Chapter 2
Facing the Future

International calls for the immediate implementation of Education *for* Sustainable Development (ESD), as an urgent response to the global-scale environmental crises developing from current unsustainable human–environment relationships, face the paradox that educational systems are notoriously slow and difficult to alter. This chapter identifies the educational rhetoric associated with ESD by briefly outlining the 40-year journey from traditional, science-based environmental education to ESD, as it occurred in Australia in response to international recommendations. Important pedagogical responses to changes to the perceived needs and outcomes of environmental education are highlighted, with particular emphasis on the role of pedagogical practice. Effective ESD demands a socially-critical pedagogy, the goals and practices of which represent the antithesis of well-established classroom approaches into which environmental education has been traditionally slotted. Of significant concern is that the calls for educational change will simply contribute to the ever-widening gap between the reality of classroom practices and the rhetoric of education *for* the environment. The development of the Australian Sustainable Schools Initiative (AuSSI) is introduced as an exemplar of the requirement to implement ESD through a socially-critical pedagogy in Victoria. In particular, the current status of ESD is assessed in terms of the ways in which schools and teachers are implementing it, and the need to broaden educational research methods in order to better understand the issues that continue to thwart its effective implementation.

2.1 International Recommendations for Environmental Education

During the 1970s, evidence that human–environment relationships, particularly the unmitigated overuse of natural resources, were critically endangering Earth's environmental systems began to gain widespread public attention. This led to calls for

environmental education through which such well-established human–environment relationships would be transformed, and impending social and environmental crises averted. In 1970, the International Union for the Conservation of Nature and Natural Resources (IUCN) Nevada conference concluded that "environmental education was a science-orientated multi-disciplinary subject where most, if not all, school subjects could, and should be, incorporated" (Martin 1975, p. 21). Environmental education was viewed as a process which provided students with opportunities for:

> recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man [sic], his culture and his bio-physical surroundings. Environmental education also entails practice in decision-making and self formulating of a code of behaviour about issues concerning environmental quality (quoted in A. Gough 1997, p. 8).

In 1972, recommendations for the establishment of the UNESCO-UNEP International Environmental Education Programme (IEEP) at the United Nations conference on the Human Environment in Stockholm more clearly positioned environmental education as a means for encouraging people to take action according to their developing 'codes of behaviour':

> Education and training on environmental problems are vital to the long-term success of environmental policies because they are the only means of mobilising an enlightened and responsible population, and of securing the manpower needed for practical action programmes (quoted in Gough 1997, p. 3).

Linke (1980) noted that by the mid-1970s, international calls for environmental education identified several critical educational outcomes directed towards developing a society's understanding of (i) human–environment relationships and human influence on environmental systems and (ii) their responsibility for ensuring quality of human life while actively contributing to environmental conservation (see also Gough 1997). The IEEP supported the development of these outcomes into more substantial policies at the International Environmental Workshop in Belgrade (in the former Yugoslavia) in 1975. Here, for the first time, a global framework (the Belgrade Charter) was provided for the most important goals of effective environmental education:

> The goal of environmental education is to develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones (UNESCO 1975, p. 3).

The Belgrade Charter incorporated the growing understanding that humans needed to transform the manner in which they interacted with their environments. In particular, the charter demonstrated the understanding that environmental education must ensure that individuals are able and willing to take positive action in ways that benefit both humans and the environment. These broad statements were more fully developed during the 1977 Intergovernmental Conference on Environmental Education in Tbilisi, USSR, and presented as the Tbilisi Declaration (Gough 1997):

> 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
> (UNESCO 1978, p. 24).

This Declaration positioned environmental education as a future-oriented, global and interdisciplinary lifelong process of learning which values cooperation in the prevention and solution of environmental problems. It noted that in order to ensure individuals are able and willing to take action, environmental education must embrace four specific goals: awareness, knowledge, attitudes, skills and participation. Furthermore, these goals could only be achieved through a holistic approach encompassing economic, political, cultural-historical, ethical and aesthetic perspectives. Unlike many earlier statements, this declaration also acknowledged the importance of pedagogy in achieving environmental education goals. It indicated that learners must be assisted to develop critical thinking and problem-solving skills by becoming active participants in "planning their learning experiences…making decisions and accepting their consequences" particularly within their local environment, such that environmental education must "utilize diverse learning environments and a broad array of educational approaches to teaching, learning about and from the environment with due stress on practical activities and first-hand experience" (UNESCO 1978, p. 27). Most significantly, the Tbilisi Declaration validated the need for critical reflection of established human–environment relationships, and unquestionably acknowledged the need for significant societal transformation.

