with trustworthiness legitimization criteria (Hardy et al., 1996). On this topic, Heron (1996) suggested that qualitative researchers, across a range of disciplines, have been offered a sense of security by the parallel nature of trustworthiness (parallel to positivist notions of validity and reliability, etc.) and he associates this with a certain nostalgia for the rigour of positivism. (p. 793)

The foundations for trustworthiness and authenticity in “naturalistic evaluation” were established over 30 years ago (Lincoln & Guba, 1986), and were recently used to claim validity/trustworthiness in data collection and analysis (Cianca, 2012). Cianca (2012) also used the following criteria for validity/trustworthiness:

I implemented Merriam’s (2001) principles for collecting, analyzing, and reporting qualitative data, and I dealt with issues of validity/trustworthiness, reliability, and ethics by employing the strategies she suggested: (1) triangulation, (2) member checks, (3) peer examination, (4) involving participants in data analysis, and (5) attention to possible researcher bias. (p. 397)

The five points used by Cianca have been replaced by new definitions of data quality in qualitative research, ones that shed the mirroring of quantitative research and reveal a renewed perspective of what it means to do qualitative research.

For example, Mishler (1990) argued that with qualitative research the “tacit understanding of actual, situated practices in a field of inquiry, and validity claims are tested through the
ongoing discourse amongst researchers” (p. 415). Mishler called for a new approach to inquiry-based studies that:

depend[s] on investigators’ judgements of the relative importance of different “threats” [to validity]. Firstly, no general, abstract rules can be provided for assessing overall rules of validity in particular studies or domains of inquiry. (p. 418)

Mishler (1990) provided a useful approach to validity/trustworthiness that is relevant to this study:

I propose to redefine validation as the process(es) through which we make claims for and evaluate the “trustworthiness” of reported observations, interpretations and generalizations. The essential criterion for such judgements is the degree to which we can rely on the concepts, methods, and inferences of a study, or tradition of inquiry, as the basis for our own theorizing and empirical research. If our overall assessment of a study’s trustworthiness is high enough for us to act on it, we are granting the findings a sufficient degree of validity to invest our own time and energy, and to put at risk our reputations as competent investigators. As more and more investigators act on this assumption and find that it “works’, the findings take on an aura of objective fact; the become “well-entrenched” (Goodman, 1983). (Mishler, 1990, p. 149)

Mishler moved away from the idea that qualitative research needed to emulate the rigour of scientific studies, an approach that is supported by Guba and Lincoln (2005):

Are findings sufficiently authentic (isomorphic to some reality, trustworthy, related to the way others construct their social worlds) that I may trust myself acting on their implications? More to the point, would I feel sufficiently secure about these findings to construct social policy or legislation upon them? (p. 205)

The basis for data quality in this study was also provided by Merriam (2014):
Regardless of the type of research, validity and reliability are concerns that can be approached through careful attention to a study’s conceptualization and the way in which the data are collected, analyzed, and interpreted, and the way in which the findings are presented. (p. 210)

Reliability was generally defined as “the dependability, consistency, and/or repeatability of a project’s data collection, interpretation, and/or analysis” (Miller, 2008a, p. 753), and was often cited in quantitative research as “the extent to which multiple researchers arrive at similar results when they engage in the same study using identical procedures” (p. 753). Qualitative research called for an entirely different interpretation of reliability:

Rather than seeking to standardize interview/testing procedures so that any researcher (who is detached and neutral) might gain the same results, the unique identities of both researchers and research participants are transparently identified and purposefully centered. Repeatability, from this perspective, is neither desired nor possible. (Miller, 2008a, p. 754)

Central to Miller’s (Miller, 2008a) rationale, and the methodology in this thesis, is the importance of reflexivity in qualitative research:

Some have asserted that purposeful attempts to demonstrate reliability are counterintuitive too much of the work that emanates from the qualitative domain. They point to the interpretive subjective nature of qualitative work as a defining hallmark of the field - one that can be undermined by rigid reliability concerns. At the heart of this position is the notion of reflexivity. Whereas quantitative researchers (and some qualitative researchers) attempt to minimize - indeed eliminate - researcher effects so as to maintain objectivity, most qualitative researchers embrace the notion of reflexivity - the idea that researchers’ backgrounds, interests, skills, and biases necessarily play unique roles in the framing of studies and in the collection, analysis, and interpretation of data. Researchers are seen as visible, biased integral players in the process. This depiction of “researcher as instrument” in the project flows
naturally with the claim that the richness and meaningfulness of qualitative research is largely dependent on its creativity and originality. (p. 754)

Validity, along with reliability, objectivity and generalisability, is a feature usually cited as essential for quantitative research. Unlike in quantitative research, validity has a (necessarily) loose definition:

[M]ost who do qualitative work agree that the validity of all research is heightened by ensuring that research procedures remain coherent and transparent, research results are evident, and research conclusions are convincing. (Miller, 2008b, p. 910)

Miller (2008b) added that some qualitative researchers question the use of any oversimplistic, global criteria for validity in qualitative research:

Judging the validity of qualitative research projects is, then, often seen as being done most appropriately in an individualized contextual manner rather than through the application of broadly applicable standards and criteria. [Q]ualitative research can be rigorous in its inquiry into meaning within fluid and continually contested contexts without being held accountable to inappropriate quantitative validity benchmarks. (p. 909)

Mishler (1990) argued that qualitative data analysis should be repeatable and subjected to standardised procedures for sampling, coding, and quantifying, rather than being “context-bound, non-specifiable in terms of ‘rules’, and not generalizable” (p. 426). Firestone (1987) explained how quantitative and qualitative researchers used different approaches to persuade others of their trustworthiness:

The quantitative study must convince the reader that procedures have been followed faithfully because very little concrete description of what anyone does is provided. The qualitative study provides the reader with a depiction in enough detail to show that the author’s
conclusion “makes sense”. The quantitative study portrays a world of variables and static states. By contrast the qualitative study describes people acting in events. (p. 19)

Merriam (2014) offered some additional strategies for determining internal validity and credibility:

Internal validity deals with the question of how research findings match reality. How congruent are the findings with reality? Do the findings capture what is really there? Are investigators observing or measuring what they think they are measuring? Internal validity in all research thus hinges on the meaning of reality. (p. 213)

Another topic that was raised in the literature is that of integrity in qualitative research (Watts, 2008), defined as follows:

Integrity is honesty and probity within the conduct of qualitative research, and it underpins ethical practice in all of the activities that comprise data collection and analysis. It is characterized by openness and wholeness on the part of the researcher and can be understood as a type of “straightforwardness” or “moral uprightness” that rejects intentional duplicity and deceit. (p. 440)

Watts (2008) provided a strategy of inquiry applicable to this thesis:

The collection of qualitative data that describe meaning and experience is rooted in a subjective paradigm that is not value free and is inextricably linked to the goals of the researcher who might not be emotionally detached from the topic of inquiry. In this sense, qualitative research is not neutral or objective, and acknowledgment of the values and assumptions that frame research is an important feature of integrity. (p. 440)

The validity of the study was further enhanced by organising and managing the interview properly; creating a standardised opening, setting the scene for the questions, affording timely prompts and probes, encouraging reflection, and closing the interview in a timely
manner (Gillham, 2000a). Unstructured observations were usually done in ethnographic studies but semi-structured observations as used here were helpful in affirming that the words matched the deeds (Gillham, 2000b).

The study adopted Mishler’s (1990) view that “no general, abstract rules can be provided for assessing overall rules of validity in particular studies or domains of inquiry” (p. 418).

Compliance against the parameters of quality for this study is set out in Table 3.5.

Table 3.5.

*Evidence of compliance with standards in qualitative research*

<table>
<thead>
<tr>
<th>Parameter of quality</th>
<th>Evidence of compliance</th>
<th>Importance</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researcher qualified in qualitative research</td>
<td>All supervisors are experienced researchers, and validity claims are tested through the ongoing discourse amongst researchers.</td>
<td>High</td>
<td>Krane et al. (1997)</td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>Researchers understand the “actual, situated practices in a field of inquiry”.</td>
<td>High</td>
<td>Mishler (1990, p. 415)</td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>“The qualitative study provides the reader with a depiction in enough detail to show that the author’s conclusion “makes sense”. The quantitative study portrays a world of variables and static states. By contrast the qualitative study describes people acting in events”.</td>
<td>Moderate</td>
<td>Firestone (1987, p. 19)</td>
</tr>
<tr>
<td>Validity</td>
<td>“If our overall assessment of a study’s trustworthiness is high enough for us to act on it, we are granting the findings a sufficient degree of validity to invest our own time and energy, and to put at risk our reputations as competent investigators”.</td>
<td>High</td>
<td>Mishler (1990, p. 419)</td>
</tr>
<tr>
<td>Validity</td>
<td>“[I]s heightened by ensuring that research procedures remain coherent and transparent, research results are evident, and research</td>
<td>High</td>
<td>(Miller, 2008b, p. 910)</td>
</tr>
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<td></td>
<td>Conclusions are convincing”.</td>
<td>High</td>
<td>Merriam (2014, p. 213)</td>
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<tr>
<td><strong>Internal validity and credibility</strong></td>
<td>“Internal validity deals with the question of how research findings match reality. How congruent are the findings with reality? Do the findings capture what is really there? Are investigators observing or measuring what they think they are measuring?”</td>
<td></td>
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<tr>
<td><strong>Socially constructivist</strong></td>
<td>“[F]indings sufficiently authentic (isomorphic to some reality, trustworthy, related to the way others construct their social worlds) that I may trust myself acting on their implications? More to the point, would I feel sufficiently secure about these findings to construct social policy or legislation upon them?”</td>
<td>Moderate</td>
<td>Guba and Lincoln (2005, p. 205)</td>
</tr>
<tr>
<td><strong>Validity and reliability</strong></td>
<td>“[C]areful attention to a study’s conceptualization and the way in which the data are collected, analyzed, and interpreted, and the way in which the findings are presented”.</td>
<td>High</td>
<td>Merriam (2014, p. 210)</td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td>Non-standardised interview procedures where “the unique identities of both researchers and research participants are transparently identified and purposefully centered. Repeatability, from this perspective, is neither desired nor possible”.</td>
<td>High</td>
<td>(Miller, 2008a, p. 754)</td>
</tr>
<tr>
<td><strong>Reflexivity</strong></td>
<td>Researchers embrace the idea that [their] “backgrounds, interests, skills, and biases necessarily play unique roles in the framing of studies and in the collection, analysis, and interpretation of data. Researchers are seen as visible, biased integral players in the process. This depiction of “researcher as instrument” in the project flows naturally with the claim that the richness and meaningfulness of qualitative research is largely dependent on its creativity and originality”.</td>
<td>High</td>
<td>(Miller, 2008a, p. 754)</td>
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</tbody>
</table>
Integrity is honesty and probity within the conduct of qualitative research, and it underpins ethical practice in all of the activities that comprise data collection and analysis. It is characterised by openness and wholeness on the part of the researcher and can be understood as a type of “straightforwardness” or “moral uprightness” that rejects intentional duplicity and deceit.

Table 3.5 set out the subjective criteria upon which the data generated and analysed in this thesis met the standards set out in the scholarly literature for qualitative research.

Formulation of the questionnaires, interview procedures, generation and analysis of the data followed the recent views in the literature for data quality standards that are not a mirror of those for experimental or quantitative research.

Other strategies were employed to ensure high quality transcripts of the interviews and accurate field notes to complement the audio data. To ensure good quality audio, conditions were established (such as choosing a quiet location that was comfortable for the interviewee, ensuring that the setup is not intimidating, and using quality audio equipment with a backup in case of technical problems).

The interviewees were supplied with a copy of the appropriate questions and consent form before the interview. Extensive field notes were taken to support the audio data, to facilitate additional comments, and to administer the Deep Ecology Spectrum (DES) test.

Another way I determined if there were problems with data quality was by noting the nature of the responses, which assisted in making judgements about the truthfulness of the participants’ comments. This was addressed in terms of reflexivity, where the role of the researcher in the study was far greater in qualitative research than in quantitative studies. For the most part, the participants were captive and engaged, issuing quality responses, and this
could be taken as a measure that the questions performed as intended. It was also evident that the responses were not contrived. In a few interviews, it was clear that the participant (usually a student) had no knowledge of the topic raised and so these responses were omitted from the analysis. This is not to imply that brevity of response was a problem in any interview. The nature of the responses was typically related to the way that the questions were written, but it was also the case that the participants were sometimes unfamiliar with the topic of the question. This problem was anticipated and the *prompt/probe* tactic proved useful in overcoming this problem. All of these factors were taken into account before, during and after the interviews.

All interviews were subsequently transcribed, checked by listening to the tapes while reading the transcripts, cross-referenced to the annotated field-notes to validate the data, and major features of each response were extracted for a mind-map analysis.

### 3.8 Chapter summary

This research adopted a qualitative interpretive approach that used open-ended interviews and a questionnaire to generate data about the participants’ subjective experiences of the sustainability culture in their schools and their metaphysical connections to nature. The interview method was the foundation stone of inductive analysis, and in this study, allowed for socio-ontological models that explained what was happening in schools according to the perspectives of the participants. The use of an interpretive approach facilitated the analysis of forty-four transcripts, setting up a core structure for the alignment of coding themes to the research questions via the interview questions. These themes were then grouped into ideological clusters that cohered with specific interview questions. A meta-analysis led to the formation of explanations and interpretations that moved toward the greater goal of a theoretical model for environmental club interactions.
Chapter 4. Bunjil

In this chapter, the sustainability community at Bunjil is discussed. In so doing, I analysed the interviews and matched interview responses to the study’s research questions, and constructed a socio-ontological picture of the sustainability community at Bunjil. The participants’ data are presented in the following order: students, sustainability coordinator, teachers, principal, and then parents.

4.1 Demographics and background to Bunjil participants

Bunjil was a mixed-gender, state secondary (Years 7-12) college in the south-eastern suburbs of metropolitan Melbourne. The school catchment area had a predominantly middle-class population, comprised mainly of university or diploma-educated professional and clerical workers. Average income was about 20% above the national average, and the number of LOTE persons was at the national average. The number of overseas-born people was also near the national average at 34.5%. The environment club and coordinator managed sustainability projects and policies at Bunjil to meet its obligations under the AuSSI scheme. Sustainability was delivered mainly via environmental projects around the school, through working bees for parents, staff and students (i.e., urban forest), and through entire school efforts (i.e., energy audits).

The fifteen participants from Bunjil included nine students, two teachers, the sustainability coordinator, two parents, and one principal. All students were members of the environment club (unless stated otherwise), recruited by the sustainability coordinator.

The sustainability coordinator at Bunjil was Wayne, a Leading Teacher with over twenty years teaching experience, and a notable list of achievements including a Churchill

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3 Australian Bureau of Statistics 2011 census data: Mean annual income for Bunjil is AUD 52,271. 18.8% of Bunjil catchment have a Bachelor’s degree. LOTE at home is 29.1%. Main employment is professional (26.4%), clerical and administrative (16.9%), with numbers of labourers (5.2%) or machinery operators (3.6%)
Fellowship and numerous awards for teaching sustainability. Wayne was also responsible for the state, national and international recognition of Bunjil as a premier sustainability education provider. Wayne was a goal-oriented teacher and coordinator, and most of Bunjil’s sustainability achievements can be attributed to his drive and efforts. The principal, Kara, played an active role in the sustainability program and also provided crucial data on how sustainability affected her role as the mother of a young son. Two teachers agreed to be interviewed: a Mathematics teacher, Nancy, who shares an office with Wayne; and Diana, who was the curriculum coordinator at Bunjil. The parents’ interviews were an opportunity to investigate environmental sustainability and socio-political dynamics of a middle-class family. The four interviews (two parents and two sons) provided data on the sustainability activities of a family.

4.2 Bunjil students

There were five girls and four boys in the study. These were Samantha (Year 9), Brian (Year 9, junior school Captain of the environment club), Allison (Year 8), Luke (Year 7), Jenna (Year 11), Lucas (Year 12), Brandon (Year 9), Natalie (Year 12 and Deputy Captain of the environment club), and Emma (Year 12 and Captain of the environment club). According to the students interviewed, some students joined the environment club either because their friends were members, or because they were encouraged to join by Wayne. In practice, student members were often conscripted from the timetabled classes (typically Science or Biology) taught by the coordinator. In a few cases, students joined under their own initiative, usually driven by an altruistic desire to help the planet.

The students’ interview questions are provided in Appendix A. The data presented here were the students’ responses to the questions relating to the deep ecology themes of ecological resilience, anthropocentrism, ecological wisdom, the deep ecology spectrum, limits to growth, Earth First, neophilia, and global environmental problems. Not all students
provided responses to every theme, largely because the interviews were semi-structured with participants allowed to explore ideas ad libitum, and within the time constraints set by the school. The data analysis was organised around the research questions.

**4.2.1 Situated identity and the environment club.**

The eight student participants were proud to be part of the sustainability culture at Bunjil partly because of the reputation of the school amongst the sustainability community (via the awards won under the sustainability banner), and also because it gave them the opportunity to act for the environment. For example, Brian, a Year 9 student, stated:

> I feel like getting involved and helping. I definitely feel good knowing that we’re working toward helping the environment or doing something sustainable for the school. The school has such a big sustainability reputation and getting to be involved is really a privilege. (Brian, 00:04:21)

Brian’s family supported his role in the club and his membership has had a positive influence on his immediate family: “Yeah. I’d say they agree and care for the environment. They have a mutual care for the environment” (Brian, 00:02:56).

Allison in Year 8 offered another perspective, stating that she was influenced by an older sibling to join the environment club:

> I don’t really know, but I [have] always loved animals. And then one day I found out that some of my favourite animals were dying; I wanted to help them and make a difference to their habitat; and that’s how I started being more into sustainability and making sure we still look after them [the animals]. (Allison, 00:01:42)

The love of animals as motivation for joining the environment club was a theme shared with some other students in the study. Samantha from Year 9, for example, also had a love of animals but the circumstances behind her story were different. Samantha came to be in the
environmental club largely due to an unfortunate childhood experience (when she was aged seven) when a number of penguins were found dead on the beach due to entanglement with plastic rings:

It was quite scary because five or six of the penguins were dead on the beach and they had bottle or rubbish bags wrapped around their neck, and that made me think more about what I want to do for the environment and how I could help them. And by doing that, I think that I could help somehow, maybe create less situations like that for seven year-old girls.

(Samantha, 00:00:47)

Like Allison, Luke (Year 7) was encouraged to join the environment club by his sibling (older brother Brandon in Year 9). Luke’s parents supported him being in the club and attending the club working bees at the school. Luke provided more evidence that club membership was linked to facilitating environmental agency in students. Luke felt that he was different from regular students:

Well, I’ve always thought differently about the environment than normal people. I’ve always thought about how things work, and I’ve always wanted to interact with animals, and improve the world. (Luke, 00:02:28)

In standing up for the rights of the natural environment, Luke said, “because I feel strongly about it I probably wouldn’t care if I got beat up, because I’m trying to make a difference to the world” (Luke, 00:11:51). I did not anticipate Luke’s willingness to be physically harmed to protect the environment, but in hindsight his response fitted with a commitment to environmental action contained within the deep ecology philosophy.

Lucas, a Year 12 student, explained that in his family, there was no explicit commitment to sustainability, but that was more an outcome of having four siblings and a busy household rather than apathy for the environment. When I asked Lucas how he felt about solving
environmental problems, his response indicated agency and empathy toward the environment:

I feel good that at least we’re doing something, rather than letting it slide and just waiting for something big to happen, where we have to do (my italics) something. But then when we solve an environmental problem, [I] think, “What about all the other problems in the world at the moment that no-one else seems to want to fix?” And so that’s a sad feeling, and it’s sort of like a depressed wish [that] everyone would want to do something; instead of not caring about it because it doesn’t directly affect them. (Lucas, 00:05:47)

Brandon was a Year 9 student with three siblings. His parents were supportive of him being in the environment club and the family grew vegetables, composted and kept chickens. Brandon described his family as environment friendly. Brandon provided more evidence for the idea that the environment club set up the conditions for agency in club students: “When I was in Year 7, if something came on the News it would’ve just gone straight over my head. But now I’m really, drawn into listening to it” (Brandon, 00:06:11).

Natalie in Year 12 was a member of the Student Representative Council and Deputy School Captain of the environment club. Born in the USA, she had lived in Israel, and had a younger brother. Her mother took on an environmental role at home by recycling, composting and buying environmentally friendly products. Her mother also came to the tree plantings at the school. Natalie’s comment summed up the sentiment shared by some of the Bunjil environment club students: “I like it [the club] and it’s important to me”

Emma in Year 12 was the Captain of the environment club. She had an older brother and parents at home. She described her family as “avid recyclers” who take care not to “cross-contaminate” with her father taking the lead on recycling. Emma added to Natalie’s view: “It [the club] makes me feel really good, but more so I feel like I’m doing something to better

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4 p. 73. Field note book
the planet, so that in the future there won’t be as many problems for people to overcome” (Natalie, 00:04:52).

Taken together, students in the club created a situated identity around the people and activities associated with the club, and for most students their parents underpinned this identity forming process. Students’ identities were also formed through their previous experiences with animals, which was associated with student wellbeing and a sense of achievement for some of the participants.

4.2.2 Ecological resilience.

Analysis of the findings from interview Questions 2 to 4 suggested that students construct their ecological self by being part of the club and that they developed ecological resilience (optimism) in their capacity to withstand or recover quickly from emotionally difficult situations, like criticism, from other students or news of environmental disasters. Ecological resilience referred to students managing these emotions around environmental issues (sometimes involving wild animals and anything that adversely affected these animals), but it does have a cognitive requirement in the form of a dialectical capacity to hold counter-opposing ideas within a single framework of concern. For example, students might have seen that particular actions (such as humans being resource hungry) need to be balanced against an opposing action (such as humans using less resources and working toward a smaller ecological footprint). If environment club students developed ecological resilience, then they were essentially embracing the deep ecology philosophy for positive action to remedy environmental problems.

The interview with Brian showed how the environment club might have promoted ecological resilience in a club student:

00:04:50 WS: So, do you have this expectation that your efforts are always going to be okay?
That it’s always going to work out?
00:05:17 Brian: Of course things like how we were talking about the vertical gardens we’re doing, a lot of the things we’re doing depend on people bringing in phone batteries and soft drink bottles that we want. But I feel like we work hard to achieve our intentions; like we set dates and goals and times that we want to have these things achieved by.

00:05:54 WS: And what if that doesn’t happen?

00:05:59 Brian: I’ve never really experienced that not happening because I’ve only been in [environment club] for this semester. But I suppose if it didn’t happen I would be disappointed and maybe extend the goal. And if we can’t extend the goal [to] something for next year, [then maybe] something for the future. (Brian, 00:04:50)

Allison dealt with apathy or negativity from teachers or students who were not interested in environmental issues differently from Brian. Her response was more emotive and demonstrated more empathy for the environment and less ecological resilience than Brian:

Well, not everyone is sustainable, but that made me a bit upset because we all need to put in to help save the environment. And some teachers and some students want to use all of the resources and things and they don’t care about how much it’s going to affect the environment later on. But I notice these things and I try to put a stop to it, but I feel a bit sad and angry that other students aren’t helping to save the environment and stuff. (Allison, 00:09:03)

Allison continued to describe the shortcomings of students and staff who wasted energy, however, when I asked her, “Do you see [sustainability] as something that you will always have as part of your life?” she responded “Yeah I think I will because this will make a difference to the world and I probably will always continue that no matter where I’m at in life.” (Allison, 00:11:44). The following response from Samantha was short but it also indicated ecological resilience: “I’m happy that we’re trying to do something even if it doesn’t always work. I mean it’s better than doing nothing” (Allison, 00:05:14).
The response to *anti-green* others was emotive; it can be anger, sadness or a mix of emotions. Environment club students believed that apathy toward environmental concerns was the cause of others’ laziness, but they also viewed this behavior as something that could be changed. Emma’s response supported this view:

I don’t think it’s a losing battle because I think in the five years that I’ve been here, the school environment has become a lot cleaner, and a lot more focused on the environment. So, I think it’s all about changing the attitudes and making sure the younger kids especially understand the consequences of what they do now. (Emma, 00:31:21)

It was likely that ecological resilience was related to students’ capacity to seek out information in a digital age. For example, Lucas reported being connected to global news via the Internet and not relying on local television news:

And a lot of times it’s [environmental information] on the Internet as well. There’s websites where there’s discussion about everything going on, and what we can do about it. I think that because of the world that we’re being brought up in, technology generation, although people see it as a bad thing. It’s also a much more helpful stimulus in a sense, because we have all that information at our fingertips, we think about it a lot more. (Lucas, 00:12:57)

Lucas’s response highlighted that environmental issues do not exist in isolation from his broader spectrum of concern. He reported:

Yeah, there’s definitely the social aspect of, “Oh what are you doing this weekend”, “Oh I’m going to go out and have a hectic night out with the mates”. Compared to I’m going to go down to the Murray [River] and give it a good clean [up]. And movies… it’s not interesting to produce a movie about cleaning up a creek. (Lucas, 00:08:54)

Lucas also offered a *tongue-in-cheek* solution to what might happen when natural resources were exhausted: “And then [we] move on to a different planet?” (Lucas, 00:22:35), a notion
similar to the *Spaceship Earth* idea inspired by the *Apollo* space program and introduced by Buckminster Fuller (Ellyard, 2011; Rome, 2015).

In the context of population growth and limited natural resources, I asked Natalie if she was optimistic about the future:

> I think I have to be optimistic because if you keep thinking that the world’s going to die, and the future generations won’t have anything left that’s not the nicest way to think. Because if you come in with the thought that we’re all doomed then you’re not going to work as hard toward fixing it. (Natalie, 00:10:41)

**4.2.3 The anthropocentric, “future human” response.**

A view of the shallow versus deep ecology binary was evident in Emma’s comment where she embraced anthropocentrism as part of the solution to environmental problems:

> I just feel like I’d rather do something that will make not just my future, but the next generations future, and the generations after that a better future. Because that makes me happier than going to a party, and you know having a couple of drinks with people. (Emma, 00:05:56)

Her response was anthropocentric in as far as advocating solutions for future humans, a view that other participants also embraced. Samantha’s response on the future of the planet showed that this issue was complex:

> Well, I’m thinking about future generations, or other kids who might be younger than us, and we don’t necessarily want to be growing up in a toxic wasteland. It could be incredibly bad for their health. You see it on TV shows how people have polluted so much that the oxygen isn’t clean enough to breathe, or that it’s come to the fact [that] there’s so much toxic waste everywhere that people are becoming seriously injured. I know some of these things don’t exist, but it's still something that you have to keep an eye on. (Samantha, 00:06:19)
Samantha’s desire to provide a cleaner planet could be interpreted as being anthropocentric, as she focused on future human generations. An alternative interpretation was that Samantha wanted a better world for all life on Earth but this was not established in the interview.

4.2.4 Ecological wisdom.

Only a few responses related to the concept of ecological wisdom. Samantha provides one example “One of the things I think I can do well is understand how people work, or how they plan on doing something and how I can change it” (Samantha, 00:12:21). Her response was also a good indicator of ecological resilience, suggesting that ecological wisdom was linked to higher order traits. Lucas had a similarly reflective understanding of environmental wisdom:

So, [for] a lot of my age group it’s just, why worry about the environment or sustainable practices, when you’ve got to worry about the party that’s coming up this weekend, and who’s going to be there, or homework you have due, or study you have to do. So, they don’t know how to do it. But they don’t have the interest to want to learn how to do it either. (Lucas, 00:07:03)

His response was a reminder that students were teenagers who built their identity from interactions with their peers outside school hours, and that the pressures or forces from this process significantly impact their pro-environmental or ecocentric beliefs and choices (or not if the “party” becomes a priority).

Allison provided another example:

Not everyone is sustainable, [so] that ma[kes] me a bit upset because we all need to put in to help save the environment. And some teachers and some students want to use all of the resources and things and they don’t care about how much it’s going to affect the environment
later on. But I notice these things and I try to put a stop to it, but I feel a bit sad and angry that 
other students aren’t helping to save the environment and stuff. (Allison, 00:09:03)

Allison’s reflection overlapped with other themes such as ecological resilience, but it has the 
quality of ecological wisdom as described by Naess: “[a] deep exploration of our whole lives 
and context in pursuit of living wisely” (Drengson & Devall, 2010, p. 19) and as “the essence 
of Socratic inquiry to know ourselves” (Drengson & Devall, 2010, p. 19). Allison cared about 
the environment and was aware of others who did not share her view, opting to “do 
something about it”, and in the process living wisely.

4.2.5 Deep ecology spectrum.
The average of all DES data for Bunjil was 6.375 and the responses were charted in Figure 
4.1. Many participants have an inclination toward ecocentrism, typically driven by a concern 
for, and love of, animals. However, the participants thought that humans were 
anthropocentric because they used too much of the limited natural resources. Some 
participant were of the view that humans were too resource greedy to make an ecocentric 
outcome possible. In some answers, the participants struggled between the ideal of a 10 and 
the reality of somewhere lower down on the scale. The thoughts of the participants settled 
toward the ecocentric end of the spectrum, a view that might be because the participants have 
a genuine desire to see the environment in better shape, or it might equally be the answer they 
felt that I wanted to hear. Drawing on the guidelines set out in Table 3.5 above, and being 
reflexive about the field notes and audiotapes for Bunjil, there is some indication that 
participants do have a genuine wish to protect the earth.
The DES data from Bunjil were an indication that purely ecocentric lifestyles were desirable but somehow unattainable in their current circumstances. Hence the low score from Jenna (2.5), who contemplated a score of 5 but said that it would be impractical for everyone to give up their current lifestyles. Using the DES instrument, students oriented themselves toward ecocentrism because they claimed to view natural resources as being for all biota (and the abiotic ecosystem) and that humans “suffered” from neophilia and were presently over-consumerist and used a disproportionate amount of natural resources.

Brian, for example, positioned himself at 6 or 7, and gave the following statement to explain this position, adopting the existential idea of a world without humans:

> Well, I can’t say [that] humans are at the centre of concern because I do have that admiration [for] the worlds that are around us that aren’t impacted by humans. If humans aren’t on Earth there is still that beauty of the environment and everything in our universe. (Brian, 00:35:31)

Allison was more ecocentric than Brian, stating, “Probably close to the 10 end because we get a lot of our food and stuff from the animals and plants, and we should look after them so we
could have more of the animal resources, and tree resources, plant resources for us, so I think they should be put first” (Allison, 00:23:25).

Samantha’s response indicated that students could move from anthropocentrism toward ecocentrism:

I think I may be an 8. I’m not going to say that I’m a 10 and [that] my only concern is the welfare of all the animals. I do consider that there are animals that are [becoming] extinct and that we should always think about how we’re affecting them. You see ads on television about what’s happening to the orangutans, what’s happening to the turtles. I’m not saying that humans are the only thing I’m concerned about. I’m not saying that animals are the only thing I’m concerned about. A balance between animals having more of a say in my head over the humans. So, seven or eight. (Samantha, 00:39:23)

Samantha’s grappling with extinction was inherently ecocentric and her concern for the orangutans favoured the biodiversity component of deep ecology. Her response also supported ecological wisdom by embracing the need for balanced consideration when talking about resource sharing with other animals.

Luke saw 4.5 as a desirable position: “I believe that we should have half the resources that we normally use” (Luke, 00:31:22). When I asked, “Are you saying humans should share with animals, is that what you’re saying?” (Luke, 00:31:31), Luke responded, “Yeah, but not all the resources, because some resources won’t work for the animals” (Luke, 00:31:59). The use of the qualifier statement was not necessarily an admission of anthropocentrism, but more a view that human needs were different to animal needs for natural resources.

Jenna chose 5, reasoning that humans were smarter than animals and although it seemed fair to share resources, humans tended to need more resources to maintain a realistic standard of living. Her response was not straightforward:
I would say 5, [because] as humans we’re more intellectual than animals. They’re all smart in a sense, but they do need resources in order for them to have the right habitats and what they need to live, but they don’t need as much as us, because we have [evolved]. We feel like we need a lot more, [but] if we wanted, we could be fine without it. But we could only be fine without all the stuff we have if everyone else [went] without it. So, you couldn’t not have a phone, and not have a car, and not use public transport not use that if everyone else had it. Because instead, you need to drive your car to get to work, or you need to catch a train to get to work, or you need to call your boss to say you’re running late you know. (Jenna, 00:35:57)

Jenna’s reference to the human trait of desiring consumer goods based on jealousy was an insight later discussed under neophilia in section 4.2.7.

Lucas chose a DES of six:

If I was to say [which] end of the spectrum we should sit on, I don’t sit up here [10] because I don’t need that much. You shouldn’t be using so much that everything else is [harmed] in the process. We shouldn’t be using up all these resources because we are apparently the smartest organism on the planet. We can’t survive without all of these other things. So, why aren’t we taking care of them? So, I would put myself more toward a range of five to seven. More toward the ecocentrism, because if we don’t care about them then that means we don’t care about ourselves. You can be self-centred, but if you don’t look in the long term at the effects of ruining everything else, you can have a great time now, but fifty years from now you’re not going to be having a great time because you couldn’t live just comfortably, not extravagant. (Lucas, 00:50:43)

Lucas’s response to the DES question was emphatic and somewhat emotional, with a very real view that humans needed animals: “If we don’t care about them then that means we don’t care about ourselves”. He articulated the ecocentric belief that humans were using too
many resources, and need to be thinking about what might happen to the Earth in 50 years time.

Brandon’s response (DES 8.5) was conciliatory: “Well, there’s downsides and upsides of both [a 0 and a 10]. Because if I say sharing with the animals then we’ll have less, we’ll have more demand, and less of what we need. Because the life we’re used to now was not there” (Brandon, 00:28:20). He added that a 10 would mean too much sacrifice for humans: “I wouldn’t go 10. I think I’d go about 8, close to 9.” (Brandon, 00:28:54). “Because if I went to 10 … I know there’s stuff that we have now that would not be the same” (Brandon, 00:29:10). “We’d have to sacrifice a lot. And then I think that would be a step back in society” (Brandon, 00:29:23). Brandon’s position on the DES indicated, like other participants, that it was impractical to expect radical ecocentrism in the form of a ten on the DES scale. He did not elicit the same empathy for animals as did Jenna and seemed to be more anthropocentric about sharing resources than Lucas, despite his high DES of 8.5.

Natalie gave a similar response to Brandon, with a DES of 5-6, stating that she would like to be a 10: “I think if we were under the same circumstances as the indigenous people, I’d be a lot higher up. But because I am aware that the population is growing, we do have all these other issues that need to be solved. I think that at this time humans do need resources. But at the same time we need to keep in mind that there are other organisms that are using the same resources as us” (Natalie, 00:27:12). Natalie’s explanations were an indication that purely ecocentric lifestyles were desirable but somehow unattainable in current circumstances.