UNESCO-UNEP has reviewed the progress of the international implementation of the Tbilisi Declaration on several occasions. The 1987 conference in Moscow developed an International Strategy for Action in the Field of Environmental Education and Training for the 1990s (A. Gough 1997). The 1997 conference in Thessaloniki focused on "Education and Public Awareness" as critical for effective implementation of the Tbilisi principles. The Declaration of Thessaloniki recommended that decisions and actions of international, national and local social interactions must give "priority to education, public awareness and training for sustainability" (UNESCO 1997a, p. 3). Recommendations arising from the 2007 conference in Ahmedabad reflected the increasing understanding of "the harsh reality that not only are we exhausting and plundering the resources of the Earth at unsustainable rates, but we are on the threshold of unimaginable devastation that climate change is likely to bring" (UNESCO 2007, pp. 3–4), and that this demands urgent social transformation:

> We no longer need recommendations for incremental change; we need recommendations
> that help alter our economic and production systems, and ways of living radically. We need
> an educational framework that not only [facilitates] such radical changes, but can take the
> lead (UNESCO 2007, p. 4).

All of these conferences reaffirmed the environmental education principles, established by the Tbilisi Declaration, which have endured as the framework for environmental education in Australia and around the world (Gough 1997; Fien

2001). However, the Ahmedabad Declaration most clearly articulated a sense of urgency for social transformation, and called for urgent changes to the purpose and practices of education: "fundamental changes in the creation, transmission and application of knowledge in all spheres and at all levels" (UNESCO 2007, p. 4).

2.2 Environmental Education in the Classroom

Environmental education began to be more widely practiced during the late 1970s–1980s but early attempts rarely addressed the full spectrum of learning outlined by the Tbilisi Declaration. In general, existing science curricula were modified to incorporate discrete ecological and conservation topics in order to educate about the natural environment. With "roots in the scientific paradigm" such environmental education remained "relatively impervious to cross-disciplinarity, and engagement with political, historical, and cultural questions" (Matthews 2011, p. 270). This science-based approach valued knowledge and awareness, rather than attitudes, skills or participation, in the belief that these alone would enable society to reduce the degradation of Earth's environmental systems (Orr 1999; Spring 2004). This reflects the belief that there is a strong relationship between awareness and knowledge, critical reflection and behaviour modification. The fact that, in general, more highly educated nations have the largest ecological footprints (WWF 2012) demonstrates that such relationships, at least in relation to environmental education, are complex and unpredictable (Kollmuss and Agyeman 2002). It has also been shown that "too much environmental knowledge (particularly relating to the various global crises) can be disempowering, without a deeper and broader learning process taking place" that enables students to respond, through action, to their developing awareness and understanding (Sterling 2003, p. 19). In other words, appropriate pedagogy is central to achieving effective environmental education: a notion addressed by Lucas (1972, 1979) in the development of his tripartite model for environmental education.

2.2.1 The Lucas Model

During the early 1970s, a review of the content and intended outcomes of environmental education practices in Australia identified three common themes:

- awareness of interrelationships between man [sic] and the environment, and the understanding of both the nature and implications of human impact on the environment;
- a concern for the quality of human life; and
- the promotion of a personal commitment to, or acceptance of responsibility for, environmental conservation (Linke 1980, pp. 27–34).

At that time, Linke (1980) identified Lucas' (1972, 1979) tripartite environmental education model as most comprehensively representing the multifaceted practices of environmental education. Lucas' model aimed to "reduce the ambiguity of the term 'environmental education'" by representing the goals of different components of environmental education which he termed education *in*, *about* and *for* the environment (Thomas 2005, p. 107). Education *about* the environment, that is, the development of "cognitive understanding" and the "development of skills necessary to obtain this understanding" (Lucas 1980, p. 167) had long been well represented as science education. Education *in* the environment referred to experiential learning during which instruction occurred "outside the classroom" in the "biophysical and/ or social context in which groups of people exist", while education *for* the environment was "directed to environmental preservation or improvement for particular purposes" (Lucas 1980, p. 167). Lucas argued that the process of learning was just as important as the content learned: education *in* the environment encouraged learning that engaged "all the senses, not just the intellect", whereas education *for* the environment encouraged active and contextually appropriate experiential learning (Orr 1999, p. 234).