In summary, the DES was viewed as a dynamic worldview where humans needed to move from anthropocentrism toward the ideal of ecocentrism.

4.2.6 Limits to growth/Earth first.

Questions 5 and 6 addressed the issue of natural resources use by humans, and investigated whether participants thought that humans were approaching a limit to resource use. The
questions established if the participants had an affinity for the needs of the Earth (ecocentrism), or the needs of humans (anthropocentrism).

The response from Lucas to Question 5, “Some people try to solve environmental problems just so that we can have more resources for humans. What do you think?” was as follows:

> When I think of solving an environmental problem, I don’t think of it as what do we need to keep going? I think of it as what do we need to not [his emphasis] have an effect? So, instead of how am I going to build this building? I need wood, it’s how am I going to build this building? I’m going to grow trees, then use the wood from those trees rather than cutting down current trees and planting a new one. So, solving an environmental problem shouldn’t be about what we need now. It should be about how we can have less effect on the rest of the world in the long run. (Lucas, 00:22:51)

Lucas’s response was ecocentric and recognised the need for renewable resources to minimise the impact on limited natural resources as outlined in the Deep Ecology Platform.

Brian’s response to Question 5 was also ecocentric as follows:

> It’s good that [some people a]re motivated to solve environmental problems, but using those resources just for humans or human use is probably not the right idea I suppose because when you talk about forests, that is the habitat to a lot of animals and it’s quite important I think to preserve those animals’ habitats and continue their lives in [that habitat]. (Brian, 00:15:42)

Question 6 of the interview was designed to explore students’ ideas about *limits to growth*. I asked the students: “Deep ecologists think we should live within the means of what the Earth can provide us. What do you think about that idea? “Allison’s response demonstrated her understanding of the concept of *limits to growth*:
I think that’s a good idea because the Earth should be first because in the end we’re going to suffer for what we’ve done to the Earth. So, we should stop using all [of] the resources we have because if the population keeps growing, we’ll eventually run out of resources for the new people that are coming [along], and a lot of poverty will probably occur [as a result] of that. So, we should put the Earth first because extreme poverty does occur. (Allison, 00:14:57)

Allison’s response was ecocentric and aligned with the deep ecology philosophy.

4.2.7 Neophilia.

Some students recognised neophilia as a problem for a sustainable society, and they showed an understanding of the commercial forces that were at play. Emma summarised, “Because people want to be seen as cool, how dare you not have the newest product?” (Emma, 00:20:22). Whereas Samantha described it as “a company thing”, alluding to the corporate push to sell a particular brand of phone, but adding that for a lot of people, “Thinking that in order to be cool you need to have the new iPhone, and sometimes it’s how they advertise stuff” (Samantha, 00:20:51). Luke saw the problem of neophilia as one related to status in society, using big screen televisions as an example:

Well, it’s not fair because there are people who don’t really work that hard but [earn] heaps of money, and they just spend it on [televisions]. Like people who have seven TVs in their house; all the rich people; it’s not really fair because we only have two TVs in our house. And the [TV] that we have is for our games room, the pixels are burnt. So, we’re just going to get as much as we can out of it, to use our PC [personal computer]. [So] when that goes we’ll probably just buy a smaller TV. (Luke, 00:17:03)

Luke’s transcript appeared to lament the lack of TVs but in his interview he accepted this austerity, and his tone was clearly dismissive of wealthy people buying too many TVs.
**4.2.8 Global environmental problems**

Question 7 explored student connectedness to nature via a hypothetical oil spill disaster that killed wildlife on the shores of Alaska. Through this question, students were invited to reflect on global disasters and explain how they might be affected by the death of wildlife elsewhere in the world. The aim of the question was to determine if empathy for nature was universal and not a local effect. Jenna’s response indicated her ideas about connectedness and empathy:

> I wouldn’t feel good about that. I [do not] call myself an environmentally sassy person, or an animal-inclined person. But its how the world goes around. There [are] animals. We’ve got to take care of them; we’ve got to take care of the Earth, and we’ve got to take care of us as well. (Jenna, 00:10:37)

Emma gave a more elaborate response on the personal affect it might have on her:

> It does [affect me] because birds migrate and they travel the world. So, if it’s affecting them in one part of the world it doesn’t just mean that that part of the world is affected by it. The Earth revolves so it doesn’t matter where it happens, it will affect you in some way. I think people don’t realise that because they think, “Oh, that’s not near here so that’s not important”, but it is. It’s like the ice caps melting, and people think “Oh, but you know that’s in Antarctica”, but at the end of the day the ocean is everywhere so it affects you, no matter what. (Emma, 00:21:31)

Natalie similarly viewed the global disaster as having an impact at the local level:

> Well, [if] it did happen on the other side of the world, we might not feel [a] difference here. But it’s still affecting us. It could happen anywhere. Just because it happened off the coast of America doesn’t mean that our Great Barrier Reef isn’t in danger as well of that happening here. I think it’s also just the fact that a whole underwater ecosystem has been ruined although it’s not near us, it’s still a loss to us. (Natalie, 00:13:12)
Natalie elaborated an emotional response to the oil disaster scenario:

The first thing I think about [are] the animals, the marine life. I think, “Oh, those poor animals, they died, they lost their homes. Future animals won’t have a home because it will be polluted with oil which is very hard to clean”. I don’t really know much about how they would go about cleaning [up] the oil and rehabilitating the area. I’d like to think there’s still hope for future animals to live there, but I don’t know. (Natalie, 00:15:22)

These students’ responses indicated a belief that if environmental disasters could happen overseas, they could also happen locally. Their responses indicated empathy for animals (biocentrism) and a comprehension that the Earth was a global ecosystem. This reflected a systems approach to ecology that was derived from deep ecology.

4.3 Bunjil teachers

The three teachers who were interviewed at Bunjil included the sustainability coordinator, Wayne, Wayne’s office colleague, Nancy, a Mathematics and Science teacher, who asked to participate in the study, and Diana, the full-time Head of Curriculum who agreed to be involved. The teacher questionnaire is included in Appendix B. These questions were designed for the sustainability coordinators, but the interviews for Nancy and Diana were modified to accommodate their roles at Bunjil.

The first question asked how the teacher situated themselves within the school sustainability community, to set the background for subsequent questions on deep ecology.

During my preliminary visit to Bunjil, Wayne was eager to tell the story of his involvement with sustainability at the school, and his commitment to environmental education. His subsequent interview data demonstrated his passion for the role and the types of direct action that had led to Bunjil being a model for sustainability practices in schools. Wayne ran the program along the lines of what I refer to as a military metaphor, because of
his reference to students as “troops” and his organisation of the sustainability community (which includes parents) in strategic ways to achieve targets and goals for various projects. Wayne had created specific opportunities to develop sustainability relationships with students, parents and other teachers. For example, parents looked to Wayne for initiative, and his environment club projects were well attended because of Wayne’s enthusiasm and promotion of sustainability initiatives. Wayne claimed to see himself as fashioning opportunities for people to be part of his vision for a successful sustainable school community. The biographical trajectories of his environment club students were linked to this path, and were interdependent. The club provided students with social cohesion, which builds from Year 7 onwards.

4.3.1 Wayne: teacher-coordinator interactions/situated identity.

This study did not set out to investigate the social aspects of the sustainability community in schools, but following these interactions appeared generative from the sustainability coordinator’s responses. For example, responses indicated that not all teacher relationships were ideal, and that not all staff provided glowing reports on sustainability at Bunjil. Nancy said that Wayne and the environment club accomplished many “amazing things”, but commented that “their successes don’t necessarily trickle down either to the curriculum or to the day-to-day behaviours of the students” (Nancy, 00:04:14). Diana, the curriculum coordinator, said the sustainability message was not fully taken on board by all teachers, and that there was the perception that the curriculum was overcrowded. The teachers’ responses were used to build socio-ontological models of the social interactions at Bunjil, and these models are presented at the end of this chapter.

In his interview, Wayne talked openly about the tensions and professional jealousy flowing from his successes in promoting sustainability. The source of the antagonism from Wayne’s colleagues appeared to be related to the time allocated to the position he held, and to
a lesser extent doubts about the source of funds for sustainability projects. Wayne did not acknowledge that this negative influence caused him concern, but the length of time he devoted to his response seems to indicate otherwise. He was quick to respond that the sustainability projects were made possible through his successful overtures to private and government sources for materials, project management expertise, and donations to the school, a fact that he thought was overlooked by the protagonists. When the major Melbourne daily newspaper, *The Age*, interviewed Wayne, he was dubbed “Mr. Sustainability”, which would normally be seen as an achievement for Wayne and Bunjil. However, some staff at Bunjil erroneously believed that it was a paid advertisement, which added to the tensions in the school surrounding the sustainability coordinator’s position. Wayne was regularly away from Bunjil while acting as an ambassador for the school, and this resulted in extra teaching duties for colleagues, a further source of collegial tension.

4.3.1.1 Running the environment club.

The environment club was one a number of extracurricular activities offered by the school, like music, sport or dancing, and students had a choice of activity to join. Wayne was dedicated to sustainability at Bunjil and provided various opportunities for students and parents to connect to the Earth, such as through the working bees. Like the students at Bunjil, Wayne followed the anthropocentric idea that resources were for future humans, but mostly he adopted an ecocentric position in his responses. For example, in his response to Question 4 about ecosystems and biospherical egalitarianism, Wayne said:

> When I think about ecosystems, it consists of physical elements, human and non-human. I don’t think you can separate them. And I think we run a real risk if we don’t think about ourselves as being a component of the biotic category. And if we separated ourselves out from the other living components, then we’ve got a risk of compromising things. (Wayne, 00:22:23)
Wayne viewed the environment club projects as a collaborative effort between himself, the parents, and the club students, referring to process of “being able to mobilise people” (Wayne, 00:05:59); (the military metaphor now being related to government). For example, the urban forest planting at Bunjil attracted eighty people for the day, and was referred to by Wayne as part of his vision that “we gave them a space (so that) they could deliver on that (goal)” (Wayne, 00:05:59). The planting was a big success and more were organised, “So, we created a space and an opportunity and an event, and people came to fulfil their own desires to demonstrate sustainability” (Wayne, 00:05:59). Wayne reiterated that his role of creating the opportunity for others was to “create a better future”. This summarises the ontological framework that he saw as central to the success of environmental projects at the school.

There was little doubt that Wayne viewed his role as fashioning a sustainability culture and nurturing specific biographical trajectories for the sustainability club students that were concordant with his visions for the school. This description by Wayne of setting the stage for others to succeed extended to the parents, and was a recurring theme in his interview.

Taking into account Wayne’s situated identity and the socio-ontology of the environment club and associated school community, his responses supported the conclusion that the club students and coordinator were successfully promoting a biocentric approach to the school environment. Habitat restoration and the successful re-introduction of frogs to the Bunjil environment were evidence of this claim. In terms of the first research question that looked for evidence of ecocentrism or anthropocentrism, Wayne promoted connection to the environment:

We can’t expect the [students] to save the environment and be sustainable unless we teach them first to love the environment. So, once they’ve made that connection with the [environment], once they understand the importance of it, once they see that the whole ecosystem is linked to the food sources and all those sort of things, then it becomes relatively
easy to move in the next step. They think twice before they make a bad decision for the environment.” (Wayne, 00:09:21).

This response is consistent with the principles of ecocentrism contained within the deep ecology philosophy.

4.3.1.2 Ecological resilience.

The concept of students’ ecological resilience was discussed in Section 4.2.2. Wayne was motivating the students toward ecological resilience by encouraging them to make good choices and to make a stand for their beliefs. Wayne used the metaphors of “sustainability by stealth” and “ninja sustainability” (Wayne, 00:19:33) adding that he wanted to make sustainability a daily ritual that could serve students well in their lives. He added, “It’s a journey and it’s a philosophy of life and a way of life” (Wayne, 00:21:21). Wayne saw sustainability as requiring higher thinking consistent with deep ecology:

It’s not a subject. It’s a journey, a philosophy of life and a way of life. And so, I try to avoid using the word sustainability, rather modelling good practice and if possible best practice. So, they’re immersed in it. They see people working at it on a day-to-day basis. And without them necessarily being aware of it, they’re absorbing the fibre of [sustainability]. That’s been my philosophical approach to delivering on this stand. So, other people think we should be out there waving the flag and knocking it into the kids with the hard-up lessons and all the rest of it. But I think slowly, slowly [we will get there]. (Wayne, 00:19:33)

The interview with Wayne showed that he encouraged students to move out of their comfort zone and embrace deeper knowledge about nature, and to defend the Earth.
4.3.1.3 Biospherical egalitarianism/Is science the answer?

As mentioned in 4.3.1, Wayne did not separate humans from the other biotic parts of the ecosystem but agreed that neither the biotic nor the abiotic components should take priority over each other:

When I think about ecosystems, it consists of physical elements human, non-human. I don’t think you can separate them. I think we run a real risk if we don’t think about ourselves as being a component of the biotic category. And if we separated ourselves out from the other living components, then we’ve got a risk of compromising things. Now that we’ve got a proven track record of being able to do it, we’ve managed to mess things up. No other organism has made the changes to its own environment that the humans have. (Wayne, 00:22:23)

Wayne’s response was consistent with both biospherical egalitarianism and biological egalitarianism. On the question of the inanimate world such as mountains or rocks, I related the story of Arne Naess’s love and respect of mountains after experiencing the reverence shown by the Sherpa before his ascents. Wayne responded:

I think the [mountain] can have enormous importance if it’s a cultural component of a population or a group of people or a race of people. And their connection with the land will often determine how they utilise the land, how they revere the land. How they honour the land and the life forms that will come from the land. And humans are a life form intimately connected with the land. (Wayne, 00:26:01)

In Question 5, I asked Wayne if science had all of the answers to our environmental problems:

No, humans are the answer to all the sustainability problems and science is just a technology that might power that [aim]. But it’s the human will and the human spirit that will actually
make the tough decisions, and the science will be applied as the will and the whim and the strength to be able to do it at the time. “Is there another way of tackling planetary health for future generations?” I don’t think science is necessarily the only way. I think empowering people to believe that they’ve got the ability to be able to change. It will change from country to country and place to place but it’s this generation of sustainability literate people. We need to be able to show and model alternative practices and then hope that they’ll value the future enough to be able to make the tougher decisions. (Wayne, 00:30:01)

Wayne rejected a technocratic environmental ideology in preference for a social ecology to resolve environmental problems; he claimed to view science as secondary to human “will” and “spirit”; a position that matched the ecological resilience discussed for the Bunjil students.

4.3.2 Nancy: sustainability, the curriculum and ecocentrism.

Nancy shared an office with Wayne and was keen to be interviewed to provide her perspective on sustainability at Bunjil. The interview provided some insight into the peer dynamic of sustainability from the point of view of a teacher not directly involved in the environment club. Nancy’s story differed from Wayne’s in several ways. Firstly, she identified as committed to the environment at home and her personal life, but not so at school. Secondly, Nancy ran a program at the school called “Learning Journeys”, which focused on “turning young people into young adults; responsibility, independence, that’s what the program was about” (Nancy, 00:11:08). Nancy claimed the change in focus to sustainability at the school was at the expense of her program, which made teaching more difficult for her.

Nancy’s responses supported Wayne’s view that implementing the sustainability curriculum had its difficulties. Nancy said that promulgating the sustainability message did not seem to be a priority in the greater picture of the project work done by the club, and that making time to plan the integration of sustainability into the curriculum was a problem:
I mean, they’ve introduced things like recycling batteries, so that’s great and that’s an opportunity for everybody. But no, I don’t feel like the ethos of the school is “we’re all here for sustainability” or anything like that, and kids drop their rubbish on the ground and all that sort of thing. The culture among the general kids is not any different than any other school I don’t think. (Nancy, 00:06:05)

Nancy then seemed to ameliorate her critical stance on Wayne’s work:

I trust that he invests a lot of time and energy and he’s done that very, very effectively in many ways. And I’m not saying that it would be better if he’d taken some of that time and energy away from the solar panels and put it into try to change the kids’ culture. (Nancy, 00:07:09)

The response from Nancy was a legacy of the loss of the Learning Journeys program, the fallout from which was shallow approval of the sustainability program at Bunjil. Nancy elaborated again:

I think if someone had come to me and said … “Alright, we need to change Learning Journeys a bit. We see what you’re doing, and I think you’ve understood what we’re trying to do with it. We want to tie in a sustainability focus, so let’s talk about how we can do that”. Do we have just one module that is sustainability focused, [or] do we embed some sort of sustainability into all of them? Here is some time and some specific goals let’s sit down and plan this”. I would have been totally open to that. (Nancy, 00:15:45)

It was clear from the above response that Nancy viewed sustainability as content of the curriculum that should be discussed first before it was implemented, but adopted only if there was adequate support, such as time allowance and perhaps professional development. Nancy continued:
So, for somebody to just almost in passing, say you have to include sustainability in that, what am I going to do? It would be great if we could go for a hike, if we could do some outdoor moving your body. Absolutely. But that is a thing that takes planning, and it takes money, and it takes a bus maybe, it takes me talking to somebody with a bit of nous in doing that stuff with kids. And when you’re a teacher you don’t have time to scratch yourself. (Nancy, 00:16:28)

The time allowance issue did not emerge from Wayne’s interviews probably because the coordinator’s position was a Leading Teacher classification with a higher pay scale and associated time allowance. Nancy taught Mathematics and said:

I have enough trouble getting my kids to learn Maths. I am open to having a sustainability module, or somehow embedding it, but someone’s going to have to show me, and I’m going to have to be given time to get my head around it to do it properly. (Nancy, 00:20:37)

The initial purpose of including Nancy in the study was to illuminate the view of sustainability as seen through the lens of deep ecology. Instead, the interview became a study of the socio-ontology of implementing sustainability, and of the various negative and (few) positive forces at play amongst staff (or perhaps just Nancy) and the coordinator Wayne. Deep ecology may well be an ecocentric philosophy and an ideology suitable for environmental education, but only if the ideal of ecocentrism can be imperfectly realised when applied to schools.

4.3.3 Diana: sustainability and the crowded curriculum.

Diana was the curriculum coordinator who managed issues around teaching and learning. She brought another perspective to the role of implementing sustainability across the school curriculum. Diana had been in her role for three years and sits next to Wayne in the office, so therefore she had good opportunities to ask him questions about the sustainability program.
She was keen to be part of the sustainability initiative at the school and was decidedly more positive than Nancy about its success. She offered a perspective on the issue of the crowded curriculum, explaining that a major constraint for implementing sustainability in secondary schools was managing the timetable. Teachers were at times assigned subjects that they were not comfortable delivering, and this occurred because they had limited expertise in that area.

Diana reported on one of the reasons why teachers might have difficulty teaching sustainability, but offered hope that there was a solution to this problem:

I get the feeling that it’s the content. It’s not that they’re scared of it. I think some of them it might be out of their comfort zone. They don’t know enough about it. So, they look at the curriculum, say it [is] Humanities, and [say] “How am I going to do all of that in the time frame that I have?” So, then when you put on top of that the cross curriculum priorities. It’s like, “Okay, we have to really break this apart and figure out what’s the best way to deliver those cross curriculum priorities, within the content that we’re meant to deliver”. (Diana, 00:06:51)

I then asked Diana if teachers viewed sustainability as being added to their teaching load rather than as an integrated task?:

I think they do. I think [that] even though we keep trying to say, well, it’s not added, it should be part of [your teaching]. So, if you’re doing a particular lesson on something, you can have that sustainability focus. If you’re looking at a particular skill, do it through sustainability, rather than in another way. But I think too, it’s also the content of the curriculum. It seems so packed [and] they get concerned that they’re not going to finish it. (Diana, 00:07:45)

The above problem was generally referred to as the “(over)crowded curriculum” (see, for example, Donnelly & Wiltshire (2014)) and it seemed to be an issue for Bunjil. The strategies Diana used to tackle the issue of the crowded curriculum were to build up documentation on curriculum strategies to support teachers, and to liaise with the heads of the learning areas.
The latter strategy, Diana explained, was effective because the heads tend to be more enthusiastic about their role in supporting the curriculum. Not all heads fit this picture but there were some new recruits to the role of head of learning area, and Diana reported that these teachers were enthusiastic about their job.

When asked why sustainability was difficult to implement, Diana said that it was the same for literacy and numeracy, pointing out that you do not have to be an English teacher to know that students need to be able to read and write. When we moved to the idea that the same logic should apply to sustainability, Diana said:

[It is] not as easy as that, because it’s not so tangible in that sense like literacy can be. But sustainability hasn’t really been an issue in terms of them understanding that they have to do it. It’s more of the how; within their curriculum and within their content. (Diana, 00:12:54)

From Diana’s responses above there were a number of barriers to implementing sustainability (and hence ecocentrism) that maintain an anthropocentric view:

- Teachers do not think sustainability was important.
- They perceive that the curriculum was already crowded.
- Some teachers do not understand sustainability.
- Teachers want more pay, time allowance, and/or recognition to comply with school sustainability initiatives.

I then asked Diana about these barriers in the context of the school being promoted as a premier sustainability institution. Was the sustainability message getting across to students and teachers? Diana responded:

I think it definitely [is]. We certainly push [sustainability]. We’re a sustainable school. So, I think, more and more, the students are definitely getting that notion into their heads. So, I think the students would be more receptive, if the teachers were providing that sort of content. (Diana, 00:15:53)
Diana also pointed out that sustainability was easier to integrate in some subjects than others:

I think [that] probably the greatest issue, particularly when you look at sustainability, is [that] it seems to naturally fit well into Humanities, because Humanities covers History, Geography, Economics, and Civics and Citizenship. (Diana, 00:16:59)

In conclusion, Diana’s responses provided a more positive outlook for sustainability at Bunjil than did Nancy. From Diana’s interview, it was now possible to outline a path to sustainability and ecocentrism for schools:

- School policy promotes sustainability *Eco literacy*.
- Sustainability coordinator establishes school-wide, cross-curriculum projects in sustainability (like an energy audit).
- School mentors graduate teacher commitment to sustainability.
- In-house and external professional development (PD) on sustainability.
- Staff commits to sustainability in their PD diary every year.
- Implement performance targets for the integration of sustainability into teaching.
- Sustainability used to promote connectedness to nature.

### 4.4 Bunjil parents/family (Ruth and Martin)

#### 4.4.1 Socio-ontology of the school/home milieu.

Martin and Ruth were the parents of Brandon and Luke, who attended Bunjil. Ruth and Martin agreed to be interviewed when they became aware (via Wayne) that participants were being sought for this study. Interview questions were used for the parents and these are presented in Appendix C. There were two older siblings that have since graduated from Bunjil and moved on to TAFE and university. Martin was a builder by profession and Ruth mainly tended to the day-to-day needs of the family. There were two older siblings that had since graduated from Bunjil and moved on to TAFE and university.
The family had always maintained an interest in sustainability because, as they reported, they “composted”. However, the main catalyst for their increased interest in sustainability and the environment was the appointment of Wayne to the coordinator position:

Ruth: I mean we’ve always had a compost bin at home. But also with [Wayne] coming to the school … that’s basically where it really became an impact on the kids, [then this] followed on with us at home. Because we thought, it’s no good the kids learning something unless we’re going to put it into practice, and acknowledge the fact that, as the parents, we need to show that we’re doing the right thing. (Martin & Ruth, 00:02:23)

Martin added to this:

Well, as a family, we have always been conscious of the environment, but I was highly impacted by the school [Bunjil]. The school brought it all home and made it worthwhile [us] doing the right thing. It made a big impact on the kids that they brought that home to let us know that, hey, we’re doing the right thing dad. We just need to step it up a bit with water tanks and all that stuff. (Martin & Ruth,00:02:57)

Martin explained that he was born overseas and that it [the environment club] brought back childhood memories of having chickens in his back yard, adding that this was an experience he wanted for Brandon and Luke. Martin explained that it was not always easy to be a sustainable family:

Because sometimes you feel like a hillbilly, because you’ve got chickens in the backyard, and we’ve got a very strong veggie patch, and a well-established garden. … It doesn’t worry [us] what they think. We know that’s what life was [my italics] about and life has done a circle and we want to get back to that. (Martin & Ruth, 00:08:41)

I asked Martin if his background in India had any bearing on the way that he viewed things. He replied:
Yes it [does]. This is why I wanted the chooks [chickens]. This is what I was brought up [with]. I wanted the chickens. [Ruth] wasn’t too keen on it as she said in her last interview, because this is something that is very close to my heart. [These were my] childhood memories. (Martin & Ruth, 00:09:00)

Their statements indicated that the family was, in a sense, predisposed to a connection with the sustainability milieu of the school, and that the social dynamic of their children was a catalyst for the manifestation of this relationship. Some of the genesis for this was when the family kept animals, with some influence from their environment teacher at primary school. However, it was the sustainability program at Bunjil that was clearly the dominant factor driving the sustainability factor for this family at home.

4.4.2 Intergenerational influence: the child-parent axis.

The influence that their sons had on Ruth and Martin was also evident. For example, Luke asked Ruth not to buy products containing palm oil at the supermarket and insisted that he would not eat any food containing palm oil because it was harmful to primates’ habitat. In another example, when Martin built some decking at home, Brandon insisted that local timbers be used instead of rainforest timbers. Martin explained that he was accustomed to Luke and Brandon coming home and “telling [me] what to do”, adding:

Actually, I look forward to it because there are things that they’re bringing home from school that we wouldn’t have otherwise given a second thought. Or it jogs our memories into, wow, we did that as kids, yes that’s right to do, we can still do that now. (Martin & Ruth, 00:07:55)

The above responses suggest evidence of an intergenerational effect (Ballantyne et al., 1998) and showed that positive forces can emerge from the environment club that influence parents toward a more sustainable, and arguably an ecocentric lifestyle. Environment club students could motivate and mobilise parents via direct action (and requests) to become connected to
the Earth, to reduce their ecological footprint, and to become part of the school sustainability community. Some of this influence also derives from the desire of parents to be seen to be involved in their child’s extra-curricular choices.

4.4.3 Ecological resilience.

The interview data from Martin and Ruth showed that they saw their sons as more confident about environmental issues after being in the environment club, supporting the proposition that the club engendered ecological resilience. Ruth provided some evidence for this view:

The other thing is too, with the kids being involved with [the] environment club, especially [Luke] who has always been quite a quiet person, it has actually given him confidence. He feels strongly about it so he’s got the confidence to talk about things, be part of a group. Normally, he would have perhaps shied away from something like that. (Martin & Ruth, 00:13:04)

Part of resilience was a reprioritisation of interests by the student. Ruth talked about Brandon’s experience:

Every term there’s a Working Bee, and usually there’s a project that the [environment club] is actually hoping to achieve with that Working Bee, and the kids are quite excited about it. And last time, Brandon had to go to his part time job, and he had to leave early. He was actually quite disappointed that he couldn’t stay for the Working Bee, which was on a Sunday, and it was his own time for doing whatever he wanted to, and he was actually quite put out by that. (Martin & Ruth, 00:15:01)

Participation in the environment club enabled some students to be more resilient about their environmental views, and this commitment to the environment was part of deep ecology. Ruth expresses this commitment, “Oh, they love it, the kids absolutely love it. I mean not everybody would get up early I suppose to come to school to do something unless they
enjoyed it, and they do enjoy it” (Martin & Ruth, 00:15:42). On one occasion, Brandon presented a talk on the environment club with Wayne to 300 or 400 men and Ruth commented “even though he’s a confident child that’s a big thing for someone to do” (Martin & Ruth, 00:16:24).

4.4.4 Limits to growth, use of natural resources, Spaceship Earth.
In Questions 5 and 6 of the interview, I described the Spaceship Earth metaphor (Ellyard, 2011; Höhler, 2015; Imura, 2013; Peterson, 2015; Rome, 2015) where humans existed on the Earth with finite resources. I asked Ruth what she thought about the fate of the planet in the context of limited natural resources. She expressed concern for her children and grandchildren:

The world can’t keep going the way that it is. We’ve spent a lot of our life living here, but our kids have got a life to live, and their kids. Humans are selfish now. They’re thinking only for themselves. They’re not thinking about for the future. And no matter how well science can solve our problems, humans have to take responsibility for their actions, and if they don’t we’re leading for a life of disaster. (Martin & Ruth, 00:34:02)

Ruth went on to describe a gloomy fate for the Earth, but on balance, still maintained some optimism about the future: “I think there is always a solution to be found. It’s just being able to educate” (Martin & Ruth, 00:35:13). One reflection from Ruth about the Earth was metaphysical: “The Earth is a living, breathing thing. It is telling us, it is warning us. But we are still so caught up in the dollar signs as to how I can make more money. And we forget about the planet” (Martin & Ruth, 00:38:28).

Ruth tried to limit the purchase of consumer goods for Luke and Brandon and had a balanced view on the issue: “Our kids don’t go without. They don’t have everything that everyone else has, but they don’t go without, they don’t miss out on anything” (Martin &
Ruth, 00:48:04). While the latter comment goes against the anti-neophilia from Luke above (Luke, 00:17:03), the family appeared to have a well established culture of recycling, reducing, repurposing and reusing resources that was innate to some extent, but also supported by the links to Bunjil and Wayne.

4.4.5 The deep ecology spectrum.
The responses from Martin and Ruth to the Deep Ecology Spectrum showed that the simple binary of shallow versus deep ecology was inadequate at locating their tendency for ecocentrism or anthropocentrism. Ruth (DES 8.5) said, “Well, I’d like to think around about the eight or nine. I’d like to think that” (Martin & Ruth, 01:06:20). “I would like to think we’re there now and can improve even further” (Martin & Ruth, 01:07:24). Ruth regarded herself as being at a score of eight or nine largely because she saw herself in the context of the planet, but agreed that as a species we were quite greedy. Martin (DES 0) had the view that humans were sitting at zero because we were the dominant species, but agreed that this imbalance should be redressed toward ecocentrism: “I would like to be six or seven. What the planet allows me to do, and why we were here today because of science, and because of ecology, and because of human domination humans were probably a zero right now” (Martin & Ruth, 01:08:41). Both Ruth and Martin struggled to locate themselves on the DES, partly due to the dilemma of wanting to be ecocentric but realising that this was an ideal state beyond present hope.

4.5 Bunjil principal (Kara)
The interview questions for the principal are presented in Appendix D.

4.5.1 Socio-ontology and situated identity.
Kara was appointed as principal at Bunjil in 2009, having held a similar position for eight years at another secondary college. The sustainability program at Bunjil was established
when Kara arrived, and it was evident from her interview that she embraced the environment club and the responsibilities of maintaining a sustainability culture at the school. While Kara was unaware that the sustainability coordinator position was at a Leading Teacher level, the highest teacher classification in Victorian state secondary schools, she clearly gave unequivocal support to Wayne.

**4.5.2 Student environmental achievements and Kara’s son.**

Question 2 asked for a response to the achievements of the students in the environment club, and here Kara mentioned her own son;

> I have a son who’s seven, so obviously as a parent as well as an educator, I think it’s really critical that we talk about these things. But also [to] normalise some of the things that we’re trying to put into action, so that they just see it as a part of everyday life that we need to conserve things, and recycle things, and take care of what we’ve got. (Kara, 00:03:05)

This was an interesting statement because it highlighted the principal’s own parent/child relationship in the context of the environment, indicating that the points of focus for the sustainability milieu were not always at the school. The use of the word *normalise* also sent a significant message by seeing this as a desired direction for sustainability education. There was some danger in attempting to define what was *normal* and what was *abnormal*; however, in the context of Kara’s response she seemed to be promoting the idea of living sustainably as an everyday thing; a daily routine.

**4.5.3 Kara’s initiative: working bees.**

Kara’s interview was brief because of her commitments as principal. The interview questions (see Appendix D) for her were therefore designed to get a broader view of her role in the sustainability program at Bunjil, and how this might shape her deep ecology philosophy.
Kara introduced working bees at Bunjil and reflected on their success at attracting parents and students to do environmental work:

I was involved in all of the [urban forest] planting [there]. So, when I came here I introduced working bees. We hadn’t had them before at [Bunjil], so that’s been a really critical part of that whole process and it’s something I’m really proud of. And I haven’t seen in my previous school, where students will turn up to working bees without their parents. … Normally they’ll come with their families, but here I’ve actually seen students coming by themselves, which says something about the work that [Wayne] has been doing as well. So, that’s really good. (Kara, 00:05:18)

She was quite proud of this move and she participated with her son in the working bees. This outcome was to her, a measure of the success of the initiative:

Yeah, there’s a real camaraderie [at the] working bees. We’ve got lots of the same families turning up with their children. I bring my son [to] every working bee. So, he’s always out there as well. It’s just lovely to see staff, students and parents working together. And when we planted in the urban forest [it] was very exciting, because we could just see how many trees we’d planted in one sitting. And I think at that time we had about 80 or 90 people turn up to that one, so that was a really amazing thing. But also the wetlands, all of that was planted out through working bees and the front gardens [as well]. So, it’s just wonderful to see those areas coming along, and often people have their favourite spot that they want to work in when they come to working bees. Because they’ve worked in there before, so it’s a great community feel. (Kara, 00:06:27)

Another benefit for students getting involved in sustainability working bees was feeling ownership of the forest and protecting the trees from vandalism:
Yeah, there needs to be that ownership of everything of the grounds; the facilities. And if you can get students involved in that ownership, that’s really important. They’ll all take care of it.

(Kara, 00:07:40)

4.5.4 Student as ecophilosopher.

In Question 3, I asked Kara to reflect on the capacity of students to have a deeper, more philosophical connection to the Earth. Kara agreed that it was possible but that it was more difficult in secondary schools than in primary schools:

I’m not a philosopher but I know that VCE philosophy is not taught in a lot of schools, [and] some of our students in the past have studied that as a university subject in Year 12. I’m sure that they can think deeply about issues. I don’t know that we give students enough credit sometimes for how deep they can think about certain things. (Kara, 00:08:21)

4.5.5 Managing the sustainability program.

In Question 4, I asked Kara to comment on the sustainability leadership team and which factors were important to the success of the environment program:

I think you’ve got to get your teams on board, and I guess that’s [Wayne]’s challenge as well as the head of sustainable practices. So, it’s a matter of working with area of learning heads to have a look for those links where they can incorporate it into a busy curriculum already. It’s a challenge, but it’s something that can be done. And I think here at [Bunjil] we’ve been working on [the] three cross-curriculum aims [including] sustainability. So, it’s nice to see that the things that we’ve been working on over the last five years fit in with these documents, and with the aims of AusVELS. But it is a challenge because of time for planning and looking at the bigger picture. (Kara, 00:11:02)

Kara was interested in encouraging teachers to source inspiration for sustainability learning materials from within their own textbooks and existing resource pool. Kara explained:
For example, science teachers are already developing their new curriculum because AusVELS has meant more work because it’s new curriculum documentation. So, people, when they’re faced with that challenge, will plan what they know first. In the other learning areas they need some ideas about how they can incorporate those things into their curriculum.

(Kara, 00:12:38)

Kara offered some reasons for why teachers might find it daunting to incorporate sustainability into their teaching, and she explained that teachers put the task aside in favour of known curriculum territory. According to Kara, Wayne provided teaching materials about sustainability for other teachers to use but that teachers’ commitments to writing the new AusVELS curriculum, for example, took priority. It appeared that the efforts by Wayne to utilise the learning area heads was not an effective strategy, and that it was not trickling down to classroom teachers.

4.5.6 The deep ecology spectrum.

Kara gave herself a DES score of 9.5 because:

My beliefs [are] just to have concern for all in nature, and it’s been part of my grandma’s family upbringing as well. Because as I said before, we’re all linked in the ecosystem … So, when something does become extinct there’s going to be other issues with other parts of the chain, I guess. (Kara, 00:33:05)

Kara said that she was religious and that she did not necessarily agree with humans dominating the Earth. Her response was consistent with biospherical egalitarianism and she understood the interconnectedness of nature.
4.6 Socio-ontological influences and interactions around ecocentrism

(Meta-meta analysis).

The mind map presented in Figure 4.2 was a socio-ontological picture of the entities forming the social milieu of the student in the Bunjil environment club. It depicts the “beings” within the social structure of the greater existence of all entities, constructing this around the hub or core being of the environment club student. This depiction was not an arbitrary choice; most of the data were from students, and it was their world and biographical trajectories that mattered most to a critical, social outcome that focused on the world that they fashioned for themselves.

Figure 4.2 grounds the theories emerging from the data in the social dynamics of each school in the study by placing the environment club student at the hub of the diagram and all of the people that have social influence over or interaction with that student. In an ontological sense, this milieu of entities and forces between them represents the processes in the entire field, but not all of these were visible to the environment club student. For example, there was no evidence that the club students were aware of teacher-teacher tensions. These forces (some negative tension, some positive) were included because there was the possibility that they might influence teachers and principals to become pro-environmental (but further work was needed to confirm these relationships).

The processes (denoted by arrows) in the figure can be active (or interactive and typically mutual), or they might be an influence from one entity over another. Those entities closest to the hub have greater influence or interaction over the student with regard to environmental issues (as denoted by thicker double-headed arrows), and weak interactions were denoted by thinner or dashed arrows and were positioned further from the hub. Ultimately, the sum total of interactions with these entities contributed to whether the statements of the student were
ecocentric or anthropocentric in nature. In the vertical direction, important entities that have
more relevance to the views of the hub were located toward the top of the diagram.

Figure 4.2.
Socio-ontological features of the Bunjil school sustainability community
This visual summary of the ontological view showed that the sustainability coordinator was a pivotal figure in the analysis, with the parents, siblings and VCE curriculum as strong secondary factors. In the case of the family, there were insufficient data to determine social forces toward sustainability. However, it was likely that in some cases, parents took the lead in forging a sustainability focus for the family. At Bunjil, there was no evidence that VCE commitments deterred students from participating in the environment club. Other competing entities (not shown in Figure 4.2) included extracurricular clubs such as the SRC (student representative council), instrumental music lessons, and sporting clubs. Childhood experiences (i.e., beach holidays) and other experiences with animals have a distinct and positive influence on becoming a member of the club, as did prior sustainability practices at the students’ primary school. This empathy for nature through animals was associated with ecocentric statements.

Club students had set themselves apart from other students because of their knowledge of environmental issues, but not in an elitist manner. The club students were somewhat forgiving of this situation, stating that the regular students were ignorant, lazy, immature or apathetic because they couldn’t see the big picture. This was particularly the case with younger students, with the phenomenon narrowing in senior years.

Kara’s response indicated that teachers other than the sustainability coordinator were less likely to adopt sustainability practices, but that Science teachers might have some advantage because of the subject content. In some cases the club students claimed that other teachers had always placed their own curriculum ahead of any sustainability initiative at the school. Practices like turning off lights, reducing paper use, recycling paper and batteries, and a general interest in sustainability initiatives were usually adopted by teachers if this does not impose on the core business of teaching a subject.
The principal of the school figured little in the responses of the club students, other than that the principal being part of the school as an institution that was held to be a sustainability model. However, upon scrutiny via the meta-analysis, it became clear that the “principal as mother” was a noteworthy feature of her part in the sustainability culture of the school.

Some students’ responses indicated that the sustainability coordinator operated within a school ethos that enabled the sustainability policy to be promulgated throughout the school. However, it seemed that students perceived the coordinator as often having to push for that message to be implemented when it came to staff disinterest in sustainability.

The World in Figure 4.2 was included to highlight social influences from sources such as the Internet, social media, television, YouTube, podcasts and advertising. These sub-entities may have had little influence in the case of Lucas (who had neither television nor radio at home), but other participants demonstrated an understanding of certain social pressure coming from advertising, in the sense that having the latest gadgets was seen as being cool. The club students were aware that this neophilia was bad for the planet because it consumed resources at a faster rate than what was adequate for human needs. The question of environmental disasters on the other side of the world (i.e., the BP oil spill in the Gulf of Mexico in April 2010) did affect club students, even though it was on the other side of the world. It was unknown if this was because of the empathy that club students had for the coastal birds, or if it was because of the worldwide coverage that followed the disaster.

The overall picture emerging from the analysis of the entities can be described by the five core concerns in social psychology (De Lamater et al., 2015, p. 3):

There were five core concerns, or major themes, within social psychology:

1. the impact that one individual has on another;
2. the impact that a group has on its individual members;
3. the impact that individual members have on the groups to which they belong;
4. the impact that one group has on another group; and,

5. the impact of social context and social structure on groups and individuals.

From these findings the next stage of the analysis was to determine how this impacted on the emergence of ecocentric/anthropocentric views from the participants.

4.7 Environment club projects

Bunjil had a reputation for being a school with a strong sustainability focus, which was exemplified by the number of projects that had been completed by the environment club and through the reputation of its coordinator, Wayne. These projects led to state, national and international awards for the school, for the principal, and for Wayne. Key projects completed included:

- solar panels;
- large wetlands habitat for frogs;
- urban forest;
- mindfulness meditation centre;
- paper recycling; and,
- battery recycling.

Most of these projects were referred to in the statements of the participants when they talked about examples of: their commitment to school sustainability; being part of a group that protected the environment; and when they were being in tune with the Earth. Many of the responses relating to club activities were ecocentric and fitted in with the component parts of the deep ecology philosophy. In terms of segmenting the data, often with open-ended interviews the data were fragmented, but there were still themes and threads running throughout the statements that related to ecocentrism. Some of this was evoked when the interview turned to neophilia and the love of consumer gadgets like smart phones and tablets.
Club students often viewed their mobile (cellular) phones as symbolic of peer pressure to be cool - a weakness of character that lead to inequitable use of natural resources.

Question 2 of the students’ interview questions specifically targeted the club students’ experiences of being in the club by asking, “How does it make you feel when you work on an environmental problem and end up either solving or reducing the problem?” The students said the club was fun, they felt good about doing something for the planet, they liked helping provide habitat for animals, they felt special, and they felt a sense of achievement. All of these outcomes were emotional responses not inconsistent with ecocentric ideals. Were they acting as “deep ecologists” or were they just having fun? I cannot conclude from the data whether one, none or both questions were correct, but it did seem that environment club students saw themselves as transformed into more environmentally connected and more active members of the community. The Naessian description for a deep ecologist was not so exclusive that the students in this study would be unwelcome members.

Question 3, “Does working toward a solution make you think differently, more carefully about what impact you and the people around you have on the planet?”, investigated if there was a shift in club student thinking that might serve as evidence of the development of an ecological self; a self that has firm commitments to an ecocentric ideology. Indeed, there was a sense of transformation in the students that constituted a generational change in thinking whereby they felt that it was their turn to take care of the Earth and come up with lasting solutions to environmental problems. The concept of self has long been a source of interest to social psychologists (De Lamater et al., 2015; Stainton Rogers, 2011) and was relevant to the sorts of actions, beliefs and locations of the student as a social being. While a thorough discussion of the self was beyond this thesis, the various kinds of self will be addressed in the next section on modelling.
4.8 Ecocentric statements from Bunjil students

The idea of the *ecological footprint* was embraced in Question 3 and it addressed two points in the deep ecology ideology; biospherical egalitarianism and resource depletion. There was universal agreement that resources were not just for humans and that animals had the same rights to habitat and that their homes and sources of food should be protected from human development. Club students said that they tried to minimise their footprint and were well aware that other students and teachers seemed to have little idea of their own impact on the planet.

Question 4, “Thinking overall, about teachers and other students, if some don’t really care that much about the environment, how do you think and feel about that?” investigated how resiliently the club students would defend their point of view. The students expressed awareness of which practices in the school wasted resources, contributed to greenhouse gases, and caused pollution. Flagrant waste annoyed and saddened them and they did make efforts to stop the problem. This align with the view of the fifth point in deep ecology, “Fight against pollution and resource depletion” (Naess, 1973, p. 97). Allison, for example, spoke of engaging in debate with a cousin over the issue of climate change and seemed quite confident in her ability to take on the challenge. Luke was more reflective on the topic and saw that other students might not share his vision. He even claimed that he would take a beating if necessary to stand up for his views on protecting the environment.

Some metaphysical statements were elicited from Brian when he talked about the vastness of the universe and “worlds within worlds” and an admiration of “the beauty of everything”. These views were not contained within the formal works of Naess but were part of the cosmic picture painted by the deep ecologist Freya Mathews (1991) and in other interpretations of deep ecology (Devall & Sessions, 2007). In the context of discussing how traditional people related to the land, Brian agreed that the Earth could be considered “alive”,
a view compatible with Naess’ perspective that he himself was part of his beloved mountains (Naess, 2005h).

The topic of limits to growth was introduced in Question 5, “Some people try to solve environmental problems just so that we can have more resources for humans. What do you think?” and again in Question 6, “Some people, called Deep Ecologists, think we should not keep using more and more resources, and should put the Earth first. What do you think?” The responses were in agreement with the notion that there were a limit to the size of the population and that we would eventually run out of resources. Some responses indicated that we would end up “growing up in a toxic wasteland”, and if we kept going the way we were (in terms of resource use) that “there’s going to be no planet”. Lucas also asked, “[do we] then move onto a different planet?” The club students realised the need for restraint in resource use and the general mood was that something could always be done, no matter how sad the problems made you feel.

4.9 Anthropocentrism and statements from Bunjil students

Question 11 asked students to comment on the deep ecology spectrum (DES). Students adopted an average position on the spectrum of 6.3, which represents a skew toward the ecocentric end of the DES. The typical explanation for this was that resources should not be just for humans; they should also be for other creatures. Allison said that we depend on animals in all sorts of ways and Samantha had empathy for animals stating that we should stop killing endangered species and cease destroying their habitat. Students toward the middle of the spectrum had a view that it might be unrealistic to expect humans to give up every resource they were accustomed to utilising, so a middle ground seemed more appropriate. Others, such as Lucas, said that if we did not care for animals then we did not care for ourselves. In the end, humans would suffer as resources became depleted, poverty would become widespread, and human greed would eventually consume the planet. The
students believed that anthropocentrism would eventually kill the Earth and therefore lead to the end of human existence on Earth, taking the ecocentric position of putting the Earth first.

4.10 Bunjil chapter summary

The findings for Bunjil have shown that students joined the environment club because their friends or siblings either wanted to or had already joined the club, or they were encouraged to join by the sustainability coordinator, Wayne. Students had pride in the accomplishments of the club (i.e., the frog bog, tree planting) and identified strongly with the Wayne and the other students in the club. The love of animals and a desire to protect wildlife were also reasons for joining the club.

The students were encouraged by Wayne to have strong emotions about the environment and to be proactive in protecting the Earth. This generated an encouraging environment for student agency and ecological resilience. Parental involvement in sustainability working bees were strong, and in the interview with parents, Martin and Ruth, they conveyed their belief that Wayne goes to great lengths to establish strategic partnerships with the parents of the club students. Wayne used an entrepreneurial approach to sustainability projects, obtaining funding from outside sources to facilitate club work. All of these factors appeared to contribute to an ecocentric approach to sustainability practices, especially with the urban forest and wetlands projects designed to bring nature into the school grounds. The students appreciated the problems associated with excessive consumerism, and some were aware of the problem of palm oil consumption diminishing wildlife habitat. Bunjil students were aware of the difficulties in moving toward ecocentrism, and understood that lifestyle sacrifices will be difficult for many people. Responses to the DES were mixed at Bunjil, with some students stating that resources should be shared equally with animals, and that a balance was preferred between human and animal needs for natural resources. The DES score for Bunjil was 6.375,
showing a skew toward ecocentrism. This figure aligns closely with the responses from the interview questions.
Chapter 5. Karatjurk

Karatjurk was a girls’ state secondary college (Years 7-12) in metropolitan Melbourne. The school catchment area had a mixed demographic and culturally diverse population. The Karatjurk school catchment area had a predominantly middle-class population\(^5\), comprising mainly of university educated professional workers (nearly 50% more than for Bunjil) and managers, with low numbers of labourers (3.9%) or machinery operators (1.8%), which was half the national average. Average income was about 10% above that for Bunjil and nearly 30% above the national average. The number of LOTE persons was near the national average. The number of overseas-born people was about 5% above the national average (34.5%).

The sustainability coordinator at Karatjurk, Adam, was employed part-time (0.6) as a classroom teacher, with nine years teaching experience in the classroom at Karatjurk, and he had a number of roles within the school:

- To manage and organise the environment club.
- As an executive officer for the school/community EcoGroup.
- As a classroom Science and Biology teacher.

5.1 Demographics and background to Karatjurk participants

The environment club at Karatjurk was critical to the management of sustainability projects and environmental policies at the school. Membership of the environment club is open to all students in the school, and the club actively seeks new members from all year levels at the school. Karatjurk met its obligations under Sustainability Victoria’s ResourceSmart schools initiative (Sustainability Victoria, n.d.) by appointing a coordinator and promoting sustainability as an extra-curricular activity. In addition to the environment club, Karatjurk

\(^5\) Australian Bureau of Statistics 2011 census data: Mean annual income for Karatjurk is AUD 56,680. 30.2% of Karatjurk catchment have a Bachelor’s degree. LOTE at home is 26.6%. Main employment is professional (39.8%), managers (16.4%).
also established a sustainability group, EcoGroup, a body comprised of students, staff, parents and interested members of the community. Members met monthly to provide counsel and support to the school via Adam. The EcoGroup operated as an executive body that applied school environmental policy, conceived and promoted projects and working bees at the school, and effectively decentralised the power of the sustainability coordinator. Through the efforts of the environment club and the EcoGroup, Karatjurk had established and implemented a number of environmental projects, including Murnong planting, Nude Food Days (rubbish-free lunches), a Frog Bog (habitat to recover endangered frog species), and a Pedal-powered Cinema. The EcoGroup met in evenings to facilitate parental engagement and accommodate parents that had daytime work commitments.

The fourteen participants from Karatjurk included nine environment club students, two teachers, the sustainability coordinator, one parent (Crystal), and Crystal’s son (Thomas) who was not at the school but was included in a family interview with Crystal and her daughter (Claire) who was of one of the environment club students.

5.2 Karatjurk students

5.2.1 Situated identity and the environment club.

There were nine students in the study: Megan (Year 9), Gabriella (Year 12 Vice-Captain of the environment club), Mary (Year 8), Kayla (Year 9), Lauren (Year 9), Grace (Year 10), Rebecca (Year 11, Co-Vice-Captain of the environment club), Amber (Year 11, Co-Vice-Captain of the environment club), and Claire (Year 11).

Karatjurk differed from the other two schools in this study in that it was a single sex (girls’) school, and many parents of the Karatjurk environment club students were university qualified professionals such as architects, teachers, or nurses. Findings from Karatjurk suggested that gender was an important factor in the situated identities of girls, and could be
an influence on sustainability practices and deep ecology. For example, Kayla and Lauren were close friends who, without prior notice from the coordinator, asked to be interviewed together because they were nervous and would feel better with each other’s support. The interview with them was brief because they arrived late, so the data from their interview was of limited value, but their bond as friends was apparently strong.

Megan (Year 9) joined the club in Year 8 through a friend who was the Middle-school Captain of the environment club:

Well, my friend said, “Oh, [Megan] you should come along to the environment club. It would be fun”, and I came along and I enjoyed it, because I knew that I was helping out the Earth. … Well, it's better than sitting around at lunchtime doing other things, just talking with your friends and stuff, so I was like, okay, I’ll help. I’ll do something. So, I joined the team and it’s going very well so far. (Megan, 00:02:02)

Joining the club was also important for Megan’s self-esteem: “Well, I know that I’m doing something now, so it makes me feel a little bit better about myself” (Megan, 00:02:36).

Siblings were also an important social influence toward joining the environment club [Gabriella]: “I only joined the team because my sister was in it. But then I’ve just continued to love it” (Gabriella, 00:01:44). Megan’s responses suggested that friendships could be critical in getting students to join the environment club.

Another finding regarding situated identity was student attendance at the Australian Youth Climate Coalition (AYCC) conference in Canberra. Grace reported on her AYCC experience that, before she went, “No one really talked about it [I assumed her fellow students at Karatjurk]. I barely knew what climate change was, let alone how much of an impact we as individuals have on the planet” (Grace, 00:22:35). It was evident from Grace’s report to the EnviroClub that the experience had made a significant impression on her.
The EcoGroup also organised various projects (like the Pedal-powered Cinema) and the students from the environment club were central to the success of every venture conceived and implemented by the EcoGroup. Grace spoke about being involved in the *Moonlight* Pedal-powered Cinema. She had a role as Master of Ceremonies at the event, an opportunity that gave her a greater understanding of the production requirements of the event. It was clear from her responses that Grace had high regard for the effort and dedication that Adam put into the Moonlight Cinema project.

Amber also participated in the Pedal-powered Cinema, and was quite proud of her achievements as Co-Vice Captain:

“It’s empowering to do these things and well not just to do them but [also] to take action in the school. We made a list during class about everything that we could do to improve the school or what was going to help us get a five star rating and forest came up. So, we decided to convert the area into forest. (Amber. 00:04:41)

Claire was a Year 11 student who had recently joined the environment club at the time of her interview. Claire had an array of interests that included scuba diving, snorkelling, running, and she generally liked beach activities. She saw the club as one that was active: “We organise lots of events, and the people who lead it were sort of really inspiring and good motivators” (Claire, 00:00:29). Her reason for joining was: “I’m interested in environmental issues and sustainability. But I finally got around to joining the team, I think at the start of this year, and I just wanted to become more involved with the school’s effort toward sustainability” (Claire, 00:01:39). Adam persuaded Claire to join at a time when her friends were not involved: “it’s kind of hard when none of my friends were so interested in environmental issues and sustainability … You know when you start something and you don’t want to go alone, so I tried to drag all my friends along, but they’re not really interested” (Claire, 00:02:11).
The data from the students indicated that they were forming their identity around the environment club, and that friendships formed within the club were part of this process. The sustainability coordinators endeavoured to recruit new students to the environment club, and they played a key role in fostering student identity. The sustainability projects established by the coordinators fostered an ecological identity in club students.

5.2.2 Other students and teachers outside the environment club.

Question 4, “Thinking overall, about teachers and other students, if some don’t really care that much about the environment, how do you think and feel about that?”, generated a variety of responses. The question was designed to determine the level of opposition to sustainability at each school, and whether negative views on sustainability from others adversely impacted the environment club students. Students were asked to comment on how they felt and thought about other students and teachers who were not part of the environment club or the school’s sustainability community. In particular, they were asked to comment on the teachers who might have been sceptics, disinterested in the environment, or non-believers (and to indicate those who thought global warming was not scientifically proven). As an example, Megan thought that most teachers cared about the environment, even if they did not make the same effort as Adam: “I reckon that all the teachers care about the environment, like in how our school was [promoting] the environment” (Megan, 00:09:57). According to Megan, the same was not true for students: “I think that some of the students don’t really care because sometimes you just see their rubbish thrown everywhere. I think I know a lot more than them and I think that they should join the environment team” (Megan, 00:09:57). Megan’s attitude might have seemed to be elitist but it did not come across this way. My impression was that it was just a sense of being different to the general population of the school. When students littered the environment it made Megan feel sad:
It just makes me feel, like, unhappy and upset because that rubbish will probably end up in the streets, but then I usually pick it up so it’s all good. But from just that action of them doing that … it’s just I don’t know. It just makes me sad because it’s going to keep on wrecking the Earth. (Megan, 00:11:15)

Mary has not had the same experience as Megan but agreed that some students viewed the work of the environment club as a waste of time, whereas staff were generally supportive:

“The whole school gets involved in the recycling and fundraisers for solar panels. So, the staff all help out and were aware of what we’re doing” (Mary, 00:09:01). Rebecca reported that other teachers were supportive of her commitment to the environment club:

I think that they all support what we do. I don’t think there’s anyone that’s against it. I mean, they maybe don’t care as much as I do and [Adam] does, but they’re not against it. They always support it. … If I’m in English and I have to write a speech I will always write about environmental issues, like always. And my teachers are always very supportive because they know that that’s quite important to me. (Rebecca, 00:12:17)

Amber affirmed the view of other club students that Adam was pivotal to the success of the sustainability program:

I think the teachers are pretty supportive of what’s happening. I hear that [Adam] has gotten them to walk to school in the morning instead of taking their cars. And in winter it’s freezing. And he’s persuaded them to give up things like hair straighteners. So, I think the staff is pretty much on board and it’s great to have a school community like that. (Amber, 00:11:32)

According to Amber, some students supported the environment club initiatives but that there were always a few that still littered, and these included students from all age groups:

If they are involved in the environment team they are very passionate. If they abide by what we do, like the Pedal-powered Cinema, and they come then they are concerned about the
Claire was aware that other students may not be aware of sustainability practices, so she would try and change their behaviour:

A lot of my friends are … not really interested in sustainability. But if they’re littering, or if they forget to turn a light off, or leave the tap on or something, I always call them out on it.

(Claire, 00:17:35)

Not many students will step into a situation that might generate antagonism so Claire was in the minority, even for a member of the environment club. Claire knew that it was not an easy approach: “They usually, grudgingly oblige” (Claire, 00:18:26).

A few teachers worked closely with Adam, including the Outdoor Education teacher Angela (see her interview in Section 5.4), and the chemistry teacher (not interviewed) who did the waste audits for the EcoGroup.

To summarise this section, the environment club students at Karatjurk had varying opinions on others outside the club, but generally they accepted that not everyone outside the club might hold environmentally friendly views. Only one club student (Rebecca) reported that subject teachers adopted sustainability practices, and they generally supported school-wide sustainability projects. There was also the view that non-club students of all ages were littering and only pick up rubbish “begrudgingly” when asked by club students.

5.2.3 Ecological resilience.

Ecological resilience at Karatjurk only came up in the interview with Crystal, the parent of Claire in Year 11. I asked Crystal if she thought that Claire had grown stronger through the environment club and would she (for example) stand her ground in a climate debate. Crystal responded:
She certainly wouldn’t go toe to toe with someone. She would state her opinion probably quietly but surely and certainly not give over. But she wouldn’t ram her views down other people’s throats; she’s just not that kind of person. But she was on the Australian Youth Climate Coalition for a year or so, and ran an event locally at a café to try and raise money for solar energy on the rooftop of the café. (Crystal, 00:22:18)

Responses from the other Karatjurk students in the previous section revealed mostly passive, emotional reactions to littering, with Claire being the only participant who was proactive about the environment.

5.2.4 The deep ecology spectrum.

Karatjurk had a school-wide implementation of sustainability, promoted via the environment club similar to Bunjil, but there were differences in student responses between the schools. Most participants at Karatjurk chose ecocentrism over anthropocentrism, and in part, I postulate that this was because the senior environment club students attended the EcoGroup and represented the school at the Australian Youth Climate Coalition (AYCC). The two students (Gabriella and Rebecca) that attended the AYCC were confident and mature at interview. They presented reports to the EcoGroup in the same manner – there were no similar students at Bunjil with the same demeanour. The students at Bunjil were enthusiastic about Wayne and the environment club, but not all displayed the higher order skills of Gabriella and Rebecca. This might be an artefact of the data since Bunjil students were not observed outside of the interview room (as was the case at the EcoGroup meetings).

Each participant at Karatjurk rated himself or herself on the Deep Ecology Spectrum. Megan chose a DES score of 5 to 6, “because humans are important and they do need things, but they’re also animals. You’ve got to care for the animals as well and you can’t just say that we’re the only things living on this Earth, and you can’t just do everything for yourself, so I
reckon, yeah, so that’s why” (Megan, 00:32:21). Megan espoused a common thread in the data - that students were motivated to join the club by a love for animals.

Gabriella responded with a score of 8 or 9 and had the following view on anthropocentrism:

Well, humans are animals as well, so we’re kind of in that category, but I just can’t commit to the 10 [score] just because … we do need more resources than a wallaby, because we’re more advanced in our thinking and our … I don’t have the right words today. But we do need more resources than some of the animals, but everything does need to be shared if that makes sense. So, that’s why I can’t commit to the 10, but I’m close … They [animals] don’t need to build houses. (Gabriella, 00:36:24)

Gabriella engaged in a dialectical struggle about how ecosystem resources should be shared; humans were just like other animals but somehow, biological egalitarianism was not going to work in her mind. Her view was similar to that presented for Allison (Bunjil) and Luke (Bunjil) where the love of animals drove their score toward ecocentrism, but the reality of abandoning current human consumerism makes a score of “ten” untenable.

Grace had difficulty finding the right words to explain her position: “I’m kind of between 4 and 6, but not exactly in the middle” (Grace, 00:34:50). “Humans, to a degree, have [evolved] differently to animals. We’re the ones that, if we really want to do something, we’re not going to go out and talk to an [non-human] animal” (Grace, 00:35:04). When I queried if this gave humans privileges, Grace responded:

I don’t think it gives them a special privilege to use the resources, but I think that if we’re going to learn how to use the resources, it would be a lot easier to start off with the humans and work toward helping [animals]. I don’t know how to word it, I know what I want to say but it’s not making sense. (Grace, 00:35:36)
Grace then said that animals too could adapt:

My views can be easily [changed] to thinking the opposite way. But animals can just as easily adapt, and have easily adapted to their surroundings, and new surroundings, and different climates, and different habitats that they could survive just as efficiently as if there were no humans, [or] if there were humans. (Grace, 00:36:34)

Rebecca’s response demonstrated a good understanding of interconnectedness in nature and was essentially a biologically egalitarian view. She responded with a score of 10 as follows:

I don’t think you can put humans at the centre because it just doesn’t work. The world does not work that way [where] you can just take all the resources for one species. It just doesn’t because all the Earth systems rely on each other. Humans are more intelligent than a lot of other animals, but that doesn’t necessarily mean [that] they should be left out of everything. (Rebecca, 00:34:07)

Amber selected 7 as a score, stating that anthropocentrism was undesirable and took the view that everything should be shared equally (between living things).

Claire chose 4 or 5, but would like to be 8 or 9: “I think it’s difficult where we live now in a society where everything was so human focused, and everything was about … furthering our species and human rights as opposed to animal rights, or protecting the environment” (Claire, 00:39:28). Claire said that toward the ecocentric end of the spectrum was a better way to live. Claire had a different interpretation of sharing than Amber in choosing different DES scores, but both agreed that anthropocentrism was an undesirable outcome for humans.

Of the remaining two girls in the study, who were interviewed together, Kayla and Lauren, Kayla’s reflections on the DES were noteworthy: “Well, of course I’d love to be at ten but I know of course I’m not going to be a perfect ten because of how the world was today. I want to say in between. I think I want to say 6.5” (Kayla and Lauren, 00:13:43). Kayla elaborated
stating that that humans had limited alternatives that prevented a perfect score of ten

“Because of the way the world is, you’re forced to use resources” (Kayla and Lauren, 00:14:15). Lauren chose 4.5-5 (an average of 4.75) claiming that the environment team was only a small group of girls and “there’s a small portion of us that take action” (Kayla and Lauren, 00:14:44), a comment that will be discussed further in Chapter 7.

The distribution of Karatjurk DES scores was given in Figure 5.1 below.

**Figure 5.1.**
*Karatjurk distribution of DES responses*

The average of all DES data for Karatjurk was 6.196. Participants had an inclination toward ecocentrism, typically driven by an empathy for and love of animals, but they add that humans were animals and also need natural resources.

**5.2.5 Limits to growth/sharing natural resources.**

Closely related to the DES, Question 5 focused on the issue of limits to natural resources and investigated how students thought about solving the problem of increasing population and decreasing supply of resources. Responses to this question were varied but some students
were in favour of limiting the use of natural resources by finding alternatives and reducing human impact on native animal habitat. The responses from Mary and Kayla and Lauren were not useful because they did not articulate any clear answers. Each of these participants had an insufficient understanding of the key issues in sustainability, even though Kayla was Middle-School Captain of the environment club. Senior students like Gabriella (Year 12 Captain of the environment club) and Rebecca (Year 11 Vice-Captain of the environment club), on the contrary, provided thoughtful and productive answers to Question 5. For Megan (Year 9), humans used a disproportionate amount of natural resources: “I think that we’re a bit greedy with all of the environment and the Earth - that we’re taking away from some other animals or other things” (Megan, 00:13:16). When asked about her response to cutting down rainforests, Megan stated:

That’s a really bad thing. That is a really, really bad thing. Oh, my God, it’s just like it also makes me feel so upset. Because orang-utans are in the rainforests; orang-utans and palm oil and [things]. Yeah, it’s just, imagine if that happened to us; imagine if someone just came here and took all of our stuff away and then we have nothing left. It’s just a really bad thing to do and it wrecks animals’ homes and stuff. (Megan, 00:15:27)

Megan reacted strongly to this question because she had done a project on orang-utans and was opposed to human activities that destroyed animal habitat - a view that aligned with biological egalitarianism.

Gabriella (Year 12) took a similar view to Megan, adopting a biospherical egalitarian view of the issue (similar to Naess’s extremely broad sense of the term in his words “Let the river live!” (Fox, 1990c, pp. 117-118). She stated that humans should focus on resources that can be regrown or renewed. She also believed that natural resources were limited: “We are running out of coal. So, things need to be looked at in terms of different ways of looking at energy and not using up a resource that takes millions of years to produce” (Gabriella,
00:16:40). Rebecca also had a biospherical egalitarian perspective stating that we needed animals and habitat, adding an interesting existential comment that “animals”*6* deserve to live here as much as we do. We tend to distance ourselves from animals. We’re like humans and the kingdom, whereas we were part of the animal kingdom and we still rely on all the same things as animals do. So, we can’t just get rid of things” (Rebecca, 00:20:27). Like some other students (Luke and Megan), Rebecca was opposed to palm oil production because it involved the destruction of rainforest habitat. She also supported the search for fuel alternatives other than carbon-based sources.

Amber’s (Year 11) view on resource use was a clear articulation of the problem associated with anthropocentrism:

The human race has developed this sort of hierarchy where it’s always been about us, and where we are the ones in charge of the environment. And since it’s been that way for hundreds and hundreds of years, it’s hard to change the mind-set and say, “Why don’t we save this so that we can save the animals instead of saving ourselves?” There are cultures, like the Aborigines, who knew about the importance of balance and they had the rule of kinship and connection, and they knew that you couldn’t use resources without sharing. But this European-Western style type of hierarchy that we’ve developed … has created this system where, if we are going to save something, it should be for ourselves and our personal gain.

(Amber, 00:15:20)

When asked if there was a possibility that this situation might end, Amber said, “when the politicians agree on something” (Amber, 00:16:28).

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*6 In the student responses it was implied that “animals” referred to “wild animals” and did not recognise humans also as “animals”.

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5.2.6 Neophilia.

Neophilia was a human trait that deep ecologists say leads to the disproportionate use of natural resources. In each school, I use the idea of buying a smart phone as a catalyst for interview responses, to gauge the level of understanding of product cycles and consumer behaviour as it related to ecocentrism. Here are Gabriella’s thoughts on neophilia:

Well, I do like to have new things. I do like to buy new clothes but I’ll use things until they die. I’ll shop … at Opportunity Shops and things like that for my clothes. But people that just get a new iPhone or a laptop every year just because they want new ones - I just see that as shallow. They can just update their software rather than getting the whole new thing just because it’s got a finger scanner. It also depends on the product like electronics [that] frustrate me. Yeah, it’s kind of hard because I’m not one that buys everything. … They don’t really need it, so why waste your money and get it? It’s just to sort of show that you’ve got the latest technology and be up with the game. That sort of frustrates me. People just get it so they can be popular. (Gabriella, 00:18:18)

Amber explained her view that neophilia was driven by corporate greed:

It’s about money. I’m thinking because they [companies] keep updating things so that they [can] get more money. But yes, it will end badly with the mining in the Congo. And it’s just getting worse as more people get more phones, and more people are born, and overpopulation and things. (Amber, 00:17:56)

At the same time, Amber experienced pressure to “keep up with the new” and how difficult it was for her not to buy a new phone:

It’s very easy for me because when I was in Year 7, I had this terrible Nokia phone, and everyone laughed at me for years, but I used it because it would stay intact and would not break if you threw it on the ground. But now, I’ve got this new [phone] because … well, it’s
high school and I want to [maintain] access to everyone, and I also wanted to see, was it really better to have something like this? And I figured, no, it’s not better to have the new model of the phone, because it only lasts for a certain amount of time so that you can buy a new one. And then they [phone companies] purposely make you update your phone so that it slows down and stuffs up, and you have to get the new one and it’s stupid. So, [the] next time I buy a phone, once this one dies, which I think is going to be like next year … I’m just going to buy one that’s hardy. (Amber, 00:18:44)

These student responses to the problem of neophilia demonstrated that they connected the disproportionate use of resources to Western, consumerist lifestyles that were deleterious to the planet. In terms of deep ecology practices, the students were thinking about the Earth first, and they appeared willing to take positive action to protect the environment.

5.2.7 Global environmental problems.

In the interviews, I used a scenario to prompt students to reflect on global disasters and asked them how they might be affected by the death of wildlife and destruction of coastal ecosystems elsewhere in the world. The aim of this question was to determine if empathy for nature was universal and not a local effect. Megan responded to the scenario:

Before when I would have heard [about] that, I would have just been like, “Oh, the poor animals”, but now I would actually still feel upset for the animals that died, but it would impact me more now because I’d actually know a bit more about the environment, and I’d try to do something about it now. (Megan, 00:21:14)

Gabriella had a less emotive, more pragmatic approach to the disaster:

I think even though it happened, and it was a bad thing that it happened, maybe now companies look into reasons as to why it happened and make sure that it doesn’t happen again.
I guess the thing that something has to happen before somebody changes. (Gabriella, 00:22:40)

Gabriella saw that global disasters could happen locally: “It’s a horrible thing that it happened, and it’s disgraceful, and they need to realise it can happen here [in Australia] very quickly” (Gabriella, 00:23:18).