The validity of each of the three components of Lucas' model has been extensively debated (e.g. Fien 1993; Gayford 1996; Gough 1997; Jickling and Spork 1998; Linke 1980). Critics point out that education *about* the environment (as traditional science or discipline-based learning) simply ignores important social aspects of human–environment relationships, while education *in* the environment simply changes the place in which traditional science learning occurs (Gayford 1996; Linke 1980). However, it is the notion of education *for* the environment that has caused the greatest consternation about the role of environmental education.

2.2.2   *Education* **for** *the Environment*

According to Stevenson (1987), education *for* the environment differs from education *about* and *in* the environment in terms of its goals, and the pedagogical approaches through which these goals are reached. He described education *for* the environment as working towards "socially critical and political action goals" (p. 69) through pedagogies that incorporate:

> the intellectual tasks of critical appraisal of environmental (and political) situations and the formulation of a moral code concerning such issues, as well as the development of a commitment to act on one's values by providing opportunities to participate actively in environmental improvement (p. 73).

This clearly positioned education *for* the environment as a critical, political endeavour, which aimed to promote and support the "transition to a socially just and ecologically sustainable society" (Fien 1993, p. 48). This means that for some critics, the term 'education *for* the environment' appears to contradict its intended goals. For example, N. Gough (1987) asserts that the term represents a "patronising

and anthropocentric" perspective in that it objectifies human–environment relationships. He asked "who are we to say what is 'good' for the environment, and which environment is 'the environment' anyway?" (p. 50). He noted that the term supports "distinctions between subject and object, education and environment, learner and teacher" and therefore fails to be inclusive of alternative worldviews such as those representative of deep ecology in which humans see "themselves and nature as part of 'being'" (p. 50, original italics). "In order to shift our attention from the *objects* of environmental education" education must embrace an "ecological paradigm" that encourages students to "learn to live, and live to learn, *with* environments" (p. 50, original italics). However, N. Gough and A. Gough (2010) note that "learning *with* environments" requires a "radical socially critical pedagogy" that supports the "involvement of students in environmental action". Environmental education as "learning *with* environments" is "not yet common practice", in part due to the "timidity of many teachers and schools" to address the politically sensitivities of many environmental issues (p. 342, original italics).

This highlights the propensity for the term 'education *for* the environment' to be interpreted, or misinterpreted, in ways that reflect the preferred environmental and educational ideologies of the interpreter. Fig. 2.1 links the intention of education *about*, *in* and *for* the environment to specific environmental and educational ideologies, the latter of which were derived from the work of Kemmis et al. (1983) and O'Riordan (1989), and which define major pedagogies and educational outcomes. The figure highlights modifications to Lucas' original terminology, suggested by authors attempting to locate components of environmental education within specific ideologies, including: education *from*, *through* and *with* the environment (Gough 1997), and conservative education *about* the environment, liberal education *about*, *through* and *for* the environment, and critical education *for* the environment (Fien 1993). According to Fien (1993), only an ecocentric, socially-critical approach to critical education *for* the environment fully addresses the intended goals of education *for* the environment described by Stevenson (1987) above. As such, a 'socially-critical education *for* the environment' demands an educational approach that supports "personal and social change" (Fien 1993, p. 49) as it aims to promote "ecologically sustainable, people-environment relationship[s]" through "an overt agenda of political literacy, values education, and social change" (Thomas 2005, p. 108). This agenda has been the focus of much debate.

Socially-critical education *for* the environment has been labelled as overly deterministic by some critics, who believe it has the potential to indoctrinate students rather than facilitate the development of their own values and attitudes towards human–environment relationships (Jickling and Spork 1998; Burbules and Berk 1999). The notion that any educational practice can indoctrinate assumes that educators are able to identify a specific "set of skills" and values or attitudes, that when taught, will lead to a specific behaviour (Scott and Gough 2003, p. 115). However, research regarding human constructed values, attitudes and beliefs, and their relationship to human action, indicates that the premise that environmental education can teach specific or long-lasting environmental values or attitudes is unwarranted. Even altering an individual's value priorities is an extremely unlikely outcome,

Educational ideology			
	Vocational neo-classical (prepare students for their future work)	**Liberal-progressive** (prepare students for their life in society)	**Socially-critical** (prepare students for their role in creating society)
Technocratic — **Cornucopian** (environmental problems can be solved through science and technology)	**Conservative** education about the environment (environmental knowledge is obtained from positivist study of the natural sciences)		
Accommodation/ Managerialism (environmental problems can be averted by good management of human–environment relationships)		**Liberal education** *about* **the environment** (environmental understanding is obtained through problem solving and enquiry-based study of the natural sciences)	
Communalism/ Ecosocialism (cooperation will ensure that equality is part of all human-human and human–environment relationships)		**Liberal education** *in* (*through*) **the environment** (student-centred and experiential learning in environments outside the classroom)	**Critical/Socially-critical education** *for* (*with*) **the environment** (learning through decision-making, participation and action)
Gaianism/ Utopian (humanity is just one component of earth's natural systems, and is therefore subject to the same laws of nature)		**Liberal education** *for* **the environment** (identifying attitudes, values and beliefs through the case study of local environmental issues)	

Note: Left margin shows the vertical axis "Environmental ideology" with arrows from "Technocratic" (top) to "Ecocentric" (bottom).

Fig. 2.1 Educational and environmental ideologies in different approaches to environmental education (Adapted from Fien 1993, p. 40)

unless accompanied by significant and contextually specific experiences (Ajzen 1996; Fazio and Zanna 1981; Kraus 1995; Lewin and Grabbe 1945; Rokeach 1973).

Despite this, some educators prefer a liberal education *for* the environment to assist students to learn "how to think, not what to think" (Jickling 2003, p. 22). This has also been contested for naïvely assuming that it is possible to remove the influ-

ence of values and political agendas from educational endeavours. Huckle, for example, argued that this is not possible, and noted that values are "shaped by the material circumstance within which people live; circumstances sustained by powerful interests who can easily co-opt the ecological message and turn it to their advantage" (Huckle 1986, p. 6). Instead, the aim of socially-critical education *for* the environment is to assist students to recognise that people enact different values and value priorities in different contexts, and to provide opportunities through which students can "*derive* for themselves thoughts, actions and feelings" (Scott and Gough 2003, p. 115, original italics). Fien (1993) suggested that socially-critical education *for* the environment is best undertaken within a framework of "committed impartiality" which encourages teachers to "state rather than conceal their own views on controversial issues" and to "foster the pursuit of truth by insuring that competing perspectives receive a fair hearing through critical discourse" (Kelly 1986, p. 130). This approach positions learning not as "a process which acts on individuals' characteristics in order to change the world", but rather "one which challenges individuals' views of the world as a means of influencing their characteristics and hence ways of thinking and living" (Scott and Gough 2003, p. 119). This is not indoctrination.

It is important to note that Lucas' model places each of education *about*, *in* and *for* the environment as essential for holistic environmental education. This means that effective environmental education requires the deliberate inclusion and intent of education *for* the environment (Greenall 1980), not just within the science curriculum, but as an integral component of all learning activities (Linke 1980).

From this point on, the term 'education *for* the environment' refers to goals and practices consistent with the environmental and educational ideologies of a 'socially-critical education *for* the environment' discussed above, and as represented in Fig. 2.1.

2.2.3   Implementation of Lucas' Model

Lucas' (1972) notion of education *for* the environment was not without precedence, and had long been represented in schools outside Australia. For example, in Britain during the 1960s, school programs provided opportunities for students and communities to participate cooperatively in local environmental planning processes. By the 1980s the focus of this education had moved beyond local community concerns to embrace "the social use of nature and issues of environment and development at all scales" (Huckle 1991, p. 52). However, successive reviews of various environmental education programs and pedagogical practices in Australia (as discussed by Fien 1993), including a national evaluation (Linke 1980), a review by a study group of the Australian Curriculum Development Centre (CDC; Greenall 1980), case study evaluations undertaken as part of an CDC environmental education project (Robottom 1983; Stevenson 1986), and observations by Stapp and Stapp (1983) and Huckle (1987a, b), all reported the overwhelming absence of pedagogies supportive

of the ideals and goals of education *for* the environment, even when these were appropriately expressed in curriculum guides. In other words, there were significant gaps between the rhetoric of education *for* the environment and the reality of teachers' practices.