Mary presented the idea of prevention rather than reaction to an environmental disaster: “I guess we need to make sure when we’re using oil it’s not [from] a dangerous place where things and people can be harmed from an accident like that” (Mary, 00:17:14). Rebecca articulated a more considered answer, empathetic to nature:

I know about it, which affects me, and it affects me that people are harming the Earth so much. I feel some sort of responsibility even though it wasn’t [caused by] me directly. I kind of feel responsibility on behalf of the species and on behalf of people. (Rebecca, 00:26:56)

Here, Rebecca not only demonstrated empathy, but showed environmental connectedness and ecological wisdom. When asked if the responsibility was on behalf of animals or humans, Rebecca replied, “because they’ve both got kind of the same level of innocence. It wasn’t their fault so they shouldn’t really have to pay for it” (Rebecca, 00:28:42).

Amber agreed with Mary but also thought that the Internet brought global issues into our lives and onto our television screens:

It impacts me more [now]. The Internet has come a long way and there was a time when things like this would [not] have been found out [until] ages later. So, I feel much closer to the issue, not because I’m an environmentalist, but because it’s on my TV every day and people are talking and discussing what things we should do, and how to tackle the issue. (Amber, 00:21:57)
Amber was well aware of the impact of global environmental disasters on wildlife and her responses were evidence that students used the Internet as a source of news.

5.2.8 Connectedness to nature/ecological self.

Connectedness to nature was part of Self-Realization in deep ecology. I explored this idea in interview Question 2 by asking student participants how the school environment club projects affected them emotionally. Megan reported that it made her feel happy to help the Earth and to help the school: “I know that I’m doing something good, and I know that I’m not doing anything bad” (Megan, 00:03:25). Megan cited her favourite environment club project as the *Nude Food Lunch* activity where members monitored the amount of plastic and disposable wraps in their lunch boxes: “We have to find out if students were bringing food in containers or they’re bringing plastic wrapped food, and we have to make a tally of it and survey. So, I’m pretty pumped about that” (Megan, 00:04:26). Gabriella was aware that, prior to the environment club, she had had a closed mind to environmental issues, and had not been exposed to any sustainability practices at primary school. A major transformative event for her was when (in her capacity as member of the environment club) she presented a talk on *virtual water* (water used to produce meat versus grains versus cotton) at a Melbourne Water conference at the start of Year 8, where she enjoyed the opportunity to teach other people. Gabriella explained:

> Virtual water is the amount of water that it takes to grow a product, and consume that product. But when I went to [the] conference I listened to a whole lot of other presentations and it just got me really intrigued with what’s actually happening and what’s out there, and that at my age I can be teaching other people about issues. … So, just from there I did other events in the school and took opportunities, went to conferences, and really just listened to everything that was put out there. (Gabriella, 00:11:01)
Connecting to nature was about doing environmental work to support the planet for Kayla:

The thing that I love so much about [environment club] is we talk about it [the environment], we make it happen, we get people aware about it, and other people join. And as a result it works out really well, other schools get involved, and it’s just amazing how we can start something so big. (Kayla & Lauren, 00:00:30)

Lauren also gained much from the environment club: “Yeah, I feel definitely proud. I feel like I’ve achieved something so I just feel happy I guess once I do something” (Kayla & Lauren, 00:01:24). Rebecca’s response differed in that initially, she had no altruistic reason for joining the environment club:

I grew up learning about it [the environment]. Because I joined the environment team in New Zealand just because, honestly, I didn’t get into student council and I was like, well, I need a leadership position. Let’s just go into this. And then as you start learning more and more about it you realise how important it is. And I just wrapped it into my moral system if you like, that this is something that I need to do in my life. (Rebecca, 00:07:58)

Connectedness to nature is revisited later in the chapter when the data from the family interview with Claire’s mother Crystal, and brother Thomas, were analysed in Section 5.6.

5.3 Karatjurk sustainability coordinator (Adam)

Three teachers at Karatjurk were interviewed: the sustainability coordinator (Adam), the Outdoor and Environmental Education teacher (Angela), and the Geography teacher (Christina). The sustainability coordinator position was an extracurricular role that Adam fulfilled in addition to his teaching commitments. He was popular amongst the environment club students and was highly respected by his peers for his tireless efforts in the sustainability program. He was employed at the school three days per week but he worked well beyond this. Angela taught VCE Environmental Science and VCE Outdoor and Environmental Studies.
She had travelled and taught widely around the world, and was passionate about her work and the environment. She was very supportive of Adam and the work of the environment club. Christina, the senior Geography teacher, explained that there was no direct discussion of ecocentrism in her own teaching but that many aspects of environmental degradation were part of the syllabus from which she taught. Christina did not convey the same level of passion for the environment as that of Adam and Angela, but she was supportive of the sustainability initiatives at Karatjurk.

5.3.1 Teacher-coordinator interactions/situated identity.

Adam completed a degree in Zoology and spent a lot of his childhood holiday time by the seashore. He was keen on marine education. While not discussed during this interview, I established from the minutes of the EcoGroup and from Adam informally, that he was an active member of the Marine Education Society of Australasia and that he regularly took his biology students on excursions to Port Phillip Bay. At the time of interview (June, 2014), Adam had been a teacher at Karatjurk for nine years and had been “thrown in at the deep end” when he was asked to teach alternative technologies in his first year at the school - an area that was outside of his qualifications and experience. His experiences, however, led to the development of various hands-on curriculum projects including building a hybrid solar/pedal powered car, a project that lasted five years. These experiences ultimately led to him gaining the position of sustainability coordinator. Adam was in his mid-thirties, and it was clear from my various meetings with him that he was an energetic and enthusiastic teacher. Adam was responsible for Karatjurk winning a major international prize for renewable energy and sustainability in schools, and there were other projects (i.e., solar panels) that he completed through the environment club. Adam generated wide support for the sustainability program from his peers.
5.3.2 Running the environment club.

Adam’s approach to running the environment club was egalitarian, inclusive and process-oriented. This was not to indicate that he was malleable, indecisive or uninterested in goals, but more to say that he followed a parliamentary-style protocol by drawing students, parents and teachers into collaborative efforts to realise new visions of environmental excellence. For example, the students at Karatjurk spoke about Adam more in terms of being in a “partnership” as members of the environment club, rather than being a “leader”. This was in line with his easy approachability and low-key approach to managing the sustainability milieu. Adam’s success was largely due to his enthusiasm for the role as coordinator, to his skill as a teacher, and to his wide knowledge of environmental issues. At interview, he also spoke of inspiration from his father (who built set designs for films), and from his work as an interpretive officer at Melbourne Zoo. It was clear that he greatly cherished his appointment at Karatjurk.

The biggest motivator for Adam in running the club was seeing the students make a difference to the environment and sharing in their success. Connecting to the Earth was important to Adam:

I suppose the biggest thing is to see the change in the students, and to see how proud they are that they’re actually having [an] impact now, rather than learning about these things with the hope that when they’re old enough they can make a difference. I think when kids feel connected, that’s when you get the best outcomes. When they do hands-on projects that have direct outcomes so they can see … say, for example, tree planting, and weeding, and installing water tanks, and building a frog bog … [and] the energy bikes that we have here at school where kids can actually pedal and see how many watts they generate. I think you really need to connect. It’s a bit of a cliché, but you [need to] connect the hand, the heart, and the head. (0:07:40)
Adam was proud of the environment club students and he felt rewarded from seeing change in students:

> Having an impact now, rather than learning about those things with the hope that when they’re old enough they can make a difference. I think when kids feel connected I think that’s when you get the best outcomes; when they do hands-on projects that have direct outcomes that they can see. (Adam, 00:07:41)

Adam stated that the success of the environment club was, in part, due to support from the principal for environment projects on energy conservation and biodiversity (such as the Frog Bog), even though these were done as part of their regular classes in Environmental Science. Adam’s inspiration was a significant contribution to the success of Karatjurk’s sustainability culture, but it appeared that the work of other teachers and a motivated membership of the environment club were also essential. For example, the chemistry teacher, at Adam’s request, took on the job of monitoring hard waste - a task done with his students by measuring the volume of material in the industrial skips.

### 5.3.3 Ecological wisdom.

There was little evidence of ecological wisdom from the interviews with the Karatjurk students. The only finding in this regard, was from parent Crystal (see Section 5.6.6 for her analysis). I asked Adam if he thought students displayed any ecological wisdom, using the debate around climate change as an example of a contentious issue requiring wisdom of thought for students. Adam thought that students could be critical thinkers capable of ecological wisdom:

> The more that [students] learn about [climate change], especially the science behind it, the better they are at defending their beliefs. I think we have to be really careful that we teach kids the facts and we don’t teach it from too much of an emotive point of view. Particularly,
I’m a science teacher, so I’m very passionate about those things but I’m very conscious of the controversy of these topics [and I] teach how controversial they are. And you have to be a bit careful when you’re teaching impressionable kids that you don’t set tasks that might have them researching and researching and find themselves on activist blogs and things like that. I think one of the key responsibilities of a teacher is to teach them to be critical thinkers and to be able to make up their own minds. (Adam, 00:11:40)

Adam’s comment above about activist blogs was not consistent with his support of club student involvement with the AYCC, so I assumed that in this quote he was referring to extremist rather than activist blogs. Adam also added, “You don’t want to be guilty of environmental propaganda” (Adam, 00:11:40), but he described the ecologically wise student along the terms of eco-philosopher: “I think that students do need to feel confident in their beliefs” (Adam, 00:14:04).

Adam’s responses were significant for another reason because they raised the issue of environmental activism - one of the Deep Ecology Platform principles. Naess advocated non-violent or non-radical action to preserve wilderness, maintain biodiversity and protect the Earth from projects such as the building of dams, and it was notable that Adam’s quotes above demonstrated insight into the potential harm that could come from promoting a more radical environmental activism amongst students.

There was other evidence of ecological wisdom from my observations at the EcoGroup meetings, where environment club students presented reports about their attendance at the AYCC. Their reports were presented to teachers, parents and members of the local community, demonstrating confidence and maturity of thought in dealing with climate issues. This evidence was anecdotal as no notes or audio recording was taken (due to the fact that attendance was difficult to predict beforehand, and therefore prior permission was not practicably obtained for all attendees).
5.3.4 Is Science the answer?

I asked Adam if he thought that science would come to humanity’s rescue, in the context of technocentrism versus ecocentrism (Pepper, 1996; Porritt, 1984), where “technocentrists see the solution for woes brought on by human ingenuity as more ingenuity” (Johnson, E., 2015, p. 1):

I think science does have the answers, but it’s not just engineering solutions. I think renewable energy, and wind fans, and solar panels, and battery technology all have an impact and a place in this. But one of the main things where science has a role to play in this is actually psychology and actually working out the best way to empower people to make changes that we need. (Adam, 00:17:44)

Adam’s response was anthropocentric in assuming that the Earth will continue to support future humans, and he viewed science and technology as the answer. Ecocentrism takes the contrary view that “humans must find and respect their proper place in the world, rather than seeking to use technology to transcend it” (Johnson, E., 2015, p. 1).

5.3.5 The anthropocentric, “future human” response.

I also explored with Adam, the proposition that the term “saving resources for future generations” was, according to deep ecology, an anthropocentric term:

Yeah, absolutely. We’re stealing from the future. I mean, when you talk about fossil fuels, do we have a right to use them all now, or do we need to leave behind some resources for a sustainable future for the next generation and generations to come? You’d hope that the wisdom that we have built over thousands of years that we have, that we realise that fossil fuels are not sustainable, regardless of the environmental problems that they’re causing. And that we could actually put into practice some of that wisdom and invest in future rather than stealing resources from the future generations. (Adam, 00:20:16)
The words “stealing from future generations” symbolised the central problem for ecocentrism, that is, the issue of ever increasing use of resources from either natural or renewable sources for humans. The reference to stealing implied that current generations were disproportionately using scarce or limited natural resources such that future generations will be required to make do with fewer resources.

5.3.6 Importance of the sustainability coordinator and other teachers.
As with all three of the schools in this study, the coordinator took an active role in recruiting students to join the club. However, at Karatjurk, students tended to join the environment club to be with their friends. Grace’s response supported this finding:

I think it was in Year 7, [Adam] taught me for a class. And he brought up the environment team and said we should join in or whatever. So, I went along and couldn’t do it because choir fell on the same day because I do performing arts and stuff”. … [Then] he emailed me about it [environment club], and I talked to my mum about it when I got home. I was like, “Oh, look, I joined a new environment team”, and she was supportive about that. And then we found out about the [environment club] this year so now we go to that. Well, I can’t go at the moment because I have dancing on the same days, but mum goes to that every week and I go when I can. (Grace, 00:02:46)

Grace’s response showed that the recruitment process was not necessarily a simple “yes” to a suggestion from the coordinator, but necessarily a careful weighing up by the student of competing demands for their time.

5.4 Angela (Environmental Science and Outdoor Education teacher)

5.4.1 Situated identity.
Angela had taught Environmental Science, Outdoor and Environmental Education and Physical Education at Karatjurk for eleven years, but she had started her teaching career by
teaching science to primary school children in London. This was early experience that forged her relationship with the environment and led to Angela embracing sustainability:

I took the opportunity to make my curriculum as interesting as possible because 8 and 9 year olds, you know, are very inquisitive. And not only was I there to give them knowledge but also I was able to add sustainability into the curriculum. (Angela, 00:00:24)

Angela subsequently trained to teach Physical Education, then taught in New Zealand for three years, followed by a period as a tour guide in Africa (where teaching opportunities were limited). Angela worked at a regional high school upon returning to Victoria, Australia before taking up the appointment at Karatjurk. She accepted the position at Karatjurk because Outdoor Education was included in her teaching allotment.

Angela said that she had a strong bond with the coastal ecosystem on her parents’ farm in Torquay, Victoria, where she grew up and lived with her parents. She made the long daily commute between the farm and school each day. Angela related her experience at the farm:

Over the last five years, we’ve completed an eco-tender project which includes the planting of 7000 trees. And I absolutely delight in wandering the place and finding birds that haven’t appeared before, like the King Parrot I saw for the first time about eighteen months ago. Echidnas we’ve never had on the place until I found one in the woodshed. Animals that haven’t appeared since I was very little have now appeared back in this location because of the work that we’ve done in restoring the environment. (Angela, 00:40:48)

Angela expressed a connectedness to nature, and has a focus on understanding her students and providing them with lots of opportunities to experience nature. Angela also supported Adam in his work as sustainability coordinator:

I had two environmental science classes and we produced the Frog Bog out the side here. My classes have [also] been involved in the Murnong project. And generally that’s it in terms of
the school. Although the [students] do support the environment conference; all of my students generally go to the school conference. (Angela, 00:07:07)

5.4.2 Ecological wisdom, sustainability, the curriculum and ecocentrism.

I asked Angela if she had thought that students acquired ecological wisdom, perhaps even a more robust personal ecological philosophy, by studying sustainability. She replied:

I think it starts with personal experience. I think you have to … you can’t teach passion, and you can’t teach caring. You have to demonstrate passion and caring. And in order to demonstrate that, I think for me, Outdoor Ed is getting kids out into a variety of environments that they wouldn’t otherwise get the opportunity to see or experience; and giving them the first step to having [the] passion and caring that they might not get at home. And there [are] a lot of kids that don’t get that at home. It’s very much inner city living, and their parents don’t provide that education for their kids. So, I think sustainability comes from passion and caring. It’s an action but you actually have to see an environment, feel something for that environment, and make connections and understandings about that environment, before you feel empowered to take action. And sustainability is an empowerment. (Angela, 00:10:56)

Angela’s response around “passion and caring” was not inconsistent with the Naessian definition of ecological wisdom; the “deep exploration of our whole lives and context in pursuit of living wisely” (Drengson & Devall, 2010, p. 19). Angela’s comment about the inner city demographic of the girls and how this might have limited their interaction with nature might explain why there was little evidence of ecological wisdom from the students’ interviews. Angela believed that the students needed excursions to form a deeper connection to nature:

I think it’s more powerful [when it’s] demonstrated. I think that kids can read that, but if they see it in action then it is more powerful. A good example is on our last Outdoor and Environmental Studies camp, we stopped at the White Gums Trust for Nature property. And
Neil Marriott, who is an ecologist himself, was able to demonstrate how climate change affects his property, what they’re doing to combat that climate change, what they’re doing to improve bio diversity, by pest irradiation, plus planting propagation. They’ve got a number of scientific studies on the property that they’re allowing PhD students to undertake. It was a real eye opener for students to see how somebody who’s so interested in conservation and sustainability actually functions. Their property is completely self-sustaining. They’re off the grid, they’re off the water mains, they produce all their own food. It was fascinating. (Angela, 00:12:55)

The implications from Angela’s interview were that schools needed to maintain excursions to farms and natural environments to ensure that students get the knowledge and experience for them to live ecologically and wisely.

5.4.3 Biospherical egalitarianism.

I asked Angela to consider, given that the Earth’s ecosystems comprise living and non-living elements, whether she thought that, we as humans, prioritise ourselves over other living creatures. She replied:

I think it’s incredibly arrogant of us to think that we are the most important things on the planet. And I hope that in hindsight, hundreds of years from now, we don’t look back and say actually we were the architects of our own demise [laughs]. Humans have a place on the planet; it’s just not all over the planet. (Angela, 00:24:26)

“So, in fact it’s the balance of the ecosystem that needs to come first. We were just talking the other day about bees and pollination, and the fact that without our very smallest of insects we have no food” (Angela, 00:14:59). She explained that every part of the ecosystem, no matter how small, was important. To ignore them could “instigate our own demise if we put ourselves above everything else” (Angela, 00:15:25). “I think there was usually a light bulb moment when they [the students] realise that without insects they can’t eat” (Angela,
00:15:53). She also explained that the uptake of these views by students depended on their parents’ sustainability practices:

   Usually, students whose parents are very well versed on sustainability and environmental issues get it a lot quicker. Probably because they’ve been composting since they were little, and it’s normal. But there are students out there [for] who it’s the first time that that’s ever been proposed to them. And it scares them a little. (Angela, 00:15:53)

I asked Angela if she thought that the students understood that it was important to protect even the smallest elements of the ecosystem. She replied:

   We’re just about to head into our Unit Four work [in Outdoor and Environmental Studies], the first piece of [which] was the state of the Australian environment. Now, we focus on Australia because it’s here, and it’s visible, and we visit it, and we can make judgements. … And we approach all sorts of environmental issues, from erosion and salinity, to land degradation, to fertilise and pesticide use, that runs and pollutes rivers, and following that obviously onto reefs. And we look at all [of] our cycles, our water cycle, [the] carbon cycle. The whole lot is affected by human activity. But we can’t just focus on the negative sides of things, we have to focus on what we’ve done in the past, what we’re currently doing now, and what solutions will be found in the future, and possibly the best solutions will come from them. (Angela, 00:16:50)

“I wouldn’t put [human needs] above resources for any other environment, or fungi, or algae, or bacteria. They’re all as important as us.’ (Angela, 00:23:31). Angela’s responses demonstrated that her teaching focused on the consequences of human activity in terms of planetary systems and the damage to those systems, indirectly promoting biospherical egalitarianism by getting students to see how insects impact on humans.
5.4.4 Student agency/teaching style.

Angela also focused on promoting student agency:

Yeah, well it’s the [students] turn to have their voice, and maybe the best ideas are yet to come. And I think that does empower them to [say], “Well, yes actually. Maybe my ideas are good. Maybe we will come up with some solutions”, but they have to have the knowledge, and they have to learn from what we’ve done already, and improve on that”. (Angela, 00:18:13)

When asked if this generation will fix the environmental problems of the previous, Angela replied:

Doesn’t that happen with every generation? … I think by human nature we learn from, well we try to learn from mistakes, we’re not always good at it. I don’t think our political systems in the world necessarily, or our religious systems in the world necessarily look at us functioning as an entire planet. (Angela, 00:18:41)

Angela’s confidence in her students allowed her to promote critical thinking about the environment:

I’m a firm believer that you teach all sides of a story. Even the ones [with which] I don’t agree because my opinions have developed over time, theirs should be allowed to also. And so when I teach environmental issues, particularly in a debate setting, I will often select students who I know feel very strongly one way, and I’ll put them on the opposite team. Walk a mile in somebody else’s shoes. … I think as a teenager that is when you learn to question the wisdom of adults. They really will come up with the answers in the future, and they will be better than anything you or I can come up with. (Angela, 00:32:43)
The above responses were tentative evidence that the environment club students at Karatjurk were encouraged to be environmentally proactive and to feel empowered to act for the environment.

5.4.5 Does science have all of the answers?

When asked if science can solve our environmental problems, Angela responded that environmental problems were social problems:

No. I actually think you have to address human issues first. If you have a family in poverty, their biggest concern is where the next meal is coming from. They’re not interested in sustainability issues or environmental issues. So, until every person is fed, and until every community feels safe, and every community has access to education, then no, humans as an animal will always put survival first. (Angela, 00:19:36)

Angela explained her belief that the developed nations needed to assist poorer countries by providing economic support, promoting social stability, and ensuring adequate education and health, before any environmental concerns be addressed - a view that parallels the United Nations position on sustainable development.

5.4.6 Connectedness to nature.

Angela related the approach she used on school camps to encourage students to connect to nature - an exercise whereby students found a “spot” to contemplate their place in nature:

I think listening can be done with human knowledge, wisdom and voices. But also listening can be done with nature. You can’t be a good observer unless you are a good listener. And on all my camps, there is time for our students to be silent, and to contemplate the place they’re in. And the majority of my students, the most poignant time on their camp experience is that time of silence. (Angela, 00:35:58)
Angela expressed some aspects of student experiences that she believed brought them a greater awareness of themselves in the grander scheme of existence:

Well, we have a discussion before we go on camp about leaving technology behind. About being truly present in the “here and now” - not worrying about what’s happening on the weekend, or planning their next party, but being here with the people who you currently are with, talking with them, conversing with them, connecting with them, but also with the environment. And having no other distractions. … We talk about it being a time where they don’t have to worry about school [or] home. But they can be physically present in the here and now which is very unusual in today’s society. (Angela, 00:36:51)

Mindfulness can be done anywhere and the mediation that Angela mentioned was consistent with that found in the Earth Education literature (see Van Matre & Johnson, 1987).

5.5 Christina (Geography teacher)

Christina had been teaching Geography at Karatjurk for 12 years and participated in the study following an invitation from Adam. Christina supported Adam’s role in managing the sustainability practices and policies at Karatjurk, and she also saw protecting the environment as part of her own role:

In terms of sustainability practices, I think [Adam] is the main sustainability person at the school who pushes that throughout the school, but of course as a Geography teacher, I push that as well in all of my classes. And also, just simple things like doing yard duty, especially since we’re on the river, always getting students to be mindful of the fact that they have to take their rubbish to bins and things like that. (Christina, 00:00:38)

It was not clear from Christina’s response how much the integration of sustainability was her idea, but Adam’s approach to sustainability clearly influenced Christina’s Geography teaching “I think [Adam’s] influence in the school. I’ve been on many camps with [Adam’s]
where I’ve learned so much as well myself, so that’s given me the tools as well to teach in
my classrooms” (Christina, 00:13:05).

5.5.1 Environmental agency, resilience and wisdom.

I asked Christina if the environment club and Geography teaching changed student
environmental thinking and behaviour. In terms of the influence of the Geography classes she replied:

Yes, definitely. With my Year 10 [Geography] classes, I’ve seen a change in behaviour and I
think they understand the impacts of littering on the school grounds and things like this. And
they encourage other students who perhaps haven’t done Geography, haven’t studied the
effects of pollution and marine environments, and they urge their peers to do the right thing.
(Christina, 00:07:08)

Christina explained her view that Geography and the environment club make similar
contributions, “yeah, I think it’s half and half” (Christina, 00:07:54).

In terms of whether there was evidence from her classes that students held firm beliefs
about the environment that they were willing to defend, Christina said:

Yeah. I have shown in my classes the other side of the climate change debate, and they’ve
[students] been outraged at how can some people deny climate change exists, that the effects
of global warming aren’t being felt. So, for instance, I showed them a government meeting
held in the Maldives underwater, and they truly believe that that was a good move from the
government of the Maldives to have done that to highlight their plight. (Christina, 00:08:51)

Christina’s responses were brief and not conclusive as to whether students at Karatjurk
developed pro-environmental behaviours or adopted resilient attitudes in the face of criticism
from others who were skeptical about environmental problems.
5.5.2 Science, politics, and economics.

In Question 5, I put to Christina the proposal that science in general has the answer to all of our sustainability problems, to which she replied:

No, definitely not. I think economics plays a huge part as well, and governments and politics play a huge part as well. So, science can give you all the answers on how to solve problems, but it’s really up to politicians to make laws to implement those solutions. (Christina, 00:14:00)

Christina’s response was different from Adam’s, who had said that science could help but that an understanding of psychology was also required. Christina’s response complemented Angela’s views, where Angela had said that social issues like poverty, education and freedom from war and oppression should take precedence over the scientific solutions to environmental loss. Should a starving child take priority over the decaying ecosystem?

In summary, and in the context of Question 5 being framed around the notion of science and technology as being a salvation for environmental decay caused by humans, Adam, Angela and Christina seemed to agree that we needed economic, political, and social solutions to environmental problems, as well as scientific remedies.

5.5.3 Natural resources and Spaceship Earth.

Question 6 used the concept of Spaceship Earth (introduced in Section 4.4.4), an idea that derives from the limit to natural resources, The aim was to use this extraterrestrial journey as a metaphor for a finite planet with an ever-increasing population. Christina responded: “I think it’s unfair to all the animal species that also need the Earth to survive. I don’t think the resources on Earth were just for humans. It’s for all of the animal species” (Christina, 00:17:47). “I think it’s just very different, everyone and everything is worthy. And I think for us humans we have a responsibility to make sure everything is being taken care of, because
everything in nature exists for a reason” (Christina, 00:18:43). I added the concept of biospherical egalitarianism to the discussion, to which she responded:

I’d hope to leave the Earth a better place than when you’ve arrived. And even now, I teach my child to always…Actually I just read his [day care] report and it was interesting to know that what my beliefs are in terms of recycling, and what I do at home, what I model for my son is that I do all of these environmentally friendly things and he does the same at day care and he’s only three. So, that was interesting to read that I’ve been able to influence him. The kindergarten teachers told me that he brings these ideas into the classroom, and so I’m a major influence on how he perceives the environment. (Christina, 00:22:15)

I had not anticipated that Christina would raise the interaction with her three-year-old son as part of her sustainability efforts. Her comment was valuable in the socio-ontological picture of the school sustainability milieu because the child of any staff member was an important social influence affecting their environmental beliefs and behaviours.

5.6 Analysis of Karatjurk family/parent data (Crystal)

Crystal was the mother of student, Claire and Thomas. Crystal was a trained nurse working at a large regional hospital as a sustainability officer and she had completed a Masters degree in environment and sustainability. She studied deep ecology as part of her Masters degree so she was very interested in this research and keen to participate.

5.6.1 Situated identity: being a sustainability-oriented parent.

Crystal explained that she was the central driving force in the family, driving their sustainable lifestyle with a passion that had derived from a time when her children were young and the family was living in a semi-rural part of Melbourne in the Dandenong Ranges:

I think the kids became interested in sustainability really through me. And that was in response to them as smaller children. [They] had a very kind of ecologically, beautiful
childhood. We lived in Montrose in the Dandenongs, and had a lot of exposure to nature and the hills. (Crystal, 00:00:45)

She studied for a Master’s degree in sustainability, an experience that shaped her identity as a mother:

Because I realised how important it [the environment] was, and that my kids were going to have the big questions of the future, and I had no capacity to support them, and that really freaked me out. It’s a bit like realising that you’re not going to be a good mother, so it was something that I undertook to support them. (Crystal, 00:03:02)

There was also a downside to her enthusiasm that manifested in her children resisting her efforts to be sustainable:

And so it was very important to me as I was doing it and share it [enthusiasm] with them. And I would be an absolute pain … because I over-communicated about the urgency, and the issues, to the point where they actually probably got a bit sick of it. And I had to, in the end, kind of pull back and realise that it was actually kind of probably my thing, you know, rather than necessarily something I should expect from someone else. (Crystal, 00:03:02)

Crystal was clearly passionate about the environment and keen to pass that value on to her children, but she realised that this was not necessarily a straightforward process. Her identity appeared to be strongly linked to her role of protecting the environment, and her role as a mother.

5.6.2 Intergenerational influence along the child-parent axis.

Crystal explained that while Claire came home with sustainability ideas from the environment club, her children’s environmental projects were more of a collaborative family effort; a not unsurprising situation given her environmental qualifications. She gave an example of a Claymation film that Claire made on climate change at school. Crystal provided
support to Claire on the project and was quite proud that it won a finalist prize in a competition. Crystal explained:

It was for [Claire], a short film on anything environmental. It was for Future Shots, so young kids making a short film, and I think there might have needed to be an environmental basis. So, she did hers on climate change, and she did a Claymation film about global warming that was not only sophisticated in its understanding of climate change, and had the issues as a background, but the story of a penguin, a fun kind of childish penguin probably a bit like itself in the foreground. So, it actually won a finalist prize for the Future Shots because it really was a very mature kind of attempt. (Crystal, 00:08:37)

The interview with Crystal and her children revealed that she drove much of the sustainability influence in this family as her children grew up. Although this had changed somewhat as Claire and Thomas had since grown older and decided to stand up to their mother (as reported by Crystal but not Claire and Thomas).

Claire’s interview revealed that she had immersed herself in the environment club world and that she attended most meetings of the EcoGroup, engaging in all aspects of the group.

5.6.3 Limits to consumption of natural resources and neophilia.

Crystal raised Claire and Thomas with boundaries on buying consumer goods and was determined for herself and her children not to be victims of peer pressure:

Through food, household chores, recycling; through everything, consumption was a big thing, I think as they were growing up we did have a lot of dialogue around consumption because as kids they want everything that their mates have, and there was limitations on how far I’d go with that. Like I wouldn’t go with the Play Stations, I wouldn’t go too far in any direction. The point of stopping was always about the environmental impact. (Crystal, 00:10:23)
Crystal said that her children would pester her when they were younger to purchase consumer electronic toys but that it was no longer a problem. She attributed this partly to being a single mother: “They certainly wanted to do it at an earlier age, but I’ve been sole parenting now for 18 months or so and potentially that’s got something to do with it too” (Crystal, 00:11:33).

Crystal’s approach to parenting aligned with the deep ecology principle of using the natural resources that were needed, rather than giving in to unlimited wants for consumer goods. The concept of anti-neophilia was presented to Crystal in the context of resisting the cries from her children to buy a Play Station. I used this idea in the context of the drive to be cool, and asked Crystal if she had managed the problem of peer pressure on her children:

I don’t know really. They are just very good kids, and I think maybe [an] explanation has helped. And being an example of non-consumerism and resisting consumerism has helped them to [ecologically] footprint, and think to themselves “I don’t need that, I want it but I don’t need it”, and recognising the difference. (Crystal, 00:43:55)

I asked Crystal to consider the popularity of smart phones and whether that had an impact on family sustainability:

They do have those things. That’s where I think that I am on this sustainability tangent and not living my deep ecology values enough for me. Because I do have some kind of hope also that technology will be part of a solution. So, one thing [is] that I will let them be open to innovation, because I think it would be closed-minded not to see technology as part of a solution. So, they actually do have the latest, not latest, but they have a [Smart Phone], and that’s probably something that they do have is two or three [of the latest] technological things. But they don’t have kind of anything else, they don’t go with fashion, they don’t go with plastic, they don’t bring stuff home. We don’t have the kind of home that can absorb anything that’s not required anyway. (Crystal, 00:45:13)
Crystal’s response demonstrated a balanced view of sustainability; one which was being open to deep ecology and spiritual ecology, at the same time allowing technology to take a measured part in the family life. She explained that her ex-husband worked in a technology area and supported the idea that the children should use technology wisely:

So, he was very insistent that as long as [gadgets are] being used as a tool, that it’s a good tool. [Except] if they’re just playing games and infotainment, they’ve never ever done that, but they have had technology that serves them, and that’s a value of his that we’ve all taken on. And also I think there’s an even broader thing that he brings to the whole conversation around capitalism, and more theoretical constructs that reinforce the anti-movement to consumption. It’s not just their kind of resistance to consumption, or recognising the tension between want[s] and need[s]. It’s not necessarily about environmental issues; it’s [about] knowing that that’s just a government driven agenda. They get that too. (Crystal, 00:47:23)

Many of Crystal’s (and in part, the children’s father’s) values fit well in the deep ecology philosophy, in that they led lifestyles that considered the Earth first, and fulfilled consumer needs rather than unlimited wants.

5.6.4 Connectedness to nature.

Crystal described some unique experiences in nature with her children that appeared to have forged some lasting views about being connected to nature:

But the positive thing, and I think this is what has made them equally well adjusted is the beautiful fantastic times we’ve spent really deeply engaged in nature. Weeks and weeks camping in forests in America, or going down to Dingo Creek at my sister’s block where there’s just nothing but nature, and having really long deep exposures to nature where that was a really strong and positive experience for us, for me as a parent of them, and for our feeling of oneness not only with each other but with the greater environment. (Crystal, 00:14:36)
Crystal had provided Claire and Thomas with experiences similar to that described in Earth Education, and this was evidence that she was closely aligned with the deep ecology concept of *Self-Realization*.

### 5.6.5 Ecological wisdom.

Crystal reported that Claire has a level of sustainability thinking that equated to ecological wisdom:

> Yeah, I think that the resonance has become deeper [in] her sustainability ethic, and she has become more participatory in solving, being a part of volunteer projects within the school, flexing her environmental citizen arm at school. So, she’s often called on to be a part of the projects and does that quite willingly because she realises that that’s her responsibility as a citizen of the Earth. That’s my interpretation. Yeah, I do see her acting in line with those values quite readily. (Crystal, 00:19:56)

Crystal’s elaboration of Claire’s behaviour added to the evidence of Claire’s ecological wisdom:

> She’s volunteered at an elephant refuge in Thailand for a couple of weeks. She volunteers with me down at the penguins at St. Kilda Pier every second Monday. She just gets that it’s important to act not just to talk. So, I guess that she has embraced it now as her thing, not as a discipline thing anymore. She is maturing into her own adult, and has kept it alive now within her person, that’s kind of part of her sensibility, and her ego, and her values now. (Crystal, 00:20:56)

It was evident from Crystal’s response that Claire had developed high order thinking and abilities consistent with ecological wisdom, achieved by a transformation into an ecological self. Claire also demonstrated a willingness to act for the environment and the ability to rebound from criticism.
5.6.6 Deep ecology for her children.

While Crystal had promoted a deep reverence for the Earth in her children, it was more in her past and her current thinking was to focus on other aspects of their education:

I think that I have decided as a parent to just stick to the basics and let them, having introduced it and really kind of known that they got it at an early age, I’ve left it open. And they know that I still feel that way [spiritually connected to] about the Earth and all its animate and inanimate parts, and [that I] have a deep reverence and respect for the Earth, but I don’t talk about it anymore and neither really do the [children] (Crystal, 00:23:39).

At first this response did not fit with Claire and Thomas being ecologically wise, but Crystal explained that she did not want to preach to her children about her own views about the Earth:

I think it would proselytise them to some extent because I want them to be free-thinking, independent thinkers. And it wouldn’t be the same win if I converted them. … It wouldn’t really be winning then. It would be me making them [do things], which isn’t the same outcome as breeding leaders of environmental issues. (Crystal, 00:24:39)

Crystal agreed that her intention was to make her children form their own environmental views, and that she accepted that they may not have the same level of connection to the environment as she did.

5.6.7 Does science have all the answers?

Crystal disagreed with the idea that science held all of the answers to environmental problems. She relied more on a subjective emotional interpretation for her response, adding that intellectualising about environmental problems was not the only path forward for sustainability:
I think that’s the bridge between the science [practice] and the theory. I think you’ve really

got to feel it at a gut level too. You can get the theory but you can still go horribly wrong

trying to solve the problems of the world with your brain. And I think you have to feel

yourself as a human, and as an animal, and as a species; as part of a collection of other

millions of other species to really get this stuff and get it right. I’m not saying that I even

come close to getting it right, but I think you have to start in the right place to have any hope

of achieving the right solution. (Crystal, 00:28:35)

Crystal discussed a spiritual/emotional dimension to this topic that complemented Adam’s,

Angela’s and Christina’s view that science was not the only dimension at play (Adam saw it

intertwined with psychology. Angela explained that social issues like poverty, education, and

war needed to be addressed first. And Christina talked of political will and economic

stability). Together, Crystal and the three teachers embraced the cornerstones of sustainable

development, and held beliefs that science alone would not solve the Earth’s environmental

problems.

5.6.8 Intrinsic value of nature.

Crystal’s response to the concept of intrinsic value was complex but referred to the

precautionary principle⁷ as being more relevant when valuing nature. On the other hand,

when comparing the value of a mountain to the value of the life of a starving child, she

explained that it was anthropocentric to try to compare the two, stating that it still made

nature “utilitarian”:

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⁷ “Where, following an assessment of available scientific information, there are reasonable grounds for concern

for the possibility of adverse effects but scientific uncertainty persists, provisional risk management measures

based on a broad cost-benefit analysis whereby priority will be given to human health and the environment,

necessary to ensure the chosen high level of protection in the Community and proportionate to this level of

protection, may be adopted, pending further scientific information for a more comprehensive risk assessment,

without having to wait until the reality and seriousness of those adverse effects become fully apparent” (von

A starving child is the responsibility of a defunct population of species who can’t control their consumption and greed. It’s not the mountain’s fault. I don’t know. I think it’s a twisted question. There’s something in the question that isn’t fair to the mountain. (Crystal, 00:33:49)

5.6.9 Natural resources and Spaceship Earth.

Crystal was asked to describe what she did to be sustainable and her view on limits for the use of natural resources:

I think this is the reality of my life. I work. I do drive a car, even though I take my canvas bags to the supermarket. I drive as little as possible. I eat vegetarian as much as possible. I do a lot to try to be green. This is kind of where I’m at, for me it’s like a shallow green, that it’s not accepting the bigness of the problem, the immensity. It’s not going to work that way I don’t think because it’s still anthropocentric. And unless the other beings, and species, and forests … whatever … [are] inanimate. Unless they’re given a real voice, I just don’t think it’s going to lead to the right place, that’s my feeling. (Crystal, 00:25:15)

From her responses, it was apparent that Crystal was following the deep ecology ideas that nature has rights and that humans need to minimise their impact on the Earth. Crystal agreed with the Spaceship Earth metaphor: “No. I don’t think that’s [current lifestyles] going to work. I don’t think it’s sustainable. I think that’s the life that I’m living, and that’s the trajectory that I’m on” (Crystal, 00:36:47). Crystal’s view was that the “Spaceship” was not sustainable and that humans needed to radically change the way they lived.

5.6.10 The deep ecology spectrum.

Crystal rated herself as a 3 on the DES but would like to be a 5. She gave a pragmatic explanation:

I’d like to think I’m in the middle, but I reckon I’m probably about a 3. I really try to think of other species and the impacts of me as a person but I think I do it very badly. And when I do
it better, I fluctuate between a 3 and a 5, or something in the times where I feel like I’m a 5. (Crystal, 00:51:20)

Crystal was quite self-critical about her score and more generally about human activity: “I don’t think we’re anywhere near this end (ecocentrism) of the spectrum in the work we’re doing there, or me in life” (Crystal, 00:52:51). Her response suggested that she was setting a high standard for herself and that she viewed ecocentrism as an ideal position. Crystal’s tone was somewhat apologetic for not being at a 10, but this did not correlate given her active service to the EcoGroup. Perhaps Crystal was downplaying the valuable role she played in supporting the sustainability practices and beliefs of her children and the school. She did, however, express her optimism in closing the interview: “I’ve had glimpses of how fantastic that [the world] can be, a much better world than we live in now” (Crystal, 00:53:32).

5.6.11 Socio-ontological features of Karatjurk (Meta-meta analysis).

Figure 5.2 below presents the socio-ontological structure and function of the school sustainability community at Karatjurk Girls’ College. The EcoGroup at Karatjurk is shown in the diagram as a critical body influencing the students directly, but there were also indirect effects, mainly through Adam and some of the parents. Interviews with parent Crystal and her children were not represented separately. Figure 5.2 addresses the research questions by representing ecocentrism in schools, as seen through the lens of deep ecology. These ideologies were predominantly made possible via the interactions that students had with the sustainability coordinator, but parents, other teachers and fellow environment club students also had significant influence over the environment club members.
5.7 Karatjurk chapter summary

Karatjurk students often formed friendships with others who were associated with environment club activities and projects. Their ecological identity was formed from: interactions surrounding the sustainability ethos of the school; and a system of beliefs that were held in high regard by the school’s senior management through pride in the achievement of significant environmental awards. Student identity was interpreted in this chapter through the context of the ecological self, whereby some students saw themselves as environmental activists with strong connection to the planet. Students at Karatjurk exhibited participation in environmental activism by attending the Australian Youth Climate Coalition conferences. The average DES for Karatjurk students was 6.39, compared with an overall study average of 6.38 for the two schools where the DES was measured. Both figures presented a modest skew toward ecocentrism, although there was some variance in the
distribution of scores. The data from the DES requires further work for verification. The result, however, suggested students had a desire to move away from anthropocentric lifestyles toward a world that showed greater care for wild animals.
Chapter 6. Waa

In this chapter, I analyse the interviews and relate the responses to the study’s research questions, and construct a socio-ontological picture of the sustainability community at Waa. The participants’ responses are presented in the following order: students, sustainability coordinator, and then teachers. Despite efforts to include parents and senior school management, neither the principal nor any parents contributed to the study from this school.

6.1 Background to Waa and the environment club

6.1.1 Demographics for Waa participants.

Waa was a mixed-gender, Catholic secondary school in a growth corridor in the northern suburbs of metropolitan Melbourne, with a low to moderate socio-economic profile. The area had average income, mostly manufacturing workers, with half the number of professional workers than the national average\(^8\), which was half the number of professional workers compared to Bunjil and Karatjurk. There were 50% more LOTE families in the catchment area than the national average, which was much higher than that for Bunjil (29.1%) and Karatjurk (26.6%). Around 35-40% of residents were born overseas (which was similar to Bunjil and Karatjurk).

Waa had separate junior (Years 7 to 10) and senior (Years 11 to 12) campuses separated by approximately 500 metres. The environment club operated at both campuses but the sustainability coordinator (Brad) was located at the junior campus. Teacher interviewees for this study included the sustainability coordinator (Brad), Head of Music and Performing Arts (Michael), Mathematics and Information Technology teacher (Sean), and the senior

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\(^{8}\) Australian Bureau of Statistics 2011 census data: Mean annual income for Waa was AUD $43,612. 10.1% of Waa catchment had a Bachelor’s degree. LOTE at home was 44.1%. Main employment was manufacturing (15.6%), and professionals (13.3%).
Geography teacher (Margaret). Six students (three girls, three boys) were interviewed at the junior campus, and six (three girls, three boys) at the senior campus. Sustainability was delivered informally across the school via the environment club activities.

The social forces at Waa were similar to that for Bunjil and Karatjurk, but the perspectives of social justice and religious doctrine added to the dimensions of this school. Brad was the driving force behind cross-school efforts to promote sustainability via the environment club. He believed that his alliance with the social justice and religious aspects of the school had a synergistic effect on the work of the environment club at Waa.

### 6.1.2 Environment club projects.

Waa did not have a state or national reputation as a sustainable school. There were, however, a number of key projects completed at Waa that were initiated by Brad. These included:

- solar panels;
- large wetlands habitat for frogs (Waa was adjacent to a local creek);
- paper recycling; and,
- an energy audit.

The wetlands rehabilitation and the energy audit were good examples of sustainability successes. The wetlands were significant because they were adjacent to the school grounds and formed part of the Darebin Creek catchment in the northern suburbs of Melbourne. This ease of access made it invaluable as a natural resource for monitoring wildlife such as frogs, and as a venue for re-vegetation work to support basic classes in botany. The energy audit was significant because it served as a basis for school-wide adoption of sustainability practices in Mathematics, Science, Biology and Geography. The Humanities (English and
History) were also involved in the audit⁹, along with other school-wide initiatives like paper recycling.

6.2 Waa students

6.2.1 Situated identity, the ecological self and the environment club.

As with the other schools, the first part of the interview located the students within the sustainability milieu, and determined the important interactions that they had with other people in the school community. Students at the junior campus were Rachel (Year 9, junior campus Captain of the environment club), Alec (Year 9 junior campus Vice-Captain of the environment club), Tara (Year 8), Courtney (Year 7), Steven (Year 7) and Colin (Year 7). The senior campus students were Anna (Year 12), Adrian (Year 11), Veronica (Year 10), Jared (Year 12, senior campus Captain of the environment club), Jack (Year 10) and Michelle (Year 10). Waa students spoke positively about both Brad and the environment club. Rachel’s views were typical of Waa students “[environment club] has really helped me realise how much the world means to us, and how we should be caring for it in a better way today” (Anna, 00:00:26). Anna’s views were similar:

Working with [environment club] really does show how much of an impact you do have on everything, especially the environment and the situations around you. And so, in a way it helped me mature and understand that if I do litter, I can’t just do it continuously. (Anna, 00:06:27)

For Anna, the environment club provided an awareness and understanding of the environment, but it also highlighted behaviours that damaged the Earth. The environment

⁹ Energy audits were promoted by Sustainability Victoria and the Department of Education and Training (DET) to identify energy wastage and cost saving strategies in schools (Sustainability Victoria, 2015). The audits were implemented by private contractors (Enhar, 2017).
club community at Waa provided social cohesion and influenced the club students’ biographical trajectories.

For a number of students, being in the environment club was an emotional experience – one that student interview Question 2 explored: “How does it make you feel when you work on an environmental problem and end up either solving or reducing the problem?” Some students stated that the club was fun, some claimed they felt good about doing something for the planet, and others liked helping provide habitat for animals. Some reported that they felt special, and others felt a sense of achievement. Deep ecology was about doing something to protect habitat and promote biodiversity, so perhaps some of these students were taking an ecocentric view. I did not perceive any anthropocentrism in their responses. I concluded that many environment club students saw themselves as transformed into more environmentally connected, more active members of the ecosystem - attributes that were part of the deep ecology philosophy (Naess & Rothenberg, 1989). These attributes were not exclusive to deep ecology and were also part of the connectedness to nature concept of Chawla (2015) and others (Liefländer et al., 2013; Mayer & Frantz, 2004), and aligned with the notion of environmental consciousness (Nazir & Pedretti, 2016):

While the term consciousness raising may connote a shallow appreciation about the environment, i.e., awareness raising, in recent literature, this has been changing. Wals and Dillon (2013), for example, suggest that contemporary constructions of environmental education should focus on helping transform people from their existing ways of being with a particular focus on ways that support the long-term sustainable well-being of the Earth in all its fullness. (p. 288)

6.2.2 Joining the environment club: love of or respect for animals.

This section explores the factors that motivated students to join the environment club. The most common reasons that Waa students gave for joining the environment club included the
love of, or equal rights for, animals. For example, Tara said that she joined the environment club partly because of a love of animals developed from being taught to feed chickens on her grandparents’ farm, an experience that led her to choose the environment club as an extracurricular activity. Courtney also acquired a love of the environment through her affinity to animals:

Well, I really like animals, and I like to, instead of staying inside, I much rather go outside and do my own thing. And my family, we like to go out and help other friends, garden, and help them in all different kinds of ways. (Courtney, 00:00:36)

Her family experiences appeared to be important to her environmental club involvement but she later claimed that she joined under her own initiative: “I decided by myself because I know that we, the environment, needs a little bit more help” (Courtney, 00:01:24). Courtney also explained:

I think a lot of the animals that we have now will probably become extinct. I think we could do a lot better. [Give] the animals a nicer place, instead of [making] it really awful for them because they don’t get the same treatment as us, and we could do better. (Courtney, 00:17:57)

Steven also joined the club through a love of animals: “I wanted to join [the environment club] because I love animals and I’d [want] to learn a bit more about plants too” (Steven, 00:00:25).

Colin described a different motive for joining the environment club: “I always thought it was interesting to learn about the environment so I decided to join” (Colin, 00:00:53). He explained that he was not influenced by his parents but rather followed his own interest in the environment to become a member of the environment club. He supported habitat preservation for animals. Anna on the other hand, was recruited to the environment club by the coordinator Brad, although she had waited until her friends had joined: “He was my Year 9
science teacher and so he was always telling us about the environment, and he’s always doing various projects around the school and it’s quite intriguing” (Anna, 00:01:50). Regardless of the influence of Brad on Anna, it appeared that she was predisposed to the idea of joining:

Well, I’ve always been one of those students that I actually do a lot, knowing that I’m not really impacting the world in a negative way. I like to do charity work but I don’t have time. So, I guess in one way, helping the environment is another way of carrying out some charity work in my eyes. (Anna, 00:00:18)

There was also an important aspect of her personality that contributed to her membership of the club:

I love knowing that instead of using this resource we can use another resource in order to reduce the impact, and also because it’s got some sort of scientific back[ing] toward it. I’ve always been a very curious human being, so I love knowing that you can just substitute one thing for another and how you can still get the same quality result at the end of the day. (Anna, 00:01:02)

Jared described a different picture. He was in Year 12 at the senior campus and was Captain of the environment club, having joined when in Year 7 because he wanted to “do the right thing” (Jared, 00:00:28) by the environment and was concerned that politicians were ignoring environmental problems. His older brother and sister had attended Waa and were also in the environment club. He explained that his parents were pro-environment, so it was natural for him to follow in their footsteps. So, in this case the sustainability coordinator, Brad, in this case was not the main driving force. Despite Jared’s interview being brief due to senior school class commitments, he provided useful insights. For example, he described the tension between senior school study commitments and environmental club duties: “I still hold the
same values it’s just I don’t have an opportunity to express those, not because of the school but just my personal time” (Jared, 00:17:27).

6.2.3 Environmental stewardship/citizenship.

At Waa, environmental stewardship was part of the Ministry Team at the school, a feature that stemmed from the *stewardship of the Earth* as cultivated in the Catholic teaching at the school. The Ministry team consisted of the Social Justice Coordinator (a full-time officer), the liturgy coordinator, and the religious education coordinator. Along with environmental club initiatives and activities (in the context of protecting God’s Earth), the team coordinated an “Indigenous Awareness Week”, and they organised religious worship at the school, and ensured that the Catholic tradition was promulgated across the school.

Jared demonstrated environmental stewardship in his responses by stating that he felt a sense of responsibility toward the environment and preferred action rather than “standing by and letting things go to ruin” (p. 40, field notes). His environmental stewardship extended to actions in the school grounds:

"It taught me to do things like recycle and looking after other people. It’s given me empathy toward others as well. And if someone … outside was littering, I would tell them to pick it up and put it in the bin because I feel that we all share the responsibility to look after the environment. (Jared, 00:03:12)

Rachel provided a similar response “[environment club] has really helped me realise how much the world means to us, and how we should be caring for it in a better way today” (Rachel, 00:00:26). The student responses fitted with the deep ecology call for environmental action (Naess, 2005b), and the Naessian claim that lifestyle choices were political choices (Naess, 2005d).

The students’ responses also indicated that for some of them, the sustainability experience (of environment club) was life changing. For example, Adrian explained,
In Year 7, I never really cared much about the environment. I never really thought about [it] as a problem. I thought it was everyone else’s duty to take care of the environment. If they do all the work, then I don’t have to. But then gradually over time it went to the exact opposite. And I really do care about the environment, and trying to keep a rich and healthy environment for us to live in. (Adrian, 00:05:19)

Similarly, Jack felt that being in the club was a transformative experience: “I feel good for the environment that something good has happened” (Jack, 00:02:52). These comments demonstrated how students’ affective processes change as a result of their membership of the environment club, and it supported a notion of environmental stewardship.

6.2.4 Ecological resilience.

The students’ interviews also provided evidence for ecological resilience. Rachel reported on her capacity to cope with the ups and downs of sustainability work with a resilient attitude, and her general optimism and pride in her work:

Well, when something I do actually impacts the world for good it’s just massive, but then when sometimes it doesn’t work out, my feelings get a little bit dampened. But then I always tend to come back up because I know that I can come up with something better. (Rachel, 00:01:59)

Alec’s story was similar. He reported little success in trying to motivate other students, but he retained the capacity to rebound from disappointment, stating “It’s pretty hard to bash me down” (Alec, 00:06:26). He added:

I’m not one of those real environmental people that are saying, “Oh, the Earth’s going to die” and such and such. I’m more kicked back than that, and I’ll try and do what’s possible, and I try to make that emphasis, that if everybody does something, even so tiny, it’ll make a difference. (Alec, 00:07:13)
Steven also was not dissuaded if things did not work out: “Well, if it doesn’t work out I like to persist until it eventually works out” (Steven, 00:02:36). Adrian was willing to challenge others who were not paying attention to environmental issues: “If they don’t want to take care of the environment that’s fine. But I’m definitely urging them to start thinking about it” (Adrian, 00:09:12).

Colin took a different approach and did not confront other students if they littered, preferring to pick up after them rather than ask them to do the right thing. Anna had a less optimistic view. She reported that environment club students were in the minority and that not a lot of people have a positive impact on the planet, so she was sad that “practically nothing” (Anna, 00:08:45) was being done by people in general. Michelle, in Year 10, had a well-articulated view on the issue:

I don’t like to force my views on other people but whenever it comes up in conversation, I try and persuade them to think a certain way. Or I’ll ask them why they don’t care about the environment because not caring about the environment is like not caring about their future. And I’ll bring up statistics about all these things that have happened in the past, and global warming. I mean, I’ve met some people who were so ignorant [about] believing that global warming does not exist. I just try to tell them to read up a bit about it because I feel like they are pretty stupid to be honest. (Michelle, 00:08:25)

6.2.5 Self-Realization.

This section presents student responses on the idea of Self-Realization.

Adrian conveyed the sentiments of Self-Realization: “Both man and [the] Earth were [connected]. One of them doesn’t have to survive, because the Earth can survive without man. [However], there [is] a certain level that we do have to use the Earth” (Adrian, 00:13:00). In the following exchange, Jack talked about the environment as if it were alive:
WS: Thinking overall about the teachers and other students, if some of them don’t really care about the environment in the same way that you do, if they’re not doing the right thing by the environment, how does that makes you feel?

Jack: I don’t really like it when they don’t respect our environment and I feel that they’re hurting the environment.

WS: That’s an interesting word. Hurt, that’s almost human isn’t it?

Jack: Yes.

WS: Do you tend to look at the environment as alive?

Jack: Sometimes I do. (Jack, 00:06:16-00:07:19)

Jack’s view was not common in the study and could represent connectedness to the Earth, although he reported that he did not feel a part of the Earth and instead saw it as a resource: “I see the Earth as something that’s beautiful and as well I see it as a resource for humans and animals” (Jack, 00:24:06). In this way, Jack was taking an instrumental view of the Earth but was dialectical in seeing the Earth as “beautiful”. Self-Realization goes beyond simple empathy for or connectedness to the Earth, so Jack’s response was an important contribution to the study. A crucial step toward Self-Realization was accepting a human/nature monism, and Jack’s response that the Earth was “sometimes” alive was an important finding.

6.2.6 Intergenerational influence along the child-parent axis.

Intergenerational learning was evident at Waa, but there were other interpretations for the child-parent axis within Waa families. For example, Jack stated, “They [his family] recycle more now and they plant a lot more now since me being in [the environment club]” (Jack, 00:01:44). In Rachel’s situation, intergenerational learning worked both ways: “After I started at [Waa], [Brad] taught me many things which I have passed onto my parents.
Sometimes they think okay this could work, sometimes they think no, maybe it’s not a good idea to do something at this stage” (Rachel, 00:00:51). Alec reported that his family engaged in sustainability practices, mainly to save money; but there was no evidence of intergenerational transfer of knowledge. Tara reported that she takes information from the environment club back home, and consequently the family started a vegetable patch and has adopted a recycling ethic. Steven was teaching his mother how to care for chickens they bought for home, which was further evidence of intergenerational learning. Anna’s interview revealed that she was the primary motivator of sustainability practices at home:

I’m more of the one who goes home and tells my parents because my mum is quite old school - she’s very traditional. And although my dad’s very open-minded, I’ve always been the one with the new and innovative idea[s] and tried to do so many things. (Anna, 00:15:40)

Anna’s comments indicated that entrenched ideas at home could be changed once students gained enough knowledge and conviction from the school sustainability coordinator and the environment club. I asked Anna if her parents’ ideas had changed:

My dad [is changing] a little. [My mum] not too much. It’s more me [saying to them], [i]t’s economical to be environmentally friendly rather than not. I guess to some extent, my mom has changed. [M]y brother has convinced my parents (because we’re building another house, which isn’t that environmentally friendly either), to get a lot more solar panels because in [our current] house we have two or three. The fact [is] that you have solar panels and lower electricity bills, so to some extent my parents are adopting it [environmental practices]. (Anna, 00:16:03)

6.2.7 Environmental politics.

It was argued that the politics and sociology of the environment were necessary for a full understanding of environmental issues (Orr, 2004), and deep ecology was located as a “deep
“green” political ideology (Spretnak & Capra, 1986). Environmental activism was part of a deep ecology and was explored in the interviews.

Adrian was one of the few students to express a view on environmental politics. He also offered some political strategies for supporting environmental action:

> What I think we should do is invest more money into fighting climate change, finding alternatives, finding better ways to combat the situation. Because there’s definitely an answer out there, we’re just not thinking hard enough. And you tend to see in governments, if they believe in business, they’ll care less about the environment, like the Liberals. And there are the Greens, who obviously care about the environment, who are more left wing, and care not just about people, but the environment as well. (Adrian, 00:16:47)

Adrian’s comments indicated that he was perhaps arguing toward a *deep green* political ideology, but in a form that was an incomplete social ideology because it made no reference to the means of production. It appeared he took the centre ground in green politics, as opposed to the radical, deep green associated with ecoterrorism (see Figure 2.1 for details).

### 6.2.8 Natural resources/needs versus wants.

Some of the environment club students at Waa were aware that natural resources were finite and they believed that humans should only use the resources that they needed and not what they wanted. Rachel’s comments reflected the general view about biospherical egalitarianism, stating, “We need to leave the world in a really good condition. Because what [will] future generations going to think” (Rachel, 00:09:15). However, Alec was the only student at Waa to express a more anthropocentric view, stating that resources should be for future humans rather than for habitat (an anthropocentric view): “If it was for something that we utterly absolutely one hundred per-cent needed, I would probably favour humanity over the animals”
Adrian had a well-developed understanding of the deep ecology principle that humans should satisfy their *vital needs* and temper their *wants*:

There’s a limit, because our resources are scarce. There’s just a limited amount of resources, and an unlimited amount of people’s wants and needs that have to be satisfied. And it just means that because there’s a limit to our resources, we just need to think better about how we use them. (Adrian, 00:09:52)

Later in his interview, Adrian commented on the fate of civilisation: “The day that we lose our [natural] resources, was the day we lose our humanity. Because then we won’t have anything. All of our materialistic things will be useless” (Adrian, 00:18:55).

### 6.2.9 The deep ecology spectrum.

As explained in Section 3.4, the deep ecology spectrum diagram was *not used* at Waa because the limitation of the anthropocentrism/ecocentrism binary did not become apparent until after the Waa interviews were completed. However, I used the DES instrument for the interview with the Geography teacher Margaret because she was interviewed later in the study. This is presented in Section 6.3.12.

### 6.2.10 Intrinsic value.

Courtney was the only student to give an example related to *intrinsic value* in the study. She conveyed an understanding of intrinsic value/resource sharing in relation to wildlife habitat, taking a reflexive view on the matter: “Well, it’s their house and we all have to fit into this world. … Even though we’re bigger and stronger, it doesn’t mean that we can just take what we like” (Courtney, 00:13:19).
6.2.11 Neophilia/excessive consumerism.

Relating to neophilia or excessive consumerism, some students at Waa understood the problem and the effect that it was having on the Earth. Tara agreed that excessive consumerism should be avoided and reported that families should use consumer goods until they were no longer functioning: “If you keep getting what you want, the more things you want, the more the environment gets demolished” (Tara, 00:17:43). This was consistent with the Naessian view that humans should principally satisfy their vital needs before addressing their wants, to prevent environmental decay caused by excessive consumerism. Alec reported that “other” students (i.e., outside the environment club) “are [focused] on the now. And they don’t think about the future of what our Earth was going to look like, and what their children are going to be living with” (Alec, 00:03:52). Steven stated “most people have all the resources they need” (Steven, 00:15:32). Anna understood the issue of needs versus wants and agreed that there was excessive consumerism. She felt confronted by the problem: “What’s the point of all this? Why do we need all of this? It’s just this continual…And then you think of the greed, and yeah, then you get sad” (Anna, 00:22:52). Adrian, who was studying economics, claimed that consumerism was “essential for any government to actually work” (Adrian, 00:23:36), but in a dialectical way, he saw the merit of humans limiting their use of resources. Adrian was not opposed to people having the freedom to buy what they wanted, but advocated for a more efficient use of resources through new technologies, and for manufacturers to take responsibility for recycling outmoded technologies.

6.2.12 Dealing with “others” outside environment club.

In this section, the focus was on what environment club students thought about “other” Waa students and teachers (i.e., not the sustainability coordinator and student who were not in the environment club). Rachel (environment club Captain in Year 9), had tried to spread the sustainability message to her classmates, but had not been successful:
When [Brad] asked me to tell classmates about what we’ve learnt [in the environment club], some people just tend to chatter amongst themselves. They don’t tend to listen to what you’re trying to say. And yeah, it does make me a little bit sad, because we are trying to do something [that] will help them in the future, but they just don’t want to pay attention right now. It does also get me a little bit fierce at times, to go a little bit rebellious against them [laughs]. (Rachel, 00:07:15)

Rachel expressed her frustration with “other” students and teachers because some were not taking environmental problems seriously. Alec thought that some of the other “teachers are quite concerned about the environment. Keeping clean classrooms and things like that, but students really don’t care. And I find that a little sad in a sense” (Alec, 00:09:53). Tara, in part shared Alec’s view, stating that all of the teachers at the school were committed to activities such as recycling and rubbish-free lunches, and that they participated in fund-raising events such as sausage sizzles, and were very positive about the sustainability message getting through to students and teachers: “Because in every classroom that I’ve been in, they’ve had signs. I’ve seen what we can do to improve the environment. Like what things should go in the correct bin, what colour tops, and things like that” (Tara, 00:28:31). This effect may be due to Brad’s office being located in the junior school, thus creating a local, positive effect when compared with the senior campus. Unlike Tara, Courtney, explained that only some teachers were environmentally friendly:

Well, it's their choice what they want to do, I can't really control anyone. All I can really do is I can ask nicely. I mean, it's not like I can control them anyway, [in the way] that I would like to. (Courtney, 00:09:30)

Courtney also mentioned that some teachers cared for the environment by allowing students to do classwork outside to save on power. She thought other teachers were given the right information but choose not to care for the environment: “Oh well, they might've been told
[about turning off lights] but they didn't really listen. In such a way where they could've, but they didn't really bother to [care]” (Courtney, 00:28:57). Steven believed that some teachers confined their concerns to their core subject and did not generally espouse environmental practices:

When I’m in class, teachers don’t really talk about the environment. They stick to their subject. Whereas when I go out during recess and lunchtime to see [Brad], that’s when I’m the most environmentally aware. (Steven, 00:29:33)

Steven also explained that other teachers should have a more pro-environmental attitude:

Well, I think that people should [care] because if we don’t take care of our planet the planet will die faster because of more pollution, and pollution is what is currently destroying the world along with global warming. (Steven, 00:07:45)

Adrian strongly supported the notion that some teachers, other than those directly involved in the club, supported sustainability at their school:

Other teachers definitely demonstrate that they do care about the environment. There [are] a couple of teachers that ride their bike to work, instead of driving their cars, because they know it leaves a [smaller] carbon footprint. And yeah, the teachers here care about the environment, [and] try to do their bit, bringing food in containers, trying to educate everyone not to throw their rubbish on the floor. They definitely want to do their bit. (Adrian, 00:31:57)

There was good evidence from the study at Waa that Brad’s efforts were spreading to the staff via the environment club, even if not all staff members were enthusiastic about the sustainability goals for the school. The story with Waa’s “other” students was less certain, but there was evidence that some students were not interested in what the environment club had to promote.
6.2.13 Inter-campus factors.

An intercampus factor emerged during the interviews with Jared (Year 12), and Margaret, the Geography teacher. Jared reported that, since he moved to the senior campus, that he was less involved in the sustainability program. He added that, “I still hold the same values. It’s just [that] I don’t have an opportunity to express those. Not because of the school, but just [because of] my personal time” (Jared, 0017:27). Perhaps this is due to a shift in emphasis in the senior years toward the academic curriculum, but this explanation requires further research. Students still took up leadership roles in the environment club (President and Vice-President) and other clubs. Senior students like Jared may have had less time to commit to the environment club, but they still reported that leadership roles (Captain and Vice-Captain) were important to their careers, and were therefore central to building their holistic situated identity. Jared confirmed this view stating that the senior campus environment club work had less impact than the junior campus work because you “hold the same values but don’t get the opportunity to fully express yourself [get involved in environment club]” (Field Notes, p. 40). Jared reported that he has less time for environment club in senior years, not so much due to academic pressure but more to do with “personal time”.

Margaret (the Geography teacher), who was located on the senior campus, viewed the environment club as a junior campus activity that was side-lined once students faced the demands of senior studies:

I’ve talked to [Brad] about it, and I really think that the students on this campus see it as a junior campus activity. But I will quite often get kids, particularly my environmental science class kids who have come in having been in [environment club] but they no longer consider themselves to be a part of [environment club]. (Margaret, 00:03:09)

As noted previously, Brad was located on the junior campus, which could have had some influence on the perception of the environment club being a junior campus activity.
6.2.14 Biblical idea of human dominion over the Earth.

There was no specific question written to address interpretations of the bible\textsuperscript{10} regarding human dominion over the Earth, but a few responses did address this topic. Michelle’s (Year 10) and Brad’s responses were the only occasions during the Waa interviews with students and teachers where the perspective of the church and anthropocentrism was raised. When I asked Michelle why some people might say that the Earth belonged to humans, she replied:

I feel like a lot of that was probably the effect of religion. I feel as if a lot of people believe in the creation story and they would relate that we were superior because God created the Earth for man in their view. … I also feel some humans might believe that because they are so assured in their superiority. (Michelle, 00:15:37)

When I discussed the work of the Ministry Team with Brad, he explained that the Team was formed to spread Christian values, and that stewardship of the Earth was part of that overall objective:

We talk about … if a strong Christian or Catholic value is … that stewardship of the land is what we should be doing, and that's what we're not doing, how do we get that across to the kids? … So, how do we tell the kids we need to look after the Earth in a manner that it’s going to still be here for our kids and our grandkids? The[efore] we need to look at using the Earth in a sustainable manner. That's the only conversation that's come up. (Brad, 00:11:46)

More research was needed to determine the influence of ecumenical practice on anthropocentrism and ecocentrism in schools.

\textsuperscript{1} And God said, Let us make man in our image, after our likeness, and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth. (Genesis 1,26).
6.3 Waa teachers

The sustainability coordinator, Brad, expressed a passion for wildlife, nature and the environment, and he had prior experience and qualifications as a zookeeper. Indeed, it seemed that his love for animals and his husbandry skills were pivotal to his success as a teacher and coordinator, and that these traits attracted students to the environment club. Jared, however, was not convinced of Brad’s efficacy of the club:

   I think [Brad] does a good job in trying to look after the environment, but there’s a general consensus that nothing is going to change and that one person can’t make a difference. … So, people don’t often go to that length or effort to actually change anything. (Jared, 00:22:53)

Jared’s comment showed that, simply because an enthusiastic sustainability coordinator was appointed at a school, not everyone would support the work and strategic initiatives they were appointed to achieve.

6.3.1 Environmental stewardship.

Brad said that the Ministry Team was formed to spread Christian values and environmental stewardship amongst the Waa community. Brad explained how his work at the school in sustainability crossed over to the religious work of the school:

   I’m part of the Ministry Team … which is a group that gets together once a term and discusses what they’re doing in terms of the stewardship of the environment and how are we living out Catholic values. … So, there are teachers there that work with community development, you know helping out people in the community, the social justice coordinators there, and I’m there from the environment club point of view. (Brad, 00:10:05)

I asked Brad to clarify environmental stewardship at Waa: “So, that's a Christian value that we're looking at, to see if we [are] doing as much as we can to pass that on in terms of a Christian or Catholic value” (Brad, 00:10:50).
There were Catholic Ministry initiatives that addressed environmental sustainability (Catholic Education Office Sandhurst Diocese, 2014b; 2014c; Riley & Danner-McDonald, 2013), and these were relevant in understanding how faith modulated the approach to sustainability in Catholic schools and the curriculum. Brad said that Christian or Catholic values advocated for stewardship of the land, and that, in line with the Ministry Team, this was what he promoted to students in his classes and in the environment club.

6.3.2 Staff dynamics and tensions.

Brad outlined the forces and tensions between himself and some other teachers in the school who viewed their role as defined by their teaching load, and who were not concerned with cross-curricular initiatives like sustainability. He explained that his role as sustainability coordinator was often “extremely frustrating” because of the resistance to (and sometimes criticism of) school-wide approaches to sustainability, and he added that change toward sustainability uptake was slow. Commitment to sustainability from the greater school community was not evident from the Waa interviews, nor was it even mentioned on the school’s website. There appeared to be little parental involvement in environmental initiatives and there was no indication of the principal being part of the sustainability effort.