2.3   Sustainable Development—A New Debate

As the public debate and concern about environmental issues continued to grow throughout the 1980s, understanding of human–environment relationships evolved to incorporate global perspectives and the complex interrelationships between the biophysical, social, economic and political aspects of any society (Fien 2001; Fien and Gough 2000). This encouraged the reconsideration of how to define and practice 'education *for* the environment', as reflected in recommendations presented in The World Conservation Strategy (IUCN 1980), the National Conservation Strategy for Australia (DHAE 1984), and the report of the World Commission on Environment and Development (WCED 1987). These reports considered the most critical goal for environmental education to be preparing societies to respond to twenty-first century challenges in ways that would maintain and preserve viable human–environment systems, and that in light of this, students must learn how to contribute to the development of sustainable societies (Fien 2001; Fien and Gough 2000; Gough 1997). The WCED suggested that "Education for Sustainable Development" (ESD) was an essential part of mitigating problems associated with increasingly complex human–environment relationships, noting that "'the world's teachers…have a crucial role to play' in helping to bring about 'the extensive social changes' needed for sustainable development to be achieved" (WCED 1987 quoted in Gough 1997, p. 32). This represented a significant change in environmental education discourse. ESD has become a strongly contested concept, both in terms of environmental ideology and its implications for the role of education in society (e.g. Fien 1993; Gough 1997; Scott and Gough 2003, 2004). It encompasses a broad range of concepts, "based on ideals and principles that underlie sustainability, such as intergenerational equity, gender equity, social tolerance, poverty alleviation, environmental preservation and restoration, natural resource conservation, and just and peaceable societies" (UNESCO 2005b, p. 28) which cannot be addressed by any single educational program.

The following discussion outlines the goals of ESD as represented in the documents that informed the curriculum and teachers' practices of the Australian Sustainable Schools Initiative (AuSSI). This program, an Australian Government initiative to implement ESD, focused on the "environmental preservation and restoration" and "natural resource conservation" (UNESCO 2005b, p. 28) components of ESD, hereafter referred to as environmental education.

Sustainable development has been described as a "shifting, indefinable and contingent concept" (Scott and Gough 2003, p. 125) founded on the future-oriented principle that the action of today's society "meets the needs of the present without

compromising the ability of future generations to meet their own needs" (WCED 1987, p. 43). "But just what kind of sustainable development is education for sustainable development supposed to stand for?" (Kahn 2010, p. 16). Chapman (2004) noted that the term:

> sustainability, as it is employed in general usage, can mean anything you want. It has so many interpretations that it lacks any capacity to confront the reality of the unsustainable behaviour of our societies. The notions of sustainable growth, sustainable development and sustainable consumption (OCED 1999) link the concept of sustainability with language that has implicit meanings and assumptions that are technocratic and underlie the causes of environmental problems (p. 99).

Despite these inherent contradictory messages, ESD aims to embrace environmental education by "setting it in the broader context of socio-cultural factors and the socio-political issues of equity, poverty, democracy and quality of life" (UNESCO 2005a, p. 19), and is most significantly "about learning for change towards a more sustainable future" (Tilbury and Wortman 2004, p. 36). ESD places education not only as "a means of implementing" sustainable development (Scott and Gough 2003, p. 125), but also as an essential "part of a process of building an informed, concerned and active civil society" (Fien 2001, p. 17), through developing the "capacity of human beings to continuously adapt to their non-human environments by means of social organisation" (Hamm and Muttagi 1998, p. 2). These goals not only differ significantly from the common themes of Australian environmental education practices identified by Linke (1980), but also remain relatively abstract in terms of how they might be incorporated into educational practice (Scott and Gough 2003).

In 1992, the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, attempted to support "re-orientating education towards sustainable development" (Gough 1997, p. 33) through the establishment of twenty-seven sustainability principles incorporating key aspects of both environmental protection and human development. However, in the decade following the presentation of these principles, the establishment of ESD by schools, communities and governments was very slow (McKeown 2002), and there was a growing concern that globally, human–environment relationships were deteriorating at an ever-increasing rate (Gore 2006). In 2002, the United Nations World Summit on Sustainable Development (WSSD) in Johannesburg aimed to identify practical methods for implementing the sustainability principles established in Rio de Janeiro. In relation to education, the final Johannesburg Plan of Implementation (JPOI) stated that it was necessary to "Integrate sustainable development into education systems at all levels of education in order to promote education as a key agent for change" (WSSD 2002; Article 121).