Brad, however, still felt supported by the principal and other teachers:

I do get a lot of support [from colleagues and the principal] but I would like more. There are plenty of staff that I talk to individually that are passionate about one aspect or another. Teachers are so happy that I have a paper recycle bin in every room, and other teachers that [say] “good work” with reducing the litter in the ground, the yard looks cleaner. … So, you get that support, and when I ask teachers to help out, they help out. But, you still see lights being left on, heaters being turned up to the max, … and that’s in offices where I know there are staff that I have on board that don’t like that. So, I have to create a culture…where people feel free to stand up and speak up … which was helped when I did the energy audit. I had a
lot of conversations with staff for the first time about their views of energy being wasted because we did the energy audit in such a public manner. (Brad, 00:43:59)

This excerpt indicated that the social dynamics of sustainability between Brad and his colleagues changed, in part depending on his perspective of the situation. It showed that there was more to learn about coordinator-staff interactions and that further research was required to reveal these relationships. The energy audit that Brad initiated provided a good model for getting the whole school involved in sustainability practices.

6.3.3 Social justice/sustainability/ecumenical ministry team.

Brad’s efforts to conduct a school-wide energy audit showed that he had a commitment to engage all students and teachers and not just those involved in the environment club. It was clear from his interview that the social justice and religious education priorities for Waa positively impacted on his sustainability practices because he saw these as synergistic forces within the Waa school community. Waa had a full-time staff member appointed as Social Justice Coordinator, whose role was to promote the Catholic Social Justice Policy under the auspices of The Catholic Education Office of Melbourne. The triad of the Social Justice Coordinator, the Sustainability Coordinator and the Ecumenical (Religious Education) Director were important according to Brad because of their shared focus on environmental stewardship.

Sustainability at Waa was linked to the need to integrate liturgy across the school “So, that’s a Christian value that we’re looking at it to see if, were we doing as much as we can be to pass that on in terms of a Christian or Catholic value” (Brad, 00:10:50).

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6.3.4 Ecological wisdom.

Michael, the Head of Music and Performing Arts, volunteered to be interviewed because of his previous role as a sustainability coordinator in a boarding school in Borneo. When asked about the prospect for ecocentrism to gain a foothold in the curriculum at Waa, Michael responded, “I think we need to move further along, away from a human-centric system to an ecocentric system. I don’t believe at this point in time you can teach totally from an ecocentric [viewpoint] but I do think you have to move further along that continuum” (Michael, 00:19:52). Michael’s comments suggested a useful approach to an *ecocentric pedagogy*, the idea that ecocentric ideology and practice can permeate the classroom and the curriculum. Michael thought it will be difficult for students to see the Earth as *alive*, therefore any ecocentric pedagogy would require thought about how the teaching and learning can proceed:

> If the Earth is just a physical object and that, I don’t think, makes permeation [pervading through]. If you’re talking about it being a living entity, and we’re part of that, I think kids find it [a bit] difficult to come into that. (Michael, 00:32:31)

He did not think that the experience of connecting necessarily had to be religious:

> I think that ultimately the building of spiritual empathy for us in relation to the whole ecology is what we should be doing. And I think we build that through creating a greater sense of empathy for other species, initially mammals, and then maybe eventually for plants. But I think initially people relate to other mammals and other animals first. (Michael, 00:33:36)

6.3.5 Energy Audit and other school-wide sustainability activities.

Brad had initiated a school-wide *Energy Audit* as part of a Sustainability Victoria program to reduce energy costs in schools (Sustainability Victoria, 2015). Under the scheme, schools used certified auditors to identify the main areas of energy use (lighting, heating and cooling,
computers), patterns of use, and an analysis of energy bills. From this audit, schools established opportunities to reduce their energy bill from improved shutdown and turn-off behaviours. The audit was promoted as an opportunity to enrich student learning about pro-environmental behaviours. Brad viewed the outcome of the audit as a success because it made visible to other teachers the sorts of ideals that Brad and the environment club had aimed to achieve. Brad explained how the energy audit raised the profile of the environment club, and provided a good model for a cross-curricular activity:

We had to go into every office. And [Mick] from Planet Savers (who ran the audit) said he wanted to make this as visible as possible. So, he got the students wearing bright yellow vests, using the light meters to measure the amount of available light in the rooms, and outside of the rooms. And to take the temperature, and to look at what lights are on, and what electrical devices were on in each room. It raised questions about what are we doing? What’s this for? Teachers said, “Oh this is so great you know I notice that this is what’s being done and I would like to see it changed.” And these were teachers that I did not have the opportunity to have conversations with before. You know, there’s three hundred staff here, and I’m mostly on this [junior] campus. So, it was great to have that opportunity to get to know that there are more teachers out there that are passionate about it, but they’re here to be employed as full time teachers, and that’s what they’re focusing their attention on. (Brad, 00:46:09)

Brad was also successful in bringing the whole school together for other sustainability events:

When I run litter free lunches, to make a cultural change you’ve got to have subtle pressures over a long time. My litter free lunches now involve a group like the VCAL or the VET students. So, the VCAL students might cook up a soup lunch from the veggie garden that they’ve been looking after, that I’ve helped them look after. The VET music students would perform as a rock band for us at lunchtime. And the [environment club] students will help with organising the event and serving the soup, and so on. So, you’ve got a large number of
students involved. And when all their friends want to come along and support, you get a really nice atmosphere, especially with the music in the background. (Brad, 00:47:28)

Brad added “And that’ll be on the senior campus, and yeah it’s a really positive environment. A lot of staff came out to support it” (Brad, 00:48:24).

Sean (a Mathematics teacher) thought that it was a teacher’s duty to embed sustainability into the curriculum, stating that sustainability had a broad spectrum that allowed for mathematical approaches to environmental issues. Sean saw calculations like the energy audit as an ideal example because students had to work with benchmarking data and strategies to save costs and help the environment.

6.3.6 Connectedness to nature.

Brad understood the importance of connectedness to nature and he made efforts to integrate sustainability across the curriculum. He explained the importance of connectedness:

When students are given these opportunities [planting, being outdoors] regularly from a young age, I believe that it builds a natural affinity for the environment for wildlife, for flora and fauna. Without that, people become detached and feel less human, and you see students who want to harm wildlife due to a fear, due to a lack of understanding. (Brad, 00:52:45)

Connecting to nature appeared to be easier for students at the junior campus of Waa, primarily because Brad had constructed wetlands on the banks of the Darebin Creek, adjacent to the school. He explained that this required teachers to have trust in their students:

By trusting them, showing that I trust them, by showing them where the animals are in the wetlands, and teaching them a little bit about them, it actually has always made these students see that people care, and start to care themselves. (Brad, 00:52:45)
Sean, the mathematics teacher, also thought this generation of students were more connected to each other and to the environment:

You can see they’re more caring. So, integrating environmental initiatives into the scientific curriculum is a very big bonus for the teacher because you have more connection to your classroom. They enjoy the activities when you take them outside which they feel that they’re part of, so they take some ownership of what they’re doing. … I think with technology and our busy lifestyles the students sometimes can forget they are connected to the Earth, they are connected to the environment, [and] they are connected to the animals. So, I think re-teaching them in the classroom in an educational context will reinforce that every living organism and human or living life is a part of Earth. (Sean, 00:03:20)

6.3.7 Science as the solution to environmental problems.

Michael, the music teacher, offered a view on the idea that science would solve our environmental problems:

I think that if we were to offer people the solution that science is going solve anything, it ardently disempowers people and doesn’t change behaviour. I believe science is part of the solution and I think it’s a vital part, but I believe it’s a barrier we should not push too hard because then it creates a disempowerment then people will do less. We’re coming with science as a solution yet people become disempowered and ultimately become lazy. (Michael, 00:22:19)

The Geography teacher, Margaret, believed that science could come to our help but was equally firm that politics and economics would determine the outcomes of the debate around the environment: “I think it has to be society, economics and environment that the environmentalist falls on [for answers]. And until there’s a political will and the willingness in an economic sense to do things, it makes it very difficult” (Margaret, 00:20:28). Margaret’s background in forestry might explain her response, but it was clearly
anthropocentric and conveyed the view that nature had only instrumental value. Margaret’s response on environmental politics followed the “Managerialism” approach to environmental education (see Figure 2.1 in Section 2.3.3).

6.3.8 Existentialism.

Margaret reflected upon her own existence and described her place in the scheme of living things, taking a partly existential view:

I suppose it’s all an extreme. Like me thinking that humans will become extinct, it’s kind of extreme and its long term; and I’d like to think it wouldn’t happen. But at the same time I can’t see why it would, I suppose I can’t put myself as a human outside of all these other species that have existed over the billions of years and we’re really not that special. (Margaret, 00:32:36)

The Naessian view described in deep ecology was inherently existential because it questions the way people exist and live on the Earth, and Margaret’s view accords with this view.

6.3.9 Ecocentrism in the Geography curriculum.

Margaret was interviewed to investigate a classroom teacher’s perspective on ecocentrism, and whether there was any evidence of ecocentrism or anthropocentrism in her teaching or in the Geography textbooks. Margaret stated that she was unaware of anything in her teaching or in the Geography textbooks (from Years 7 to 12) that she was aware of that constituted ecocentrism. She also stated that the prescribed curriculum did not make any distinction between human-centred and Earth-centred material but that it was more about human interaction with the environment. Margaret commented on the ecocentric concept that nature had intrinsic value (as opposed to instrumental linked):

I suppose a lot of things talk about [how] we need to protect the environment for the environment’s sake rather than it doesn’t always have to be human-centred. But the way that
it is approached always seems to have a human element to it. … The focus in Geography … it’s more about the management. So, much of geography is about human attraction with the environment so the focus tends to be on the human aspects of the natural environment and also the human environments. I think, and I suppose the way that the curriculum has been written, it shows that [human-centred material] should be coming through. But because, when you go to textbooks, the publishers go, “Oh there’s this new thing what can we pull out of our own textbooks to still meet the requirements of the curriculum” - they don’t go back to basics and rewrite stuff. (Margaret, 00:05:51)

In terms of textbooks, Margaret stated, “I think [that] the textbooks probably don’t truly reflect the essence of the curriculum [on] sustainability” (Margaret, 00:07:43). According to Margaret, part of the driver for this limited focus on sustainability was the short publication cycle for textbooks, which means that they could not be completely rewritten if they were to be commercially viable and be delivered on time for the academic year. Margaret therefore used other learning materials that she sourced that already fitted the new curriculum. Her forestry degree background influenced Margaret’s view on ecocentrism; for example, she believed that forests should be for use by multiple groups and not just for habitat. She took a position between anthropocentrism and ecocentrism, and added that humans should not keep using more and more resources. However, she stopped short of stating that the Earth should come first. On the other hand, Margaret held the view that the Earth would survive even if humans became extinct. She explained how she puts this idea to her students:

I think it’s a realistic possibility, and I don’t say that to my students, but I do like to remind my students that in geological time we’re a little bleep, we’ve made huge impacts but we are a little bleep and we are one species and species become extinct quite regularly. (Margaret, 00:30:48)
6.3.10 Ecological wisdom.

I asked Margaret whether she thought that students acquired a kind of ecological wisdom, or perhaps a more robust personal ecological philosophy by studying sustainability. I used climate change as a catalyst for the question. Margaret replied that she used her teaching about global warming as an example of ecological wisdom:

Over say the last four or five years where we do global warming, specifically in year 12 Environmental Science (but it’s always been a part of their Geography curriculum as well as the junior Science curriculum) … I suppose personally I’ve seen the attitude change [around global warming] in the students over that time, and of course that’s a broader reflection of society and that type of thing. But I think now the students coming through are very much well, “Yes, this is the situation and we should be doing something about it”. It doesn’t mean they’re necessarily taking personal action to do something about it but I think they’re much more inclined to think that people who don’t believe in climate change [that] that’s the old way of thinking … So, I think it has changed and [I] think it reflects those changes in their education as well in primary school where they’ve got a lot more focus on sustainability.

(Margaret, 00:09:15)

It was clear from Margaret’s interview that she believed students had the capacity to deal with complex ecological issues but that this capacity needed to be nurtured in the face of a skeptical older generation (i.e., some teachers and parents).

6.3.11 Ecological resilience.

The literature on ecological resilience was presented in Section 2.9.3, from which it was concluded that resilience and agency worked together to fulfil the deep ecology call to action (Rothenberg, 1993). I put the concept of ecological resilience to Margaret in terms of students being able to defend their ecological position, and asked her if any students had such
attributes. Margaret stated that not all students fell into this category and that some still experienced resistance from their parents:

Some of them would be [resilient in their attitudes] but I think the majority would still back down a bit. It depends on who the person is that’s attacking them. I know that some of my Year 12s will say that their parents are still a bit questionable about it [climate change] and they’re trying to have these discussions but then they just give up. (Margaret, 00:10:57)

Added to this was the perception from some students that little has been done by the previous generation to resolve climate issues:

I think there’s probably also more of them who, in a way, are starting to blame the older generation … like they’ll question why … I suppose more thinking of my Year 12s, they can’t understand why certain things haven’t been done. (Margaret, 00:11:25)

6.3.12 The deep ecology spectrum.

As explained in Section 3.4, the DES was created after the Waa participants were interviewed, however, the Geography teacher Margaret did complete the DES because she was interviewed after its creation. Her data is now presented here.

Margaret chose 7-8 on the DES, realising that humans were part of an ecocentric world, but that they would find it too difficult to fully embrace ecocentrism.“But at the same time I also think that humans get a higher priority. I suppose the well-being of humans does get a higher priority than most other living things to a certain extent” (Margaret, 00:58:38).

Regarding whether human used too much of the Earth’s natural resources, Margaret stated, “Well, yes we were to the planet’s detriment, but also to our own detriment” (Margaret, 00:59:06). Margaret’s response was typical of the struggle that participants faced, with the idea of sacrificing Western standards of living to limit natural resource use.
6.3.13 Intrinsic value.

I asked Margaret about the value of the Alaskan wilderness to students - Do they see inherent value in such a remote place? Margaret said that, yes, the students do understand the value of such wilderness, but in a dialectical manner they also linked it to humans protecting the ecosystem:

I think it has value to the [students]. I think they like the idea that the wilderness areas are there. I think as humans we like the idea that it’s there. But even, I suppose, when we’re teaching those things in the curriculum, a lot of the time … will be linked back to things like, I suppose, ecosystem services of those places. So, there [are] ecosystem services; humans are one of the species that benefit from that. (Margaret, 00:14:09)

6.3.14 Global environmental problems.

When asked about whether or not students had empathy for a degraded ecosystem on the other side of the Earth, Margaret stated, “[For] some of them it would have, others don’t care” (Margaret, 00:15:13). When asked why they fell into these two categories (empathy versus apathy), she elaborated at length about the students and their parents:

I think it’s a personality thing. I used to think it was tied in with possibly their parent’s views but I don’t necessarily think that anymore. I think it’s such an individual thing because you’ll get some students who have a real attachment to the natural environment and you think they must have grown up in a household where their parents are conscious of those types of things. And then when I’ve spoken to a few of them about it, it’s like, no my parents don’t care, but somehow they’ve got this connection. Whereas you’ll have other ones who their parents are into all the green things but they haven’t picked up on that, so I don’t know how that comes about. I think it’s quite variable, I suppose overall, I think the awareness of things like environmental issues has increased in teenagers. However, I’m not sure whether that’s
necessarily meaning that more of them are incorporating that into their life. (Margaret, 00:15:31)

Margaret’s view of her students’ connectedness to global environmental problems showed that empathy could not be assumed in all cases.

**6.3.15 Disconnected from nature: an alternative view?**

Margaret’s response in the previous section indicated that family dynamics were complex and not readily synthesised into a single explanation of parent-child interactions. She reported that some of her students had no real connection to the natural world and did not know about the major national parks in Victoria:

> I find that our students tend to be quite isolated overall. A lot of them are very northern suburbs [implying poorer areas] focused and they haven’t moved much beyond that. So, that limits their association on how they feel that they are a part of the natural environment. I’m thinking people who go out and go camping. You’ll talk to your Geography class about national parks and they’ll have no idea where or what you’re talking about. They won’t even know Wilson’s Promontory [National Park]. They don’t even know it is a place of national significance within the state. (Margaret, 00:17:09)

In response to Margaret’s reply above, the northern suburbs of Melbourne was a growth corridor with the second highest level (16-22%) of overseas-born people of all local government areas around Melbourne (Benessia, 2009). It was not possible from this study to say if there was a relationship between ethnicity and connections to the natural world, but it could be a topic worthy of future study.
6.4 Waa socio-ontological influences and interactions around ecocentrism (Meta-meta analysis).

Figure 6.1 below outlines the relationships between the various group and individual entities within the Waa sustainability community.
Important findings presented in Figure 6.1 were the social and religious influence of the Ministry Team, and the overarching influence that this has had over many aspects of schooling, including the sustainability coordinator and the club. The diagram denotes this
with double-headed arrows, but in some ways the flow might be unidirectional, for example (perhaps), the teachings of the church.

Brad viewed his role as an extension of the Catholic ethos of the school, and was following the work of the Catholic Church in linking God’s work to stewardship of the land. The integration of social justice, religious and environmental strategies at Waa provided a cohesive approach to sustainability at the school.

The influence of the senior years studies (VCE) were represented in Figure 6.1 as a weak dotted arrow close to the club, indicating that students were drifting away from the core work of the club. This, as previously discussed, was likely due to students focus on the VCE, Brad having his office on the junior campus and also due to the perception that the environment club was a “junior school thing”, even though the Captain and Vice-Captains of Sustainability were on the senior campus.

6.4.1 Summary of Waa socio-ontology.
A feature of the Waa socio-ontology was the desire by the school to integrate the Catholic faith into school sustainability practices. It was difficult organising Brad’s interview, so he had to be recorded in two sessions over a two-week period. This meant that I did not understand the full significance of the Ministry Team data until after all the students had been interviewed. It was not possible to say if environment club students were influenced by the ecumenical aspects of Catholic school as proclaimed by Brad.

6.5 Waa chapter summary
A main finding for Waa was the influence of the Catholic Church on the sustainability practices of the school, exercised through The Ministry Team at the school. This was promoted as an obligation to protect God’s creation and for the Church community to be good custodians and stewards of the earth. As with Bunjil and Karatjurk, the sustainability
coordinator acted as an exemplar for environmental action and played a crucial role in implementing sustainability practices at the school. The findings for Waa have also shown that some students joined the environment club because they were encouraged to do so by the sustainability coordinator, the same finding as occurred at Bunjil and Karatjurk. Environment club students also had a desire to contribute to the environment and were motivated by the positive impact that they had on the natural environment of the creek adjacent to the school. Waa students enjoyed participating in environment club projects and were proud of club achievements, and experienced a sense of agency through these projects. Some club students were aware that they had a duty to protect the environment. This was associated with resilience in some towards environmental disasters and the pragmatic acceptance that not everyone was going to protect the environment. They understood that students outside the club would not always share their views. Waa students provided some data indicating that they were becoming ecological beings, consistent with the deep ecology concept of Self-Realization. There was some data supporting student connectedness to nature, and the interview with Geography teacher Margaret supported the presence of ecological wisdom in some students.

A love of animals was another factor at Waa contributing to environment club membership, again in common with the other two schools. Some students (like Colin) joined without any outside influence from parents, friends or the sustainability coordinator, but there was evidence from a few students of intergenerational transfer of sustainability knowledge from school to home. The response to questions around neophilia/excessive consumerism, needs versus wants, and limits to natural resources, demonstrated awareness of these problems similar to that found at Bunjil and Karatjurk. Only one Waa student provided a view on the intrinsic value of nature. There are no DES scores (other than for Margaret) because the DES instrument was not developed until after the Waa interviews.
Chapter 7. Discussion

7.1 Introduction

In this chapter, I address each research question consecutively, and compare and contrast the findings in the context of the existing literature. I discuss where my research confirms or challenges current theories of environmental education, and where the study makes a significant contribution to the study of school environment clubs. The socio-ontological models constructed in Chapter 4, 5 and 6 (showing the lines of influence between entities in the clubs) were used to synthesise a theoretical model for student Self-Realization based on the deep ecology concept of an ecological self.

First, I discuss the key findings that students expressed views consistent with ecocentrism, and that many reject anthropocentric ideas and practices. Secondly, I discuss the implications of these findings for environmental education through the concepts of ecological self and identity, personhood, student as ecophilosopher, ecological resilience, and ecological wisdom. Finally, my contribution to the sociology of education is discussed in terms of the intergenerational/child-parent axis, and in Section 7.6.1 on socio-ontological interactions of the school sustainability milieu.

7.2 Research question 1: Anthropocentrism and ecocentrism

This section addresses the first research question, “Do students and teachers, and other members of the school community embrace anthropocentric, or ecocentric beliefs consistent with deep ecology?”

7.2.1 Ecocentrism and anthropocentrism.

The deep ecology spectrum (DES) instrument (Figure 3.5) was used with students at Bunjil and Karatjurk, and they were asked to explain their score (as an alternative to Naess’s
ecocentrism-anthropocentrism binary). The separate distributions for Bunjil (Figure 4.1) and Karatjurk (Figure 5.1) showed that ecocentrism was more apparent at Karatjurk compared with Bunjil. The average score for the study across all 25 responses was 6.29, with the participants aligning toward the ecocentric end of the spectrum (Figure 7.1). This could largely be explained by the participants’ desire to see natural resources shared between humans and non-human animals, and their rejection of anthropocentrism and disproportionate use of resources by humans. However, some of the participants expressed their choice in terms of preserving resources for future humans, which was still an anthropocentric position. The lower scores were from students who claimed that it would be difficult for humans to suddenly give up their resource-hungry ways, and therefore it was impractical to impose a strictly ecocentric lifestyle.

**Figure 7.1.**
*Distribution of DES responses for both schools that completed the DES score*
Reasons for the difference in the response patterns between the schools were mixed, and were perhaps largely due to differences in expectations and aspirations between the participants at the two schools. The DES data from Bunjil were an indication that purely ecocentric lifestyles were desirable but somehow unattainable in their current circumstances. This is evidenced, for example, by the low score from Jenna (2.5) at Bunjil, who contemplated a score of 5 but had said that it would be impractical for everyone to give up their current lifestyles.

Karatjurk had a similar school-wide implementation of sustainability practices promoted via the environment club, but there were differences in some students at Karatjurk that might explain the DES data profiles. It was clear that the majority of participants as Karatjurk chose ecocentrism over anthropocentrism, and in part I postulate that this was because the senior environment club students attended the EcoGroup and the Australian Youth Climate Coalition. Students Gabriella and Rebecca were confident and mature at interview, and had presented reports to the EcoGroup in the same manner, whereas none of the students at Bunjil had this same demeanour. The students at Bunjil were enthusiastic about Wayne and the environment club, but not all of them displayed the higher order skills of Gabriella and Rebecca. This might be an artefact of the data since Bunjil students were not observed outside of the interview room (as was the case at the EcoGroup meetings).

All participants were directed or encouraged to explain their score on the spectrum. Their elaboration on their score was governed by their interpretation of the meaning of choosing 10. Selecting a figure toward 0 was usually seen as representing human greed, whereas a 10 was viewed as an ideal world of humans and other non-human animals sharing the planetary resources. For some, the ideal of 10 was considered too unrealistic, partly because it was assumed that most people on Earth could not make the radical adjustment to their lifestyles to
meet the ecocentric ideal. This did not always mean a failure or giving in; it was seen as a viable way forward and a reasonable option for the participant.

Participants were asked to provide explanations for their position on the spectrum. For example, Jenna, a Year 11 student (Bunjil), believed that humans needed more resources than animals to maintain their standard of living, and that ecocentrism was not going to happen because people were selfish. Martin, a Bunjil parent, viewed humans as currently at 0 on the DES, because that was where he thought we were located, but added that he would like to see humans at 7 or 8 (his DES score was set at 0). Alec, in Year 9 (Waa), was the only participant to favour resources for future humans over habitat; an anthropocentric stance.

A problem for schools if they wanted to embrace more ecocentric practices and beliefs related to the lack of material on the topic in schools and in the curriculum. Part of this problem was with the lack of discussion about anthropocentrism and ecocentrism in textbooks, which the Geography teacher Margaret claimed locked teachers out of discussing such topics. As discussed in Section 6.3.11, Margaret believed that humans should not keep using more and more resources, but stopped short of stating that the Earth should come first. She also thought that the Earth would survive even if humans became extinct.

The finding in this study of a skew toward ecocentrism or pro-environmental behavior in terms of the New Environmental Paradigm (NEP), was consistent with the study by Thompson and Barton (1994). They found that people who were pro-environmental tended to be ecocentric, whereas people who saw instrumental value in nature were typically anthropocentric or apathetic to nature conservation values. My data is not consistent with a New Zealand study of vocational students (Shephard et al., 2009), where all groups in their study had a mean NEP in the anti-anthropocentric range, and a Finnish study of high school students (Keser et al., 2010), where little or no interest in pro-environmental behaviours were found. Age was a possible factor behind these differences - an explanation supported by the
work of Chang (2015) who found an orientation in 16-26 year old university students toward materialism and anthropocentrism, again measured using the NEP. Other research supported the DES findings of this study (see Chan, 1996; Karpudewana & Keong, 2013). For example, Chan (1996) found that secondary school students’ consumerism and the desire for gadgets and technology were counter-opposing forces that some students were grappling with in their lives. My findings differ from Twenge, Campbell and Freeman’s (2012) work showing declining concern for the environment amongst American millennials (born 1982-1999). Berkman (2012) also challenged Twenge et al.’s data, citing the mass rallies for the climate as evidence against the findings of the latter study. Similarly, in this study, students at Karatjurk attending the AYCC supports Berkman’s (2012) findings.

7.2.2 Neophilia.

The inclusion of questions on neophilia and excessive consumerism related to Arne Naess’s view of ecocentrism that humans should satisfy their “vital needs” rather than their limitless wants (Walters, 2010); an anti-consumerist point of view. Some students reported that neophilia, exemplified in the study (for example by the purchase of a new smart phone), was driven by the need to “be cool”, and the desire to be popular amongst their peers. As noted in Section 4.2.7, Samantha (Bunjil) summarised this as: “Thinking that in order to be cool you need to have the new iPhone, and sometimes it’s how they advertise stuff” (Samantha, 00:20:51). When asked about managing her children’s desires for consumer products like a gaming console, Karatjurk parent Crystal was tough on her children Claire and Thomas and was determined not to give in to pressure via her children’s peers. Adam, the sustainability coordinator at Bunjil, encourages students to keep their mobile phones longer and to reduce their ecological footprint. Emma, a Year 12 student at Bunjil (and sustainability Captain) described neophilia (perhaps ironically) as “How dare you not have the newest [gadget]” (Emma, 00:20:22). Some of these responses are likely due to adolescents’ fear of being
rejected by their peers. Many of the Bunjil students agreed with the ecocentric view that Western lifestyles were based on consumer wants and not fundamental needs. Some Karatjurk students also agreed with this claim, at the same time balancing the complexities of neophilia with realistic proposals for consumerism.

Environment club students in the study generally did not conform to the impulse buying of expensive gadgets (Benmoyal-Bouzaglo & Guiot, 2013), in some cases, they opted to hold on to a mobile phone longer than usual and resisted the temptation to upgrade to a newer model. A few students in the study were aware of the power of advertising to convert unlimited wants into gratifying needs (Murphy, Cooper, Dora, & Rose, 2012). Angela, the Outdoor Education teacher at Karatjurk, proposed an antidote to neophilia (at least a temporary one) as technology-free excursions and weekends away in nature.

### 7.2.3 Modelling the data and findings from students.

Modelling was based on the observations of the participants and on any recurring themes from the preliminary analysis and segmenting of the data (Boeije, 2010). Can any theories be formulated from the data to construct a coherent model for what emerged from the data? The first observation related to the social influence observed in the socio-ontological diagram Figure 7.2. The key positive influence on the club student was the sustainability coordinator, with their peers within the club playing a secondary role. In the three interviews of parents, the parents played some role in the ecocentric thinking of the club student but this was not remarkable. Negative influence was minimal with apathy from other students and teachers being noted, but some club students seemed resilient to this factor.

Figure 7.2 showed the final theoretical model with the core concept of ecocentrism. There were two major strands to the model. Along the environment club strand was the dynamic of influence surrounding the members of the club and the projects they had undertaken. These projects were important to the formation of a particular identity and outlook of the club
students. This identity served as the foundation for many aspects of ecocentrism as seen through a deep ecology lens. These aspects of deep ecology were outlined in the literature review and do not require repetition here, but each project addresses different aspects of ecocentrism. The second strand was essentially the building of an ecological self and the formation of a system of beliefs that the student used to create agency over their own destiny. Those beliefs were also congruent with ecocentrism. The arrow along the child-parent axis denotes the flow of ideas and information from the environment club to the home via the student.

7.3 Previous studies of environment clubs

Findings from this research differed from Lousley’s (1999) study where club projects did not necessarily make a difference to environmental outcomes. For example, the quote from Adrian (Section 6.2.7), a Year 10 student (Waa), demonstrated an awareness of environmental politics, whereas Lousley (1999) concluded that:

It is this appearance of “making a difference”, coupled with its uncontested moral rightness, which made recycling the dream project in the liberal self-empowerment model of high school clubs, in the process reducing environmentalism to a set of impotent, eco-correct behaviours all-too compatible with the culture of schools and the social and economic status quo. (p. 300)

In contrast, participating students genuinely wanted to make a difference. As Rachel (Waa) remarked:

[W]e do need to leave the world in a really good condition because what are the future generations going to think about the world if it’s just full of buildings and concrete roads? It doesn’t really make sense. You need the greenery to live and animals won’t be able to live either, so you won’t get to see the wonders of nature occur. (Rachel, 00:09:15)
Lourie (1999) challenged the ethical worth of environmental activities like recycling but Jared, a Year 12 student (Waa), joined the club in Year 7 because he wanted to do the right thing by the environment and was concerned that politicians were ignoring the problem.
failed to capture the ethos of the environment club that was predominantly defined as the ethically right path to follow - a path that both Rachel and Jared appeared to follow.

The activities and accomplishments of the clubs in this study were vastly different from the more menial cleaning duties that were seen in Nigerian clubs (Ana et al., 2009) and Kenyan clubs (Mwangangi, 2012; Toili, 2007). Many participants in this study held concerns about global environmental issues and they ran sustainability projects and did field work more akin to environment clubs in Canada (Flynn et al., 2002), the United States (Alonso, 2014; EarthTeam, n.d.; Greenspan, 2005), New Zealand (Enviroschools, n.d.), India (Hillwoods Academy, 2010; Indian Central Board of Secondary Education, 2010), and Japan (Japan Environment Association (JEA) Junior Eco-Club Project, 2004).

Section 2.9 outlined more of the typical work of environment clubs around the world, but this study revealed that environment clubs could do more toward developing an awareness of ecocentrism and anthropocentrism in their schedule of activities and projects. Typical club projects in this study included recycling (paper and composting), solar panels, tree planting, energy audits, monitoring water use and conservation, and creating and managing frog habitats at the schools.

Connecting to nature was part of Angela’s Outdoor and Environmental Education excursions at Karatjurk. Brad the sustainability coordinator (Waa) actually took the students down to the adjacent Creek to monitor wildlife and do wetlands studies.

The findings from this study showed that environment club students were oriented toward protecting the environment, they enjoy connecting with nature, and they understood that some humans were harming the Earth.
7.4 Research question 2. Embracing ecophilosophy

This section discusses the second research question, “If secondary school students can embrace an ecological philosophy, is there evidence to support the concept of student as ecophilosopher?”

7.4.1 Student as ecophilosopher.

The idea that children can be philosophers is not new (Haynes, F., 2014; Haynes, J., 2003; Sapere, 2014). There is growing acceptance for including environmental philosophy into EE and outdoor education (Cocks & Simpson, 2015), and for helping teachers prepare to include ecophilosophy in their practice (Splitter, 2014). However, there appears to be a paucity of research into ecological philosophy with secondary school students where the focus is on the deep ecology worldview. This thesis addresses that gap by using interpretive analysis to generate new theories related to ecophilosphy.

In particular, the data demonstrated that some students were capable of higher order thinking that was consistent with philosophical views on the (poor) state of the environment. This led to the proposition that students might be capable of embracing ecophilosophical ideas. Amber, from Karatjurk, articulated this in her response to the limits to growth question (see her full response in Section 5.2.5):

The human race has developed this sort of hierarchy where it’s always been about us, and where we are the ones in charge of the environment. And since it’s been that way for hundreds and hundreds of years, it’s hard to change the mind-set and say, “Why don’t we save th[e] [environment] so that we can save the animals instead of saving ourselves?”

(Amber, 00:15:20)
Bunjil’s principal, Kara, affirmed that students could think in ecophilosophical ways: “I’m sure that they can think deeply about issues. I don’t know that we give students enough credit sometimes for how deep they can think about certain things” (Kara, 00:08:21).

Students in the study provided evidence of metaphysical responses to the interview questions, consistent with ecophilosophical thinking. For example, Brian, a Year 9 student (Bunjil), when asked if the Earth should be put first before humans, stated:

Yeah, I definitely agree with putting the Earth first. It’s such a beautiful and unique ecosystem our universe and our world that it should be there for, I suppose, people of the future to observe so they can admire the beauty of everything. So, conserving resources to protect the environment, I definitely agree is an important thing. But there is of course the problem of the efficiency of the resources that are … harmful to the environment. (Brian, 00:18:46)

The socio-ontological diagrams presented in chapters 4-6 depicted the interactions between the individuals who were part of the extended environment club community. These diagrams illustrated the theoretical model of student ecocentrism expressed in Figure 4.4 (Chapter 4), and serve as the foundation to student Self-Realization as proposed in Figure 7.3 below. The socio-ontological diagrams, and the theoretical models for ecocentrism and Self-Realization, contribute to the existing literature by filling a gap in our current understanding of the environment club community in secondary schools.

Karatjurk parent Crystal (Section 5.6.6) explained that ecophilosophical ideas were a part the household discussion with Claire and Thomas, even though her children had their own opinions on matters relating to ecophihosophy.

There is a gap in the literature on intergenerational influence relating to ecophilosophical learning. Payne’s (2005) study on sustainable households yielded the concept of *household ecology* and this learning was a one-way process: “This study of Green families elaborates
the idea of a household ecology by examining how the parents environmental commitments and interests are ‘passed down’ to their children” (p. 82).

In this study, Crystal’s family did not follow the parent-child axis, and the sustainability dynamic between Crystal had changed as her children, Claire and Thomas, had grown older. In her interview, Crystal explained that her family has a deep connection to the Earth, and that she saw herself as having and encouraging a strong commitment in being a sustainable family. Thomas and Claire did not express any subservience to their mother in their interviews; they had formed their own view of what constituted a sustainable lifestyle, even if their views were parallel with those of their mother.

7.4.2 Metaphysics of environmental education.

Metaphysics is recognised as difficult to define because it has multiple meanings deriving from Aristotle’s fourteen books (van Inwagen, 2013). However, it can be summed up as “the study of ultimate reality” (van Inwagen, 2015, p. 1). “Metaphysics, then, attempts to get behind appearances and to tell the ultimate truth about things” (van Inwagen, 2015, p. 4). The deep ecology philosophy draws on Spinozian metaphysics for the core idea of a human/nature monism (see Section 2.4.2.6) (van Inwagen, 2015). Ruth’s (mother of Luke and Brandon at Bunjil) comment about the planet could be interpreted as metaphysical:

The Earth is a living, breathing thing. It is telling us. It is warning us. But we are still so caught up in the dollar signs as to how I can make more money … and we forget about the planet. (Martin & Ruth, 00:38:28)

Ruth’s words were an invocation of Gaia theory (Lovelock, 2000), which is inherently metaphysical (Laface, 1997).

Crystal’s description of her children’s experience with nature in national parks (see Section 5.6.4), was metaphysical and an example of connectedness to nature. Angela, the
Outdoor Education teacher (Karajurk), encouraged her students to connect to nature (Section 5.4.6), asking them to listen to and become wise about nature. In both of these examples, the test of a metaphysical response was whether it met the condition of being wise beyond worldly, material or social success (Ferrari, 2008). There are few studies of metaphysics specific to primary or secondary schooling (abstraction in mathematics being one example) (Macknight, 2011). Other scholars were clear that wisdom could be developed in elementary schools (Reeve, Messina, & Scardamalia, 2008) and public schools (Ferrari, 2008), as a way of broadening student experience of philosophy.

7.5 Developing an eGeneration profile

The eGeneration profile referred to students who provided more articulated answers to the interview questions with greater depth and maturity. Common for these participants was one or more of the following features:

- Participated in or maintained an interest in environmental activities and sustainability education at both primary and secondary school.
- Raised by parents (or indeed the greater family) to care for and tend to animals.
- Visited a sustainable secondary school or environmental camp while in primary school.

Only a small number of students in the study fitted the eGeneration profile of having had sustainability experiences at both primary and secondary school, so the data supporting this idea is preliminary, but their stories are worth attention. For example, Alec (Waa) can notionally be categorised as an eGen student. He was introduced to sustainability at primary school as an integrated activity, and primary school was an important foundation for Alec’s environmental attitudes. His response indicated that he felt a sense of agency over sustainability issues:
Telling people to pick up litter, and turn off lights, and change globes. Trying to help students to put stuff in the right bin, or stuff like that. Picking it out if it’s not in the right bin. Just trying to get them into it, but mostly my words land onto deaf ears, as most people don’t like to put things in the right bin, just to make me annoyed. (Alec, 00:02:12)

Courtney (Waa) reported that her primary school experience of sustainability was better than in secondary school: “I think in primary school we watched a little bit more about the environment. We were seeing what was happening, and we as a school, tried to make things better” (Courtney, 00:21:11). Jack (Waa) identified that only two or three of his primary school classmates went on to become environmentally active. Jack was not an eGen candidate, but he did experience a transformation to an ecological self after joining the secondary school environment club:

Well, in primary school, I never really paid attention to the environment. I never really cared about the environment. And then in Year 7 when I did join [the environment club], I enjoyed it, and then that’s when things started changing where I was more careful with what I did. So, I recycled, I would save water, I would plant things, whereas in primary school if someone asked me to plant something I would wince about it. (Jack, 00:15:29)

Jack viewed this progression as simply moving from childhood to being an adult. When asked why his attitude to sustainability was not better at primary school, Jack responded, “I think that’s just the way the school ran” (Jack, 00:17:38). He added that he wished for a sustainability program for students, teachers and families. Michelle (Waa) explained that her primary school did not have a sustainability focus and that she gained only a basic understanding of environmental issues from the media. However, she did later state that she had a latent desire to help the environment: “I wanted to be involved in helping the environment and I knew that I cared about the environment, I just didn’t know how I was supposed to support the environment or what I could do personally” (Michelle, 00:18:31).
Michelle fitted the eGen profile because she sustained an interest in the environment from primary school through to the environment club at Waa. Data from the Waa students suggested that the eGen concept might be a real phenomenon, even if the paths taken by individual students varied depending on their primary school experience.

### 7.5.1 Primary school.

It became clear from some students’ responses that (in part) a student’s situated identity was connected to their sustainability experiences at primary school. This was especially so if the primary school had a sustainability coordinator. Luke explained:

> We had an exhibition at primary school, and I did palm oil because of the orang-utans and deforestation of the palm trees. And that was pretty interesting because I got to learn about how nature and the world forms, and how people who do the smallest things can affect the Earth very big [sic]. (Luke, 00:07:54)

Luke was in Year 6 at the time and it had made an impression on him, talking about the experience in a quite animated fashion. This was only one example so further work would be needed to determine if this applies to other students who are given sustainability education at primary school.

### 7.5.2 Secondary school.

Students new to secondary school were typically faced with many challenges, including that of multiple teachers and a complex timetable. The extent of the transition “shock” can depend on factors such as the size of the primary school, or whether there was an older sibling at the secondary school. For example, Luke’s older brother in Year 9 was also in the environment club and was a positive factor in Luke’s decision to also join the club. Wayne, the sustainability coordinator (Bunjil), provided his view on the challenges faced by primary school students when they enrolled at Bunjil:
Year 7’s a confusing year for kids because they’ve come from a primary school, that’s invariably smaller. Then [the environment club] start[s] competing with other interests. So, they might have come from a primary school with strong connections in sustainability education. [But] when they get to secondary school, their distractions are far more and new, and pretty exciting. They can be very switched on [to the environment club] for a number of years, and then they get a part-time job after school or they are selected to play in particular sporting teams, and it [then] becomes a little bit harder. Or their studies start to take more precedence over other things. (Wayne, 00:12:32)

It was not evident from the literature how the above factors might have influenced the development of eGen profile students, but Wayne reported that it was not easy recruiting students and retaining them in the environment club. Regardless of these barriers to club membership and the adoption of a sustainability ethic, the club offered students social cohesion throughout their life at the school (and beyond).

Rebecca, a Year 11 student (Karatjurk) and environment club Co-vice Captain, was another example of an eGen student. She had sustainability experiences at her primary school in New Zealand, and her eGen status was best exemplified by her attendance at the Australian Youth Climate Coalition. Both Amber and Claire (Karatjurk) were also examples of the eGeneration profile. Jack, however, did not have any primary school exposure to sustainability but underwent a transformation at Waa because he had paid more attention in secondary school. He did not qualify as an eGen person according to my definition, but had most of the traits described above and showed that an inadequate primary school experience can be offset by a greater enthusiasm in the secondary school setting. Mathematics teacher Sean (Waa) supported the above findings by responding with the view that the current generation of students were connected to the environment.
7.5.3 Intergenerational learning.

Findings from this study also supported the idea of an eGen profile that might include parents/grandparents/guardians, who promoted commitment to the environment in their children/grandchildren. Ruth and Martin (parents at Bunjil), for example, demonstrated that intergenerational learning could promote a stronger commitment to the environment in their own children (see Section 4.4.1). Luke and Brandon’s parents were a key influence in their early years when their two boys were at primary school, with sustainability education being imparted both at home and primary school. Initially, I assumed that Luke picked up his love of animals from his father, and that this love had been nurtured and extended at Bunjil through the environment club to align with biological egalitarianism. However, Ruth reported that his love of animals was partly innate:

Luke has been [attached to animals] ever since a small child. “Oh, don’t stand on that, and don’t stand on that”. Even with spiders, if you find them around the house, he’ll get a piece of paper and a jar, and trap it, and put it outside. He has been very much like that from [a] very, very, young [age]. Even in regards to [monkeys], he loves monkeys, anything to do with [monkeys]. And he’s very much into not using anything with palm oil in it. He will go and look at things in the supermarket and say, “Mum, you shouldn’t be buying this”, or “Mum, I’m not eating it anymore because this has got palm oil”. He’s very much into that sort of thing. (Martin & Ruth, 00:06:53)

In terms of the influence of primary school environmental education on student propensity to adopt similar values in secondary school, Luke said that he had animals at primary school: “Well, we had a rabbit there, and I took care of it but then it died. And they had chickens as well. So, me and a few friends used to take care of them” (Luke, 00:05:09). He clearly liked animals: “I really enjoy animals. I’ve been to a lot of zoos, and I enjoy watching the monkeys,
because monkeys are cool” (Luke, 00:06:17). Luke’s mother believed his affinity for animals developed from both his primary school experiences and the animals kept at home:

It was acknowledged at [primary] school. They did have environmental studies. But unfortunately it got to the stage where in grade six, you [only] studied environmental [issues] when you were doing [classwork] that you could actually tie in with environmental [work]. Which is a bit of a shame really because a lot of the kids got a lot of benefit out of working in the little garden at the school, and growing various bits and pieces. Although they did do a little bit of cooking at the school where the environmental teacher would cook herbs, or tomatoes or whatever. (Martin & Ruth, 00:04:01)

Data from this study revealed an intergenerational flow of ideas from the students to their parents, as a unidirectional, child-parent transmission of knowledge and skills; or an intergenerational child-parent axis. As discussed in Section 2.9.6 and here, students sometimes influenced their own parents (and siblings) to embrace sustainability (i.e., solar panels, rainwater tanks), whereas parents (and grandparents) who grew vegetables and encouraged their children to go outdoors promoted sustainability in their children. In Section 6.2.2, for example, I reported that Tara (Waa) joined the environment club partly because of a love of animals after being taught to feed chickens on her grandparents’ farm. Parents of environment club students generally attended sustainability working bees, and were socially connected to the school. Karatjurk student Megan was one student who was keen to influence her parents using the ideas she acquired from the environment club. Amber was also another example: “Yeah, I try and convert my family. Our house isn’t finished so we’re hoping to be more sustainable when it’s done. Install the [water] tank and things.” (Amber, 00:02:47).

These findings were similar to other studies on intergenerational knowledge transfer along the child-parent axis (Ballantyne et al., 1998; Uzzell, 1994) where the focus was on transmission in the homes of secondary school students, rather than in nature centres or
classrooms. The data from Crystal’s family confirmed previous literature that claimed that parent-child transmission was bidirectional (Payne, 2010).

### 7.5.4 Summary of the eGeneration profile.

It was not possible to conclude from the data if the particular environment club students who were referred to as eGeneration or eGen individuals were a new type of individual or not, but they did have three specific traits:

- Higher order thinking that embraced the intrinsic value of nature, understanding of the social and political processes that endanger the environment, and capacity to logically process environmental issues (perhaps approaching Self-Realization and understanding rudimentary environmental ethics).
- Emotional connection to biotic and abiotic ecosystems (the standing next to a mountain metaphor).
- Behavioural change (direct action), which might be around the home or school, or out in the field protecting natural resources or attending conferences.

These findings suggested that the eGen profile of this group of students included responding to their primary years sustainability mentors and that they carried a positive attitude toward the environment across to their teenage years at secondary school.

### 7.6 Research question 3. Socio-ontological structure

This section addresses the third research question: “What is the ontological structure of the sustainability community in schools and how does this ground ecocentrism and anthropocentrism in schools?” Arising from the data, the social forces and ontological picture of the sustainability community in the three schools were developed and depicted in Figures 4.3, 5.1, and 6.1.
7.6.1 Socio-ontological interpretations.

The socio-ontological diagrams are idealised representations of a four-dimensional sustainability community, with three dimensions of space and one dimension representing interactions and lines of force between entities. When it became clear that the social interactions were too complex to be represented by text alone, the diagrams were developed to represent responses to the third research question.

Placing the student at the centre of the diagram was neither an arbitrary move, nor a tactic to indicate that students in environment clubs were any more or less significant than other people (such as the sustainability coordinator). I selected the student as the point of reference because most of the data came from them. The nature of the relationships and social architecture were similar amongst the three schools in the study but there were some notable differences that emerged. For example, the environment club students at Karatjurk had closer social bonds than that for Bunjil and Waa (indicated by the shorter, bolder, double-headed arrow). The other clear difference was the EcoGroup at Karatjurk (see Section 5.1) that acted as an executive arm, providing guidance on the sustainability policies and practices at the school.

The data revealed that the sustainability coordinators at each school had the primary influence over students with regard to their views and practices on environmental issues. The data suggested that the influence (or *sustainability line of force*) of some parents was also important (but this requires further study and a larger sample size to verify the findings). Interaction with friends in the environment club was another factor important to club members.

The two-way interactions at Karatjurk with sibling and parent were represented in Figure 5.2, as they were for Bunjil but not as a family (where a double-headed arrow should exist between parent and sibling). The figure does not (and cannot) depict the nuances of the
parent-coordinator interactions; these were only determined from the transcripts. The parents in this study were from different educational backgrounds and had different vocations. It was not possible to say what effect these differences had on the club students.

### 7.6.2 Environment club students.

Figures 4.3, 5.1, and 6.1 showed that some students became environment club members because they had existing friends already in the club. Students were disinclined to join the club if they did not have any friends to bring along or if they did not know a current member. This was consistent with developmental psychology literature (presented in Section 2.9.3) where close friendships often provided social, cognitive, emotional and academic benefits that were essential to the development of self-worth, empathy and the acquisition of social skills in teenagers (Way & Silverman, 2012). The student responses in this study revealed that the girls at Karatjurk “valued” friendship more than the boys – a finding that is consistent with Way and Silverman’s (2012) conclusion that girls were better than boys at forming close friendships. The findings cannot make any claim that girls are “better” than boys at having friendships.

Findings from this study revealed that sustainability coordinators were critical to students joining the environment club but that friendship played more of a major role in club membership, particularly with the girls at Karatjurk. Claire (Karatjurk) stated that the sustainability coordinator (Adam) had persuaded her to join the club and that she had previously not been motivated to join because her friends were not members of the club. “It’s kind of hard when none of my friends are interested in environmental issues and sustainability” (Claire, 00:02:11). Anna (Waa) was also recruited to join the school environment club by the coordinator (Brad) but had waited until her friends joined. Megan (Karatjurk) also supported this observation: “Well, my friend said, ‘Oh, [Megan] you should come along to the environment club. It would be fun’, and I came along and I enjoyed it
because I knew that I was helping out the Earth” (Megan, 00:01:20). Gabriella (Karatjurk) also stated that “I only joined the team because my sister was in it. But then I’ve just continued to love it” (Gabriella, 00:01:44). “Fitting in” and feeling “normal” was important to some club students.

An unexpected finding of the study was that students in the environment club developed cultural capital in relation to other students outside the club, but not solely as a source of power, status or worth. Cultural capital is a currency that engenders cohesiveness and provides opportunities for students to express their views and reach consensus. These outcomes are consistent with Social Influence Network Theory (Friedkin & Johnsen, 2011; Stanton-Salazar, 1997) which they can essentially use for “social progression and the accomplishment of goals.” (Harper, 2008, p. 1033). Environment club students generally viewed themselves as doing something altruistic and worthwhile, which in some students elevated their self-esteem, and gave them greater confidence.

Other findings about students and their membership of the club were:

- Students could have competing demands from other extra-curricular activities. For example, Grace (Karatjurk) had dance classes and discussed these issues with her mother before joining the environment club.
- Club students were motivated because they wanted to do something good for the environment.
- Once students joined the club and experienced the rewards from the club activities, they often became more involved in the work of the club and they identified themselves more closely as a sustainable student.

The study showed that students saw the sustainability coordinator as an environmental exemplar. They respected their coordinators because they (the coordinators) put their beliefs into action, and encouraged others students and teachers to share in their passion for the environment. The counter-argument is that the social interactions between coordinator and club students are simply a manifestation of top-down control, a problem that Uzzell (1999)
[286x759] says constrains EE. The presence or absence of top-down control of sustainability coordinators over environment club students was not pursued in this study, and requires further research.

7.6.3 Ecological resilience and agency.

Some students indicated that they were able to rebound from ecological disappointments that were in the form of apathy or criticism from “other” teachers and students outside the environment club, but also in scenarios of global disaster, for example, an oil-spill killing wildlife. Wayne (Bunjil) described this as agency, “sustainability by stealth” or “ninja sustainability”, calling it a daily ritual, a way of life, and a philosophy. Anna, a Year 12 student (Waa), was an example of a student that had gained a feeling of agency by joining the club, which she described as “how much of an impact you do have on everything” (Anna, 00:06:27). The student responses, such as Anna’s, were consistent with Uzzell’s (1999) findings: “First, it is clear that environmental problems are seen as more serious the farther they are away from the perceiver, such that environmental problems affecting the national level are seen as more serious than those affecting the local” (p. 405). The data from this study was also similar to previous research from Canada (de Vreede, Warner, & Pitter, 2014) that claimed that much of the direct action by students were changes in lifestyle choices that minimised the impact on the Earth.

Alec, Steven, Adrian, Colin and Michelle (all from Waa) gave responses that demonstrated ecological resilience and agency, as did Luke (Bunjil) and Claire (Karatjurk). Anna, a Year 12 student (Waa), provided the only pessimistic response in stating that the environment club had done “practically nothing” (Anna, 00:08:45) to solve environmental problems.

Findings from this study also indicated that resilience and agency were a function of any successes of the club or coordinator. This was supported by Johnson (2008) who found that
“as the students in this study testified, teachers are able to ‘make a difference’ to the lives of their students in quite profound and socially significant ways by actively focusing on ‘the little things’ within their sphere of influence” (p. 396). Gabriella in Year 12 (Captain of the environment club) and Amber in Year 11 (Co-Vice Captain of the environment club) both at Karatjurk, noticed if staff walked to or cycled to school rather than used a car (an initiative introduced by the Karatjurk coordinator Adam, and put into practice through the club students). Seeing teachers “walk the talk” affirmed their choice to be in the environment club and added to their resilience. This finding agrees with Johnson (2008) who defines resilience in adolescents as follows:

Resilience refers to both a process and outcome of coping in response to risk, adversity, or threats to wellbeing. It involves the interplay between internal strengths of the individual and external supporting factors in the individual’s social environment. (p. 386)

The environment club achievements at all three schools were seen as collective endeavours that engendered great pride amongst the club members if it involved the greater school community.

7.6.4 Environmental activism in school students.

In the study, there were two recorded responses and one anecdotal response that discussed environmental activism. Michelle (Waa) provided an example of how students used digital technologies to embrace environmental activism - an indicator that the environmental life experiences of the current youth would almost certainly be different from their parents (Fisher, 2016). She used Twitter to follow a hash tag that related to the environmental impact of coal. Whether digital technologies were leading to more students being environmentally active is a topic for further research.
Jared (Waa) believed in environmental activism because his parents were pro-environmental, and his older brother and sister were also members of the environment club. Jared felt a sense of responsibility toward the environment and preferred action to “standing by and letting things go to ruin” (p. 40, field notes). Anecdotal evidence came from the EcoGroup at Karatjurk in their meeting minutes (July, 2014), where senior students who attended the Australian Youth Climate Coalition in Canberra reported back to the EcoGroup meeting. The senior students held beliefs that were consistent with environmental activism, but there was no data generated from the EcoGroup meetings.

There is too little data from the study to generalise about environmental activism in secondary schools, but there is enough to suggest that environmental activism did exist amongst a couple of the student members of the environment club in the study.

7.6.5 Socio-ontology of the club coordinator and other teachers.

The situated identity of the teachers and the ontological structures were different for each school, with the tensions between staff and the sustainability coordinator Wayne (Bunjil) being notable. Adam’s leadership style at Karatjurk was quite different from Wayne’s, and best described as low key and fairly modest by comparison. The notion of a situated identity helped describe the tensions that arose around Wayne’s running of an environment club – these tensions polarised some staff into being for or against the sustainability culture at the school. Such tensions have the potential to derail attempts by schools that wish to become sustainable institutions. Interestingly, “negative vectors of influence” (not displayed in the socio-ontological diagrams) as seen at Bunjil, are not evident at Karatjurk. Adam’s colleagues Angela and Christina were more focused on what was best for students within the sustainability agenda for the school.

These observations have implications from the perspective of this study’s sub-title “Exploring ecocentric alternatives”. Wayne described factors that promoted or hindered an
ecocentric approach to sustainability in schools, but there may be other explanations for his answers. One view might be that the picture given by Wayne was typical of any secondary school, and that his responses described above did not relate to his sustainability role. The interview with Kara, the principal at Bunjil, did not generate any data on the socio-ontology of the Bunjil tensions. As is presented in the chapters on Karatjurk and Waa, staff antagonism toward the sustainability coordinator was not evident at these two schools. An investigation of sustainability coordinators’ relationships with other school staff could be the focus of further research. It is uncertain why the negative social forces existed at Bunjil, but reasonable to conclude that Wayne’s personality and style of leadership were not appreciated by all staff. In spite of the negative aspects of the socio-ontology at Bunjil, Wayne continued to accomplish significant advances in sustainability at the school, achievements that were consistent with an ecocentric ideology.

**7.6.6 School/community links as strategic initiatives.**

An important difference between the schools in the study was in their governance. The EcoGroup at Karatjurk included the environment club Captain (Gabriella) and Vice-Captain (Rebecca) as members. This placed these senior students on the same footing as teachers, parents and community representatives, and therefore empowered the environment club because they were given an equal say in the projects, fund-raising and policies of the EcoGroup. The EcoGroup at Karatjurk took on the wider function of ratifying sustainability policy and practice at the school. For example, any proposal for a new initiative (like a new bank of solar panels) was discussed at the EcoGroup meetings, where Adam was a representative of the school management team. This over-simplifies the complex negotiations between the stakeholders (students, teachers, parents, senior staff like the principal, and members of the local community), but demonstrates the strategic importance of a forum with
a wide membership, and it is recommended (based on this study) for other schools contemplating an enhanced community sustainability profile.

7.6.7 Sustainability practices in a faith-based school.

As discussed in Chapter 6, the sustainability, social justice and ecumenical practices at Waa were closely linked through the Ministry team, and Brad received positive support from the team. Michelle was the only Waa student to raise the anthropocentric problem contained in the biblical story that humans should dominate the Earth: “I also feel some humans might believe that [God created the Earth for man.] because they are so assured in their superiority” (Michelle, 00:16:21). The linking of social justice with sustainability via the Catholic faith was in keeping with Catholic social thought (Riley & Danner-McDonald, 2013). Previous work showed that various faiths were aware of sustainability issues (see 2.3.3.13 for details of interfaith beliefs) but that this does not necessarily translate into environmental action (Lawson, 2012). This could be due to cultural and religious factors that might limit or prevent the uptake of sustainability practices (Lawson & Miller, 2011).

A main finding at Waa was the strong ecumenical link between Catholicism and sustainability; a feature that environmental educators needed to be aware of and a factor to be considered in future research with faith-based schools. The Catholic Church has established curriculum frameworks to help environmental educators (for example see, Catholic Education Office Sandhurst Diocese, 2014a) and Lawson (2012) argued that this was important to people of other religions as well. State secondary schools in Australia are secular, so the findings from Waa may not be relevant to government schools. It may, however, be an issue for environment club students who come from a religious family, and this is an area for further research.

In summary, the socio-ontological structure at a faith-based school was clearly different from that of a secular school, and this difference influenced the way that a faith-based school
addressed anthropocentrism and ecocentrism. The biblical interpretation of human dominion over the Earth has shifted from an anthropocentric past to an ecocentric present, and the integration of sustainability with ecumenical and social justice practices appeared to benefit each of these streams at Waa.

**7.7 Overview: Ecological self and identity**

This section addresses aspects of all of the research questions because being/becoming ecocentric and locating the participants within the environment club community are linked to ecological philosophy. Environment club students were exploring and evolving their *identity* (or *selfhood*) - a process characterised by a sense of inner wholeness and direction in their life, and through feeling loved, skilled, unique and independent (Ewen, 1998). In the context of the research questions, this is referred to as the *ecological self* (Mathews, 1991; St. John & MacDonald, 2007), and can be identified as the formation of *personhood* (Ashmore & Jussim, 1997) through the shared culture of the environment club and sustainability community.

Analyses of the narratives in this study confirmed the established notion from Gee (1999) that young people engage with the world in different ways, with aspirations in life that are shaped by their teachers and peers. For example, Jack, a Year 10 student (Waa), experienced a transformation into the ecological self when he moved to high school which he characterised by a greater attentiveness toward the Earth. The ecological self is associated in deep ecology with the concept of Self-Realization - a gestalt state of expansion of the self toward nature (Fox, 1990c) and ultimately toward the cosmos (Mathews, 1991). It is similar to the *ecological consciousness* proposed elsewhere (Turner, 2011). This was seen in the interview with parent Crystal (Bunjil), who had taken her children to national parks in Australia and the USA. She appeared to value the importance of a metaphysical approach to nature in developing an ecological self.
Identity is crucial to the situated selves of environment club students because it gives them a sense of being and purpose in life (Kroger, 2012). Students in this study achieved this by making choices about the political, social, environmental and relational values they held, and by undergoing a meaningful exploration of their lives - one that might inform them about possible future directions. In the environment club setting, the self is both a product of the situation and a shaper of behavior and thoughts associated with that situation (Oyserman, Elmore, & Smith, 2014). The findings from this study indicated that these processes were active in many of the environment club students and that these essentially defined a new type of environmental citizen. This data accords with Cao’s (2015) description for an environmental citizen, where the Earth is not regarded as property and the individual has a set of “values, duties and responsibilities, very much in tune with attempts to address our environmental predicament” (p. 77).

7.8 Drawing the research questions together into one model

The broad aim of this study was to explore ecocentrism and anthropocentrism in secondary school environment clubs. This focus has not been addressed in the literature to date, however, this study has provided new perspectives on the role of environment clubs in secondary schools, and revealed aspects of these clubs that were critical to the success of the sustainability culture and policy in schools. The responses to each research question contributed to the foundation of a single model for developing Self-Realization, and are revisited briefly here to help establish the model:

1. Analysis of data relating to the first research question showed that students and teachers varied in their alignment to ecocentrism, but for many there was empathy for the deep ecology lifestyle (consistent with minimising ecological footprint), and a desire to share the Earth with other living things.
2. In addressing the second research question, I developed the *student as ecophilosopher* concept from the responses of some students. The data supporting this proposition is tentative, and requires further work for confirmation, but it does relate to the existing literature on philosophy in schools. Analysis of the coded data quickly established themes of identity and personhood, the ecological self, ecological resilience, student agency over environmental issues, ecological wisdom, environmental citizenship and stewardship, and the idea of an *eGen* or ecological generation. Analysis of data relating to the second research question, and the concepts generated from this work, provide explanations for what is happening in school environment clubs. The study explored student attitudes, beliefs and behaviours, coordinator motivations, aspirations, leadership and inclinations toward deep ecology, and provided a picture of how environment clubs engaged and interacted with the whole school community.

3. Findings related to the third research question on socio-ontology were used to generate theoretical models of the social interactions between the various people (entities) that form the wider sustainability community, interactions that resonate throughout the school, the sustainable families, and the greater school community (see Figures 4.3, 5.1 and 6.1). The socio-ontological diagrams are essentially maps of the social interactions of the various entities, and the vectors reveal the complexity of the psychosocial interactions.

Having addressed the three research questions, it is now possible to return to the metaphysical aspects of deep ecology referred to as Self-Realization (as discussed in the Literature Review Sections 2.3.4.7 and 2.3.4.8), and observed in some participants as a connectedness to nature. Self-Realization is the key difference between shallow and deep ecology, and to a large extent the difference between mainstream environmental education
and deep ecology. This study showed that connecting to nature using the “standing next to a mountain” metaphor was a useful way of introducing students to metaphysics. Multiple paths to Self-Realization are possible because there are countless ways to experience nature and potentially infinite ways to connect to the Earth. It is clear from this study that some of the environment club students empathised with nature, and it is therefore useful to imagine how the journey toward Self-Realization might be mapped out. Some of the activities of Earth Education, like quiet contemplation in natural settings, may be appropriate for this journey and can be used for students of various ages. The significance of the study can now be summarised and this is shown in Figure 7.3, which builds on the idea of the ecocentric student as illustrated in Figure 7.2 by moving toward a human/nature monism.

**Figure 7.3.**
*A model for developing Self-Realization in students*

*Many paths to Self-realization for the club student*

- School environment club projects
- Social vector of influence
- Environment club student
- Many ways of interacting with nature
- “Standing next to a mountain” metaphor
- Personal vector of agency
- Forming ecocentric beliefs and self agency
- Transcending ego/creating the ecological self
- Becoming “one” with nature.
  A human/nature monism

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The top left box shows the importance of the environment club in the formation of an ecological identity and agency. The top right part of the figure (the mountains) indicates that there are many ways that the student can experience the connection to nature and learn to appreciate that wilderness has intrinsic value. This connection is an iterative process, an entirely metaphysical experience where the student is mindful of their place in the cosmos, both at the everyday, scientific level, and at an emotional/affective level. In deep ecology, this approximates to Self-Realization. Transcendental and transpersonal versions of this connection are described in the literature but are not included here (to maintain a non-secular, approach). A non-secular standpoint did not preclude the study of the importance of Christian values to the participants at Waa. The student then uses these two arenas of experience and knowledge to work on building agency (to act for the environment) and ecological wisdom (confidence and capacity to make good environmental judgements). The lower circle is the gestalt reached once the knowledge, beliefs, agency and metaphysics combine to produce a student that has the traits consistent with the monism of a deep ecology philosophy. Critical to this final stage is denying room for the ego in finding a place with nature.

Figure 7.3 drew on the findings illustrated in the socio-ontological diagrams (Figures 4.3, 5.1 and 6.1) by introducing the lines of force between entities into the model. The activities of the club produced the social vector from club to student in Figure 7.3. Part of the personal vector is ecological wisdom - the ability of students to assess conflict situations, form reasoned judgements about options for action, and follow through with commitments to action. None of these things necessarily happen contemporaneously; sometimes the action is slow to reach fruition, at other times there is transformation in the students toward enlightened action.

Combining the social and personal vectors of influence with the “standing next to a mountain” metaphor drives the opportunity for the student to “realise” a deep connection to
the Earth. A connection formed from their active membership of the environment club, forged through the friendships that they made, and a reward graciously accepted, in the absence of ego, through critical thought about the intrinsic value of nature.

### 7.9 Chapter summary

This chapter has discussed each of the research questions and related the findings from other research studies to the findings from this study. From the study findings and related research, I have generated several models to explain the data, providing new insights into school environment club sustainability beliefs and practices around anthropocentrism and ecocentrism. It is likely that school environment clubs are playing a critical role in galvanising the school community toward ecocentrism and away from anthropogenic harm of the Earth.

Most participants aligned with the ecocentrism end of the Deep Ecology Spectrum, although for some this is a journey moving away from an anthropocentric past toward an ecocentric future. The other (perhaps unsurprising) finding is that environment clubs are not insulated from the wider school community, nor the local community or their families when it comes to the projects and aspirations of the club. The socio-ontological diagrams illustrate this and indicate how the club is interwoven into the fabric of the school, and not a stand-alone entity.

The journey for students in the club toward ecocentrism was influenced by a number of factors, including friendships, sustainability coordinators, beliefs about the environment, family ecological practices and beliefs, closeness to nature, and exposure to sustainability learning in primary school. The idea of lifelong learning is adapted in my study to form the eGeneration profile, where students learn sustainability from a young age, from pre-school through to secondary school. The findings also indicate that the process of becoming an ecological person is for students, largely about finding their place in the environment club,
their situated identity, and their role and potential within the greater club community. In each school, there are different social forces operating, whether it was the Catholic Church at Waa, the EcoGroup at Karatjurk, or the driving force of Wayne at Bunjil. In each case, the socio-ontological diagrams told the story of club students travelling on an ecological journey, a path they took because they were affected by environmental degradation, felt connected to the Earth and because they were motivated to act and protect the planet.

This study therefore reveals the importance of environment clubs in the promotion of student agency and environmental hope, and adds new meaning to the philosophy of education by proposing the *student as ecophilosopher* model.
Chapter 8. Conclusion

In this chapter, I draw together the elements of the thesis including the research questions, literature review, methodology, results and discussion with the conclusions from the work, and show how the outcomes connect to the challenges set out in the introductory chapter. The chapter provides a final demonstration of how the study connects with the established literature on environmental education, and offers the overall significance of the study. Some of the findings provided evidence for ecocentrism in school environment clubs, and other evidence showed an anthropocentric bias in some individuals. Other findings indicated that students can have an ecophilosophy, but there is a need for further research into the metaphysical aspects of environmental education. The study presented models to explain the socio-ecological findings from the study, and provided an ontological structure of environment clubs that might extend to the broader school community and perhaps also to the local public community.

This study set out to address three research questions:

- Do students and teachers, and other members of the school community, embrace ecocentric or anthropocentric beliefs consistent with deep ecology?
- If secondary school students can embrace an ecological philosophy, is there evidence to support the concept of student as ecophilsopher?
- What is the ontological structure of the sustainability community in schools and how does this ground ecocentrism and anthropocentrism in schools?

The research questions were addressed using a qualitative approach, with a research design based on interviews to generate rich data for interpretive analyses. The analyses were then presented as themes or codes that were then explored in a meta-analysis.

The study investigated ecocentrism and anthropocentrism in three secondary schools, with the primary focus being students in the environment club. Data were also generated from
sustainability coordinators, several staff, three parents, a sibling, and one principal. Each of the schools in the study demonstrated their commitments to the environment via an environment club and appointment of a sustainability coordinator, who had responsibility for environment projects and who implemented the school’s sustainability policy. In each school, the coordinator was also responsible for compliance with the AuSSI Resource Smart program.

The first question of the study investigated if ecocentrism and anthropocentrism existed in the schools, with particular focus on its environment club community. It was found that most participants were closer to ecocentrism than anthropocentrism as observed from the Deep Ecology Spectrum data. The study also investigated if there were a place for ecocentrism in the school community, as promoted and implemented by the environment club, and explored the scope of eco-philosophy in these school environment clubs. Findings indicated that the participants had a desire for a more ecocentric approach to school sustainability practices, and their responses showed that it was likely that students can develop a strong eco-philosophy. Responses also indicated that many participants were concerned about anthropocentrism in society (such as in the form of disproportionate resource use). Some reported that anthropocentrism was detrimental to the Earth and that schools and society at large needed to address this environmental problem.

Based on the findings from the study, I have developed models of sustainability practices in the participating secondary schools. The findings show that environment clubs are making significant improvements to school sustainability practices and policies. Major works on reforestation, solar panel installation, recycling, energy saving practices, water conservation, and attendance at the Australian Youth Climate Coalition by students, are examples of the successful activities of these environment clubs. The sustainability coordinators at these clubs were exemplars of sustainability practice who “walked the talk” by riding bicycles to and around the school campus, recruiting students to the environment club, encouraging staff to
participate in club activities and to live sustainably, and enthusiastically promoting sustainability across the school and beyond.