In response to the WSSD recommendations, in 2002 the United Nations General Assembly proclaimed a Decade of Education *for* Sustainable Development (DESD) for the period 2005–2014 (WSSD 2002), outlining a vision for a future as "a world where everyone has the opportunity to benefit from education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation" (DSE 2005, p. 4).

2.3.1   *Education* **for** *Sustainable Development (ESD)*

The notion of ESD as a vehicle for 'societal transformation' has created an opportunity to re-define the purpose and practice of education, but in so doing, presents an enormous challenge for educators. Although there is no agreed definition for what constitutes such transformative education, Morrell and O'Connor (2002) suggested that:

> transformative learning involves experiencing a deep, structural shift in the basic premises of thought, feelings, and actions. It is a shift of consciousness that dramatically and permanently alters our way of being in the world. Such a shift involves our understanding of ourselves and our self-locations; our relationships with other humans and with the natural world; our understanding of relations of power in interlocking structures of class, race and gender; our body-awareness, our visions of alternative approaches to living; and our sense of possibilities for social justice and personal joy (p.xvii).

This definition reveals the complexity and multiplicity of the inherent values, and the moral and ethical dimensions of the environmental and societal issues that position ESD as the precursor to action for social transformation towards sustainable development—expectations unlike any traditional subject, and beyond the capacity of the most pervasive or familiar teaching methods (Gayford 1996).

2.3.2   *Pedagogy for ESD*

As ESD "calls for additional and different processes than those traditionally thought of in education…to involve people, rather than convey just a body of knowledge" (Tilbury et al. 2002, p. 12), "issues of pedagogy are…vital in reorientating education towards sustainability" (Fien 2001, p. 23). However, "there is no absolute answer to the question of what is an appropriate pedagogical approach to learning in the context of sustainable development" (Scott and Gough 2004, p. 75). An effective pedagogy must not only encompass all of the scientific, technological, economic, aesthetic, political, ethical, cultural and spiritual aspects of human–environment interactions demanded by ESD, but also:

- inspire students' belief that they have the power and the responsibility to effect positive change on a global scale;
- encourage students to become primary agents of transformation towards sustainable development, increasing their capacity to transform their vision for society into reality;
- develop the values, behaviour and lifestyles required for a sustainable future;
- facilitate the learning of how to make decisions that consider the long-term future of the equity, economy and ecology of all communities; and
- build students' capacities for future-oriented thinking (AAEE 2005, p. 17).

Putting all of these into practice however, is problematic. Although it is evident that the acquisition of knowledge, often associated with traditional science education *about* the environment, does not fulfil the holistic aspirations of ESD, "the role of science and technology deserves highlighting as science provides people with the ways to understand the world and their role in it" (UNESCO 2005a, p. 18). In other words, science knowledge and environmental education should not be mutually exclusive (Gough 2007). Traditional science pedagogy however, conflicts with the behavioural outcomes of ESD, as transmissive, or vocational/neo-classical (Kemmis et al. 1983), teaching practices objectify the "biogeophysical" world, effectively separating humans from their environment and segregating facts from values (Scott and Gough 2004). As part of ESD, science pedagogy must incorporate more inclusive paradigms of teaching and learning to become oriented towards learning for action, or "science for action" (Gough 2007) in ways that "provide a scientific understanding of sustainability together with an understanding of the values, principles, and lifestyles that will lead to the transition to sustainable development" (UNESCO 2005a, p. 18). This reflects the understanding that holistic ESD must explore human activity as one part of the environment, and that this involves the role of human values and attitudes, or ideologies.

There is a long history of debate concerning the role of human values in environmental education (e.g. Lucas 1980). According to UNESCO, ESD is "fundamentally about values, with respect at the centre: respect for others, including those of the present and future generations, for difference and diversity, for the environment, for the resources of the planet we inhabit" (UNESCO 2005a, p. 6). Many human decisions and behaviours, including those related to the environment, are driven by values, value priorities, attitudes, and beliefs (Gayford 1996). This is the basis for recommendations for the incorporation of values education in ESD (e.g. the Belgrade Charter and Tbilisi Declaration), and is paralleled by studies indicating a pervasive belief amongst primary school teachers that environmental education must include the teaching of attitudes (Cutter and Smith 2001).