However, some participants indicated that there was a lack of ecocentrism in their wider school communities and in the general curriculum. The interviewed club students, coordinators, and parents demonstrated various aspects of the deep ecology philosophy, and many viewed themselves as being on a journey from an anthropocentric past to an ecocentric future.

Some students exhibited high-order knowledge and skills consistent with an understanding of ecological philosophy. Some teachers did not universally accept embedding ecocentrism into the curriculum and across the school because they viewed sustainability as being “bolted on” to or “over-crowding” in their teaching programs. The findings suggest that there is anthropocentrism in teaching and learning, although this is only a tentative proposal from the findings of the study and will require further study.

The models developed from the research depict the socio-ontological dynamics between individuals in environment clubs in secondary schools, and helps explain the social, economic and psychological factors contributing to those interactions. The findings show how students and other members of the schools environment club follow the established models for social control and conformity (Moscovici, 1976) - behavioural styles that are modulated by friendships, aspirations, and situated identity.

8.1 Alignment with deep ecology

The responses from many students revealed beliefs and actions that were toward a deep ecology philosophy. Their understanding of notions of anti-consumerism/anti-neophilia, ecological footprint, limits to growth, wildlife protection, and other parameters of an ecocentric lifestyle, in many cases supported behaviours consistent with deep ecology’s biospherical egalitarianism. Students explained neophilia as a symptom of the consumerist
society driven by wants and not needs. Students also viewed neophilia as a desire to be “cool”, a predicament caused by peer pressure, and a burden on the planet, best summed up by Emma: “How dare you not have the newest product?” (Emma, 00:20:22). Neophilia is linked to the disproportionate use of natural resources by the powerful, dominant, Western countries, and students are aware of the larger ecological footprint that these countries create. The students in this study understood that humanity needs alternative sources of renewable energy and other natural resources to create a sustainable world. The participants in the study could generally be classed as green consumers, conscious about their choices when purchasing products.

8.2 The Deep Ecology Spectrum (DES)

The Deep Ecology Spectrum (DES) was used as an instrument for stimulating feedback from participants on the continuum between anthropocentrism and ecocentrism. The average DES score across all schools was 6.3, where 1 was anthropocentric and 10 was ecocentric. TheDES was useful in establishing ecocentric and anthropocentric attitudes. Asking participants their reasons for choice of a score helped in the interpretation of the results. Various conclusions were drawn from the data using the DES. Firstly, the data showed that environment club students gravitated, to a moderate extent, toward ecocentrism, although a few students did have anthropocentric ideation.

Secondly, students realised that any extreme or radical green lifestyle (represented by a 10 on the DES) was an ideal, and therefore unattainable. They therefore did not rate themselves as a 10, although a few students favoured the radical lifestyle (because they believed it would ultimately make the world a better ecosystem for all creatures). These findings are supported by some previous studies using the New Environmental Paradigm (NEP), which indicated a trend toward ecocentric lifestyles and beliefs amongst students in schools and environment clubs (Chan, 1996; Karpudewana & Keong, 2013).
The DES instrument is a form of the NEP Scale (see Section 2.8), simplified using the approach of Manoli (2007) to suit the age range of participants in this study. The DES instrument was a suitable method for assessing ecocentric beliefs and behaviours compared with the shallow/deep binary of the deep ecology philosophy, a conclusion that agrees with the range of environmental end political ideologies outlined by Dunkley (1992) and Fien (1993a).

8.3 Future humans, intrinsic value and biospherical egalitarianism

The study found that the students’ anthropocentric beliefs were nearly always linked to the idea that the Earth’s resources should be preserved for “the future”, or more appropriately for “future humans”. This was summed up well in the aphorism from the sustainability coordinator Adam: “We’re not using the resources left by our ancestors, we’re stealing them from our children.” (Adam, 00:19:52).

The deep ecology/ecocentric view states that natural resources should be shared not only between humans, animals and other forms of life in nature, but also be shared with the non-living parts of nature (like mountains, rivers and oceans). This is what Naess (Fox, 1990c) meant by biospherical egalitarianism; everything in the ecosystem has intrinsic value. The findings from the study showed that only a few participants understood or subscribed to biospherical egalitarianism, although the love of animals for some students possibly equated to biological egalitarianism. Previous work has shown that students can learn the intrinsic value of nature (Hargrove, 2010). The findings here indicate the need for future research on biological egalitarianism, where humans and animals have the same rights of access to natural resources.
8.4 Student as ecophilosopher

One of the findings from this study was the concept of student as ecophilosopher. This concept developed when certain students from the environment clubs gave responses that were beyond just knowledge and facts. In addition, these students questioned their own existence, and their own purpose within the sustainability community and the world at large. While few in number, the existential responses are notable and indicate the need for a new theory about the capacity for students to have higher order thinking consistent with the “Philosophy in Schools” program discussed in Chapter 7.14. The student as ecophilosopher idea is an extension of the worldwide programs of philosophy for children that are now available in the United States, Great Britain, Australia and New Zealand. It is not clear from this study if every student is capable of ecophilosophical thinking; further research is needed to establish in more detail the mechanisms behind the development of this kind of student.

8.5 Socio-ontological considerations

Analysis of the data around the social structure and dynamics of the school sustainability community revealed some important findings. Early in data analysis, the relevance of the core strategies from social psychology for explaining much of what is going on in the school became apparent. Social psychology helps explain the motivations for the social interactions, and explains the situated selves and biographical trajectories of the club students (Gee, 1999)

Early analysis of the data indicated that the social interactions around the environment club were not straightforward, as they involved students and teachers outside the club. The socio-ontological models in Chapters 4, 5 and 6 show the complex network of interactions, ranging from the from club students’ close friends to the more distant connection with the World Wide Web. The models show that relationships sometimes have a line of force (vector) that goes in one direction, as in the case of Bunjil’s coordinator (Wayne) to the
parents Martin and Ruth. Sometimes the lines are bidirectional (as is the case for Adam at Karatjurk with his students). An overlay to the diagrams is the formation of identity and personhood, a complex process that is described in the literature (Splitter, 2015), but is not displayed in the figures. The socio-ontological diagrams are similar for each of the three schools, but there are important differences which include the religious education and social justice coordinators at Waa, the Mindfulness Meditation Centre at Bunjil, and the EcoGroup at Karatjurk.

What is clear from the study is that the biographical trajectories of the students are influenced by their upbringing, their primary school experiences, and their integration into secondary school life. Children from a rural background, from a family that loved nature and animals, or having experienced sustainability at primary school, had different outlooks to other similar aged students in the environment club. Forming and maintaining friendships is also key to environment club memberships.

8.6 A theory for developing student ecocentrism

Figure 7.2 provides a composite model for developing ecocentrism in secondary schools. It shows how the various elements and beings work together in the formation of ecocentric beliefs and identity, which in turn promote behaviour consistent with a deep ecology philosophy. Not all students may be willing to connect to nature, just as not all students might be happy doing mindfulness meditation. The background literature on Self-Realization presented in Section 2.3.4.7 provides some insight into what Naess meant by the process, and it is this metaphysical feature of the deep ecology ecosophy that distinguishes it from other ecosophies. The ultimate stage of Self-Realization is the attainment of a human/nature monism, a state of being that does not appear to be part of current EE thinking.
8.7 Methodology and limitation of the study

Some problems emerged during the meta-analysis: participants often strayed from topic and had to be piloted back on to course, a strategy that was not always successful; the strict time constraints imposed by school timetables meant that some interviews were truncated; and there was no perfect alignment between the responses to the interview questions with some gaps formed in the data where participants did not answer the relevant question. The strategy used to overcome these shortcomings in the data was to move to a higher level of analysis; a meta-meta-analysis. This higher order analysis revealed the socio-ontological structure of the schools’ environment clubs. It provided good evidence of student eco-philosophical thinking and yielded a theoretical model that served as a plausible approach for students to develop an ecological self. It also opened up the idea of including important concepts like connectedness to nature, environmental hope, ecological resilience, and environmental literacy. I recognise that there are limitations to the study, and that further research is required to determine if the findings can be applied more widely across government primary and secondary schools, and non-government schools. Efforts were made to make the study non-sectarian; with the exception of the analysis of the Catholic school data for Waa. For Waa, I took into consideration the teachings of the church with respect to sustainability issues and practices, which were provided by the local Diocese.

In summary, conducting human research in the schools in this study was constrained by a number of factors:

1. Finding schools to participate in the study was difficult. Several schools indicated that they were “overwhelmed” by researchers wanting to conduct studies or complete questionnaires, either as part of doctoral or masters degree work, or initiated by organisations as part of larger scale investigations. Two principals in the study
emphasised that they were granting privileged access to the participants in their school.

2. The complicated dynamics of school timetables, student availability within school hours, and the reliance upon a teacher to liaise and facilitate interviews and correspondence, limited many aspects of the research. Long interviews that explored complex issues were not possible with the students or the principal Kara. This limited the conclusions that could be drawn from the data. The interviews with the coordinators, teachers and parents did not have the same limitations.

3. In qualitative research interviews, there are no guarantees that participants will stay on track with their answers, and a number of students and a few teachers did not provide appropriate answers to the interview questions. Some responses were ambiguous and did not contribute to the study, sometimes leaving large gaps in specific coding fields and limiting the overall explanation of what was happening in the environment clubs. These problems were predicted before commencement of the study and efforts were made to bring participants back on course, but this strategy did not work in every instance.

4. Given that the study employed open-ended questions in interviews with relatively long answers, the sample size had to be relatively small (n=44).

5. Regarding the methodology, it would have been useful to run a focus group at each school before the main interview days, to determine if there were any problems with the interview questions. This was not possible in this study due to the constraints placed on the study by the schools.

The sample size of 44 participants was small but the elaborations and rationales provided by the participants still provided a rich view of the sustainability milieu at each school.
8.8 Implications for future research

This study showed that, in the participating schools, environment clubs were complex socio-ontological structures of extra-curricular programs in secondary schools that have implications for the implementation of sustainability programs in schools. There is little previous research on the strategic roles that environment clubs play in the development of an ecological generation. Environment clubs may well be one of many extra-curricular options that attract students but their reach across the school community to promote sustainability, ecocentric behaviour, and to move away from an anthropocentric past was central to the findings of this study.

The combined data from Bunjil suggested that everyone within the environment club community (including school senior management) can play a part in promoting sustainability across the whole school. Evidence from the study tentatively suggests that, when a school reaches out to parents and the community to be partners in school sustainability practices, the sustainability milieu is strengthened and better valued by all. Further research is needed to confirm these findings at a more generalisable level.

The implications of the findings in relation to the metaphysics of a deep ecology philosophy, the concepts of ecological wisdom, ecological resilience, and connectedness to nature, are that these can be critical concepts in the evolution of the environment club students’ repertoire of thinking. This study found that students can think and engage in eco-philosophy paves the way for future work in environmental philosophy in schools. The next step is to determine if the high-level capacity for environmental thought demonstrated by some of the students can be made more widely available to students that love the environment, and who are passionate about protecting wilderness, fragile ecosystems and threatened species. The findings of this study could be used to invigorate the debate around ecocentrism, anthropocentrism and deep ecology using a deep ecology philosophy. It is a call
for environment clubs to be recognised as a valuable forum for promoting environmental philosophy, and as vanguards driving a socio-political agenda that places the Earth first.

With sustainability increasingly being marginalised in the curriculum, environment clubs may be a strategy to foster sustainability practices in the future in Victoria. This study showed that environment clubs can act as a mediator of sustainability practices and policies in schools, thus assisting schools to achieve higher environmental standards. This will help schools save money on energy, reduce their use of natural resources, lower carbon emissions, reduce waste, enhance recycling practices, and build a culture of sustainability across the school. Given that some teachers are overwhelmed by the “crowded curriculum”, and that some are concerned about how to embed sustainability into the curriculum, environment clubs can act as a repository of resources to support teachers across the school.

There is a lack of ecocentrism and anthropocentrism in the EfS literature and in the material that is produced by the United Nations. Little has changed since the Brundtland Report in 1986 on the goal to preserve resources for “future humans”, and recognition of the intrinsic value of nature seems to be largely absent from environmental education. Given that students can appreciate the concepts of anthropocentrism and ecocentrism, it seems that a deep ecology philosophy has a place in the EE programs in schools. Only then will the narrow anthropocentrism of EfS be displaced, and the word “sustainability” be redefined to mean a sustainable future for ecosystems, the living and non-living nature, the Earth, non-human life, and humans.
References

4-H clubs. (n.d.). *What is 4-H?* Retrieved from [http://4-h.org/about/what-is-4-h/](http://4-h.org/about/what-is-4-h/)


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Appendices

Appendix A. Student Questionnaire

DEEP ECOLOGY AND THE SECONDARY SCHOOLING PROJECT

LIST OF QUESTIONS FOR STUDENTS

SEMI-STRUCTURED INTERVIEW

Q1. Can you tell me what motivates you to be involved in sustainability and perhaps a little bit about yourself?

Q2. How does it make you feel when you work on an environmental problem and end up either solving or reducing the problem?

Q3. Does working towards a solution make you think differently, more carefully about what impact you and the people around you have on the planet?

Q4. Thinking overall, about teachers and other students, if some don’t really care that much about the environment, how do you think and feel about that?

Q5. Some people try to solve environmental problems just so that we can have more resources for humans. What do you think?

Q6. Some people called Deep Ecologists think we should not keep using more and more resources, and should put the Earth first. What do you think?

Q7. Does being involved in sustainability change the way you think in general? Are you more inclined to be critical if you think an action is harmful to the Earth?

Q8. Are many of the teachers at the school as keen on sustainability as the [Enviroclub] and Mr. [Coordinator]?

Q9. You will be shown a picture of the DES (deep ecology spectrum) scale. Can you tell me where on this line you might situate yourself with 1 = anthropocentric (humans first) and 10 = ecocentric (earth first)? THIS DIAGRAM WILL BE EXPLAINED TO YOU AT INTERVIEW.
Appendix B. Teacher Questionnaire

DEEP ECOLOGY AND SECONDARY SCHOOLING PROJECT
LIST OF QUESTIONS FOR TEACHERS
SEMISTRUCTURED INTERVIEW

Q1. Can you tell me how you became involved in sustainability education and a little bit about your recent teaching in the area?

Q2. How does it make you feel when you and your students work on an environmental problem and contribute to reducing the problem? Do you feel more connected to the Earth?

Q3. Do you think that students acquire a kind of ecological wisdom, perhaps a more robust personal ecological philosophy by studying sustainability?

Q4. When you think of the earth’s ecosystems as consisting of physical elements, human and non-human elements, do any one of these deserve priority? How does this affect your approach to sustainability teaching?

Q5. Do you think that science has the answer to all of our sustainability problems? Is there another way of tackling planetary health for future generations?

Q6. Some people try to solve environmental problems just so that we can have more resources for humans. What do you think about this approach? Explain.

Q7. Some people called Deep Ecologists think we should not keep using more and more resources, and should put the earth first. What do you think?
Q8. You will be shown a picture of the DES (deep ecology spectrum) scale. Can you tell me where on this line you might situate yourself with 1 = anthropocentric (humans first) and 10 = ecocentric (earth first)? THIS DIAGRAM WILL BE EXPLAINED TO YOU AT INTERVIEW.
Appendix C. Geography Teacher Questionnaire

DEEP ECOLOGY AND SECONDARY SCHOOLING PROJECT
LIST OF QUESTIONS FOR GEOGRAPHY TEACHERS

SEMI-STRUCTURED INTERVIEW

Q1. Can you give me a brief run down on how you came to be teaching Geography at the school, what other duties you have at the school and whether you have any involvement with sustainability practices at the school?

Q2. In your Geography teaching or text books, is there any discussion about anthropocentric (human-centred) versus ecocentric (earth-centred) ways of managing the land? If so, at what year levels does this occur and to what depth do you take the topic? Please elaborate.

Q3. Do you think that students acquire a kind of ecological wisdom, perhaps a more robust personal ecological philosophy by studying sustainability?

Q4. When you think of the earth’s ecosystems as consisting of physical elements, human and non-human elements, do any one of these deserve priority? How does this affect your approach to incorporating the cross-curriculum priority for sustainability teaching?

Q5. Do you think that science has the answer to all of our sustainability problems? Is there another way of tackling planetary health for future generations?

Q6. Some people try to solve environmental problems just so that we can have more resources for humans. What do you think about this approach? Explain.

Q7. Some people called Deep Ecologists think we should not keep using more and more resources, and should put the earth first. What do you think?
Q8. You will be shown a picture of the DES (deep ecology spectrum) scale. Can you tell me where on this line you might situate yourself with 1 = anthropocentric (humans first) and 10 = ecocentric (earth first)? THIS DIAGRAM WILL BE EXPLAINED TO YOU AT INTERVIEW.
Appendix D. Principal Questionnaire

DEEP ECOLOGY AND THE SECONDARY SCHOOLING PROJECT
LIST OF QUESTIONS FOR PRINCIPALS
SEMI-STRUCTURED INTERVIEW

Q1. Can you tell a little bit about yourself and how your school became involved in sustainability?

Q2. How does it make you feel when you see students working on an environmental problem and end up either solving or reducing the problem?

Q3. There are moves to introduce environmental philosophy into schools. Do you think school students can think deeply about say e.g. ‘oneness with the Earth’?

Q4. What aspects of leadership skills do you think are most important in facilitating sustainability education as a cross-curricular aim?

Q5. You will be shown a picture of the DES (deep ecology spectrum) scale. Can you tell me where on this line you might situate yourself with 1 = anthropocentric (humans first) and 10 = ecocentric (earth first)? THIS DIAGRAM WILL BE EXPLAINED TO YOU AT INTERVIEW.
Appendix E. Parent Questionnaire

DEEP ECOLOGY AND THE SECONDARY SCHOOLING PROJECT

LIST OF QUESTIONS FOR PARENTS

SEMI-STRUCTURED INTERVIEW

Q1. Can you tell me a little bit about how your son/daughter became interested in sustainability and if it has altered the way that you and your family think about the school in general?

Q2. Do you think that the home environment is important to your son/daughter’s views on sustainability and if so, have you got any examples of how this occurs?

Q3. How does it make you feel when your son/daughter works on an environmental problem and end up either solving or reducing the problem? Is it mostly a positive experience or are there some ups and downs in the process as well? Do you get a chance to talk to them about such issues?

Q4. Have you noticed any transformation in their ideas that might be viewed as a more sophisticated way of thinking about the environment? What I mean here is whether, since joining the sustainability club, they have become ecologically more robust so as to ward off critics.

Q5. The deep ecology movement serves to protect the planet by adopting an ecological philosophy whereby every creature including mountains and rivers have equal value to humans? Do you think this level of thinking is too much for your son/daughter and that we should just stick to the basics like numeracy/literacy?
Appendix F. Sibling Questionnaire

DEEP ECOLOGY AND THE SECONDARY SCHOOLING PROJECT

LIST OF QUESTIONS FOR SIBLINGS

SEMI-STRUCTURED INTERVIEW

Q1. Can you tell me a little bit about yourself, what your interests and hobbies are, and perhaps whether you think about the environment much?

Q2. Does the topic of environmental sustainability come up when talking to your sister, and if so is it mainly from school, home or some other place?

Q3. Does your sister’s views on sustainability have any affect on you? In the sense that you change your habits or even your thoughts about protecting the earth?

Q4. Thinking overall, about teachers and other students, if some don’t really care that much about the environment, how do you think and feel about that?

Q5. Some people try to solve environmental problems just so that we can have more resources for humans. Like more tv’s, and mobile phones. Consuming lots of resources. What do you think?

Q6. Some people called Deep Ecologists think we should not keep using more and more resources, and should put the Earth first. What do you think?

Q7. If you see an environmental disaster like a big oil spill that kills thousands of shore birds, how does that affect you and do you think the people that caused it all should be treated?

Q8. Are any of the teachers at your school keen on sustainability? If so, what makes you think that way?

Q9. You will be shown a picture of the DES (deep ecology spectrum) scale. Can you tell me where on this line you might situate yourself with 1 = anthropocentric (humans first) and 10 = ecocentric (earth first)? THIS DIAGRAM WILL BE EXPLAINED TO YOU AT INTERVIEW.
Appendix G. Ethics Approval

Notice of Approval

Date: 23 December 2013
Project number: CHEAN A 0000016119-01/14
Risk classification: Low Risk
Investigator: Professor Annette Gough

Approved: From: 23 December 2013 To: 30 June 2016

I am pleased to advise that your application has been granted ethics approval by the Design and Social Context College Human Ethics Advisory Network as a sub-committee of the RMIT Human Research Ethics Committee (HREC).

Terms of approval:

1. **Responsibilities of investigator**
   It is the responsibility of the above investigator/s to ensure that all other investigators and staff on a project are aware of the terms of approval and to ensure that the project is conducted as approved by the CHEAN. Approval is only valid whilst the investigator/s holds a position at RMIT University.

2. **Amendments**
   Approval must be sought from the CHEAN to amend any aspect of a project including approved documents. To apply for an amendment please use the ‘Request for Amendment Form’ that is available on the RMIT website. Amendments must not be implemented without first gaining approval from CHEAN.

3. **Adverse events**
   You should notify HREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.

4. **Participant Information and Consent Form (PICF)**
   The PICF and any other material used to recruit and inform participants of the project must include the RMIT university logo. The PICF must contain a complaints clause including the project number.

5. **Annual reports**
   Continued approval of this project is dependent on the submission of an annual report. This form can be located online on the human research ethics web page on the RMIT website.

6. **Final report**
   A final report must be provided at the conclusion of the project. CHEAN must be notified if the project is discontinued before the expected date of completion.

7. **Monitoring**
   Projects may be subject to an audit or any other form of monitoring by HREC at any time.

8. **Retention and storage of data**
   The investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.

In any future correspondence please quote the project number and project title.

On behalf of the DSC College Human Ethics Advisory Network I wish you well in your research.
PARTICIPANT INFORMATION AND CONSENT FORM (PICF). STUDENTS FORM
INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

PARTICIPANT INFORMATION

Project Title: Deep Ecology and Secondary Schooling: Exploring Ecocentric Alternatives. A longitudinal study of secondary school students to investigate their attitudes and values relating to the deep ecology worldview, that for the survival of the planet, humans need to place living and non-living elements of ecosystems at the centre of sustainability decision-making ahead of viewing the earth as a resource exclusively for humans to utilise.

Investigators:

- Prof. Annette Gough
  - principal supervisor
- Mr. William Smith
  - doctoral candidate
- Dr. Andrew Gilbert
  - secondary supervisor

Dear ……..

You are invited to participate in a research project being conducted by RMIT. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate. If you have any questions about the project, please ask one of the investigators.

Who is involved in this research project? Why is it being conducted?

- The researchers are experienced teachers and lecturers in education, with a background in environmental education and science education. Prof. Gough has 30 years of experience in sustainability research, teacher-training and policy-making in environmental education. She has a distinguished international profile in sustainability education. Dr. Gilbert completed his doctorate in the United States and is now a senior lecturer in science education for teachers in training. He brings a wealth of knowledge about American First Nations Peoples and has a diverse knowledge of ecology.
- The doctoral candidate is William Smith, a registered teacher with 25 years experience teaching science and environmental education across secondary, TAFE and university sectors. His prior research has been in physiology, animal anaesthesiology, animal welfare, and use of animals in schools and he has previously completed a Masters degree by research in reproductive biology.
- The project has been approved by the RMIT Human Research Ethics Committee, Department of Education and Early Childhood Development (DEECD) and the Catholic Education Office of Melbourne (CEOM) as a low risk investigation.

Why have you been approached?
Your school has been approached because of its recognised commitment to sustainability education and for its recognition of the Aboriginal Peoples as the custodians of the land on which the school was built.

You have been invited to participate in the study because your environment teacher and the principal(s) have recognised you as a student leader in sustainability with important views and ideas in both sustainability and Aboriginal cultural contributions to the Australian landscape. The research team believe that you can make a valuable contribution to analysing the AusVELS curriculum for ecocentric views (i.e. views that put planetary health as a priority).

**What is the project about? What are the questions being addressed?**

- Fifty years ago the American researcher Rachel Carson shook the world up with her book *Silent Spring*, which showed that we were destroying the earth, then in 1972 came the book *Limits to Growth* that said we were running out planetary resources.
- Many ecologists and thinkers said this was because we had always put our species (Human) ahead of everything else and whole ecosystems such as rainforests were being lost. This is called *anthropocentrism*.
- The deep ecologists are a group of philosophers, educators, scientists and many other people that said we had to end this topsy turvy relationship with the earth and start putting our planet first. This is *ecocentrism*.
- This research also respects First Nations Peoples’ (indigenous) knowledge and looks to older cultures for ideas on how to sustain and nourish the land, because we believe some of the answers to our global disintegration lie with the wisdom of ancient civilisations that are still vibrant today.

**If I agree to participate, what will I be required to do?**

You will be part of a small group of about twenty students at the school asked questions about the topics in the paragraph above. The ages will range from 11-17 and students who are playing an active role in school sustainability solutions will be our priority. We will start off with a focus group at which we toss around a few ideas about deep ecology for us all to discuss. This is important for the study because it will make sure that when we get to the formal interviews, the questions I ask of you will not be a surprise and will generate interesting ideas for the benefit of all who read the research results. There will be three interviews requested of you over approximately 18-24 months at 3-4 month intervals and each interview will take 30-45 minutes at a time to suit the school, the teacher, the parent and the student. This is called a longitudinal study because we are interested in changes and maturation of ideas over a period of time.

Some of the questions will look like:

1. When you think of environmental issues like endangered species, can you tell me if you see yourself wanting to help fix the problem or stop it happening in the first place, or are there other ways of thinking about the problem?
2. One of the biggest problems about fixing environmental problems is that some countries are very poor or lack access to education. What would you say if you went to a youth environment conference on global pollution of the oceans, and you were asked to speak about how these problems might be solved for ever?

**What are the possible risks or disadvantages?**

- We don’t believe that there are any risks to you in participating in this study. All of the interview data will be private and confidential and stored securely by RMIT, and neither the teachers, principals nor school will have access to the data you provide; you will remain anonymous throughout the study. You may be given an alias or ID number during the study so that the data can be properly analysed, but at the end of the study all participants will be de-identified (no-one
STUDENT NAME: Amanda Tombolato
SCHOOL: Melbourne Girls' College

will know who you are) from the final thesis document or from any research papers derived from your input. This is not to say that your input will be destroyed and wasted. On the contrary, valuable new ideas about deep ecology in schools are expected to add to the quality of teaching in environmental science.

- This is information for you in the event that you are concerned about your involvement in the study. For example, in a questionnaire study that includes questions pertaining to global environmental issues it is unlikely but possible that certain issues may affect you (whaling, loss of endangered animals, viewing violence towards environmental activist events in the media, etc.) there is the possibility, however slight, that you might be concerned or upset about your responses. If you are unduly concerned about your responses to any of the questionnaire items or if you find participation in the project distressing, you must contact either your teacher or parent as soon as possible. Either person(s) will discuss your concerns with you confidentially and suggest appropriate follow-up.

What are the benefits associated with participation?
If you participate in this study, you will be one of the first groups of students in the world to be involved in the environmental philosophy of deep ecology. It is not offered anywhere within the traditional school system in Australia, and your views will become the foundations stones for a whole new way of teaching about the environment and sustainability education. Part of the study is designed to look at the ways that will empower you to think about our world; Simply by taking a more critical look at what the curriculum is telling you about sustainability and Aboriginal custodianship, you will learn from the great thinkers of the environment to become clear, strong thinkers and to gain your own ecological identity.

What will happen to the information I provide?

- As mentioned above, confidentiality and anonymity are guaranteed but they are not one and the same thing:
  - Anonymous means that the participant cannot be identified at any stage of the research.
  - Confidential means that identified data will be seen by a small number of people:
    - Mr. William Smith (doctoral candidate)
    - Prof. Annette Gough (principal supervisor)
    - Dr. Andrew Gilbert (secondary supervisor)
    - Transcription service (aliases will be used for this service to ensure anonymity)

- Any information that you provide can be disclosed only if:
  - It is to protect you or others from harm,
  - if specifically required or allowed by law, or
  - you provide the researchers with written permission.

- The results will be published and disseminated for academic review in the form of a doctoral thesis (PhD) and in peer-reviewed journals. The results will be presented to the world also at conferences and seminars, and there may also be presentation of the findings to teachers for the purpose of professional development. Appropriate Durable Record (ADR) in the RMIT Online Repository explaining that this is a publically accessible online library of research papers.

- All data will be aggregated, you plan to use pseudonyms or any other de-identifying techniques.

- The research data (i.e. the raw information and/or images) will be kept securely at RMIT for 5 years after publication, before being destroyed. Whereas the final research paper will remain online.

What are my rights as a participant?
The right to withdraw from participation at any time
The right to request that any recording cease
The right to have any unprocessed data withdrawn and destroyed, provided it can be reliably identified, and provided that so doing does not increase the risk for the participant.
The right to be de-identified in any photographs intended for public publication, before the point of publication
The right to have any questions answered at any time.

Whom should I contact if I have any questions?

- Professor Annette Gough in the School of Education at RMIT University

What other issues should I be aware of before deciding whether to participate?

- No other issues are anticipated that would impact on your participation.

Yours sincerely
Annette Gough:
BSc. (Ed) (Melb) 1973, MEd. (Melb) 1981, PhD (Deakin) 1995

Andrew Gilbert:
BSc (Geology) (VirginiaTech), 1992, MArts (ScienceEd) (EastCarolina)1998, PhD (New MexicoSU) 2002

William Smith:
BAgrSc (La Trobe) 1977, DipEd, (La Trobe) 1978, BEd (La Trobe) 1981, M AgrSc (Melb.) 1990

If you have any complaints about your participation in this project please see the complaints procedure at Complaints with respect to participation in research at RMIT http://www.rmit.edu.au/research/human-research-ethics

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STUDENT NAME: Amanda Tombolato
SCHOOL: Melbourne Girls' College

CONSENT TEMPLATE

1. I have had the project explained to me, and I have read the information sheet.

2. I agree to participate in the research project as described.

3. I agree:
   - to be interviewed and/or complete a questionnaire
   - that my voice will be audio recorded.

4. I acknowledge that:
   - (a) I understand that my participation is voluntary and that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied (unless follow-up is needed for safety).
   - (b) The project is for the purpose of research. It may not be of direct benefit to me.
   - (c) The privacy of the personal information I provide will be safeguarded and only disclosed where I have consented to the disclosure or as required by law.
   - (d) The security of the research data will be protected during and after completion of the study. The data collected during the study may be published. Any information which will identify me will not be used.

Participant’s Consent

Participant: ________________________________ Date: ________________________________

(Signature)

Where participant is under 18 years of age:

I consent to the participation of ________________________________ in the above project.

Signature: (1) ________________________________ (2) ________________________________ Date: ________________________________

(Signatures of parents or guardians)

Participants should be given a photocopy of this PICF after it has been signed.
Appendix I. Debriefing Letter to Schools

DEBRIEFING DEECD APPROVED RESEARCH PROJECT
“DEEP ECOLOGY AND SECONDARY SCHOOLING”

Dear [Name],

Your school participated in a research project conducted by RMIT between 2013 and 2015 with the above title. I appreciate how busy your school is and I am indebted to you and senior school management for your generosity in allowing me the privilege of conducting the research within your school community. This research was given approval by the DEECD and by the RMIT Human Research Ethics Committee. The study was undertaken with the cooperation of your sustainability co-ordinator, [Name], who played an invaluable role in the organisation of the study. I am extremely grateful to [Name], the teachers and students, and to two of your parents (The [Name] family), who agreed to be interviewed on the topic of sustainability, providing valuable data that is in the final stages of being written up as my doctoral thesis. Please note that all feedback is welcome (positive or negative), and should be forwarded to the investigators by mail, email or telephone.

The research project evolved out of the belief by me that it was timely to look at the AusVELS curriculum through the prism of deep ecology, which is essentially a type of ecological philosophy based on putting the earth at the centre of efforts to rehabilitate ecosystems. The study was regarded as one of low risk by the RMIT Human Research Ethics Committee and this letter is to advise you that you are welcome to review the outcomes of the study, which have generated three peer-reviewed papers in international journals (2015-2016), one refereed paper from a conference in Hiroshima in 2015, a workshop paper presented in 2015 in San Diego at the North American Association for Environmental Education, two peer reviewed abstracts from papers presented at the Australian Association for Environmental Education (AAEE) in Hobart in 2014, and a paper accepted for the upcoming AAEE conference in Adelaide in October 2016. All of this would not have been possible without the help of the Bentleigh Secondary College and the study has contributed to new knowledge in environmental ethics and ecological philosophy.

The interviews all went as planned and the data analysis was conducted in 2014 and 2015 and your students and staff responded positively to the interview process. If you have questions or concerns please feel free to telephone myself on [Phone number] if you require further information.

Best wishes,

[Name]
Investigators:

- Mr. William Smith
  - doctoral candidate
  - william.smith@rmit.edu.au
  - +61 438 285528

- Prof. Annette Gough
  - principal supervisor
  - annette.gough@rmit.edu.au
  - +61 3 99257725

Yours truly, _______________________________ Date: 07/07/2016

William Smith
Appendix J. Participant Debriefing Document

DEEP ECOLOGY AND THE AUSTRALIAN CURRICULUM PROJECT

PARTICIPANT DEBRIEFING DOCUMENT

According to the RMIT College Human Ethics Advisory Network (CHEAN), all participants should be debriefed after the study. This is mainly required in research where the participants are involved in research involving double-blind studies or studies where the treatment is not known at the time of the study. In this research project, participants are fully aware of all the questions in advance of their interviews, and they always have the right to withdraw from the study, have their data destroyed, or listen to their own audio tapes for review.

Macquarie University have some guidelines on this topic: (Macquarie University, 2008):

In certain types of research, giving information to participants about the exact aim of the study tends to compromise the validity of the data collected, so that researchers may want to withhold this information, or even engage in initial deception about the true purpose of the study. This sort of practice is sometimes approved, but a clear justification of the need for deception must be provided, and a ‘debriefing’ procedure (for use after the data has been collected) must be set out in the ethics application. Participants are generally asked to give consent a second time to their data being used after the data collection has been completed AND they have been informed of the true aims of the study.

There are no specific instructions in the National Statement on Ethical Conduct in Human Research 2007 (National Health and Medical Research Council, 2007b) nor in the Australian Code for the Responsible Conduct of Research (National Health and Medical Research Council, 2007a). The latter documents provide assurance to participants that their welfare is paramount and that at any stage a formal complaint can be made to the RMIT Human Ethics Committee if they feel unjustly treated during the study. In such an event the contact number for the Ethics Committee is (+61) 3 99253283.


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