Values education however, is somewhat problematic. It requires educators to determine such things as what values are, how they are constructed, whose values should be taught, if values and attitudes can be actively learned, which learned values will cause a student to embrace a specific behaviour, and whether or not the teaching of values is simply indoctrination. Most importantly, educators must identify and assess the role of values embedded within the educational outcomes towards which they teach. This is particularly difficult when guiding statements, such as those that outline the role of ESD, contain apparently contradictory sets of values. For example, in Educating for the Future: A Transdisciplinary Vision for Concerted Action, UNESCO (1997b) states that "Sustainable consumption does not necessarily mean consuming less. It means changing unsustainable patterns of consumption by allowing consumers to enjoy a high quality of life by consuming differently" (quoted in Spring 2004, p. 121). For many, human consumer values are the root of today's environmental concerns, and yet this statement clearly retains the value of consumerism as a measure of life quality. Similarly, no single value has a universally agreed meaning or relative priority. For example, despite the development of

The Draft Strategy of Education for Sustainable Development in Sub-Saharan Africa in 2006, African educational institutions have been reluctant to embrace ESD. Manteaw (2012) attributes this, in part, to the belief that "meanings of sustainable development have been largely based on Western needs and values, which, to a large extent, have colonised local cultural interpretations and understandings. Additionally, the origins of the concept in global environment and development debates have given the concept an aura of 'globalness,' which, in many ways, is far removed from the day-to-day realities of local people" (p. 381).

Despite these issues, school communities in Australia do consider values education to be important, and identify the value of "individual responsibility" as essential (DSE 2005, p. 4), particularly as it relates to the maintenance and preservation of the environment (DEST 2005). There is, however, no definitive effective method for teaching 'individual responsibility'. The learning outcomes of any values education depends, in part, on the manner in which it is taught. Gayford (1996) notes that the behaviourist pedagogy employed in many environmental education classes may achieve little more than "green consumers", rather than developing the political literacy required to understand the role of values in the formation of complex and diverse societal environmental ideologies and resulting behaviours (McKeown 2002, p. 14). It is only through these understandings that environmental issues may be truly understood and "constructively resolved" (Clayton and Opotow 2003, p. 19). These outcomes require the use of a pedagogy that assists both teachers and students to begin to understand their own agency. Educators must understand the implicit political and social messages conveyed not only by the context of the content knowledge they teach, but equally also by the manner in which they teach it (Giroux 1997).

Effective ESD must therefore incorporate opportunities for developing understanding of human agency. This requires learning opportunities that facilitate students' understanding of the mechanisms of ideological conflict and resulting political forces, through critical examination of the past, present and potential future effects of human–environmental relationships. Teaching for social critique is therefore crucially concerned with facilitating understanding of how humans frame their ideas according to their values, attitudes and beliefs, how they construct their environmental ideologies and behavioural choices, and how these interact within a society (Scott and Gough 2003, 2004). The transformative learning outcomes of ESD are therefore necessarily associated with critical theory (Luke 2003).

2.3.3 Critical Theory

The notion of transformative learning, or transformative education, developed from the field of critical theory that originated during the 1920s at the Institute for Social Research in Frankfurt (Peters et al. 2003). The term 'critical theory' was coined by Horkheimer in 1937 to describe the philosophical and theoretical basis of work undertaken by the Frankfurt School, although the definition of the term changed and

broadened over time (Peters et al. 2003). Although the early work centred on Marxist ideologies with the overriding goal to highlight the "critical function of Marxist theory as a form of opposition to bourgeois society" (Peters et al. 2003, p. 3), the focus of research broadened as new School members brought new perspectives. However, Horkheimer (1982) maintained a definition of critical theory that remains useful today: critical theory is related not to content, but to a philosophy directed mainly towards changing society in ways that "liberate human beings from the circumstances that enslave them" (p. 244). This definition incorporates the idea that "man [sic] can change reality, and the necessary conditions for such a change already exist" which implies that, unlike traditional positivist style outlooks on the world, humans are the "producers of their own historical way of life in its totality" (Peters et al. 2003, p. 3). Horkheimer valued the idea that humans are reflexive conscious beings, and that social reality is contextual (Horkheimer 1982; Horkheimer and Adorno 1972). It is this aspect or understanding of critical theory that informs the processes of transformative education identified as essential components of ESD.

2.3.4 Critical Theory as Transformative Education

Transformative education has been inconsistently related to various teaching practices and epistemological ideals, and various cultural and structural aspects of society (Schugurensky 2002). Although widespread use of the term emerged during the 1970s, there remains no single definition. The underlying principles of transformative education arose from a collection of ideas from many philosophers influenced by various social contexts, particularly the work of Paulo Freire, Antonio Gramsci and Karl Marx: "no education is politically neutral" as traditional education works to maintain the social status quo, particularly in relation to the overriding injustices or asymmetric power relations in society (Wink 2000, p. 77). This belief grew in response to an increasing awareness that social power asymmetries were defined and maintained not only by physical means, but also equally well by knowledge (Gramsci 1971), as "education is knowledge and knowledge is power" (Swain 2005, p. 1). Karl Marx for example, saw education as "an insidious vehicle for institutionalizing elite values and indoctrinating people into unconsciously maintaining" social power asymmetries (quoted in Wink 2000, p. 83). In light of this, emancipation (or transformation) was envisaged to begin with the development of critical awareness of the "social, economic and political dynamics of everyday situations and practices" (Schugurensky 2002, p. 61). This is the aim of critical pedagogy.

Critique, in terms of critical pedagogy, is about embracing critical perspectives. A common misconception is that critique is a negative process restricted to criticism; however, here it refers to a much deeper level of understanding that incorporates "seeing beyond" or finding new ways of understanding complexities, particularly in relation to self and the social world (Wink 2000, p. 29). The application of critical pedagogy however, does not guarantee that critique is holistic, or

unaffected by the discourses through which it is practiced. Early practice of critical pedagogy reflected the prevailing "anthropocentric Marxist paradigm that assumes that humans are different from other species because of their ability to make choices" (Spring 2004, p. 132), and as such that nature is valued, understood and utilised only in terms of human needs (Bowers 1991). Similarly, much of the work of Habermas (1972, 1975) reflected values that placed nature in a "primal position prior to society" (Luke 2003, p. 239). Alternatively, critique conducted from a science-based positivist worldview may embrace Cartesian dualist views that objectify the environment, and which assume that issues relating to human–environment relationships may be assessed and/or categorised as either right or wrong (Bowers 1991). All of these are contrary to the reality of the social world where human action reflects a complex web of motivations and intentions, and contrary to desired ESD outcomes of holistically understanding the reality of dynamic and complex human–environment relationships. In the broadest sense, critical pedagogy acts as a pedagogy of transformation by teaching students to ask "for reasons why things are the way they are and why others (and oneself) act as they do" (Mogensen 1997, p. 430).

Since its inception, the notion of critical pedagogy has evolved in response to changes in society, and more recently, in relation to developing environmental perspectives. Before his death in 1996, Freire had begun to modify his ideas to incorporate environmental concerns, highlighting the need for a critical pedagogy he referred to as "ecopedagogy" (Spring 2004, p. 132), in order to critique the contribution of capitalist ideals to modern human–environment relationships. Freire's idea inspired many pedagogical developments. Gadotti (1994), for example, built upon this idea to define "planetary consciousness" as a more holistic alternative pedagogical focus (quoted in Spring 2004, p. 133), and Kahn (2010) presented ecopedagogy as the basis for a holistic framework for ESD:

> Ecopedagogy seeks to interpolate quintessentially Freirian aims of the humanization of experience and the achievement of a just and free world with a future oriented ecological politics that militantly opposes the globalization of neoliberalism and imperialism, on the one hand, and attempts to foment collective ecoliteracy and realize culturally relevant forms of knowledge grounded in normative concepts such as sustainability, planetarity, and biophilia, on the other (p. 18).

Irrespective of the intended focus or ultimate aim of any form of critical pedagogy, the practical application of pedagogy determines its effectiveness. The understanding that the most effective critical pedagogy encompasses understandings unique to a place and time became known as socially-critical pedagogy (Giroux 1988).

2.3.5 *Socially-Critical Pedagogy* for *Learning*

The notion of socially-critical pedagogy was founded on the understanding that learning is only truly effective when developed within contexts related to a student's life experiences (Giroux 1988)—that is, within their "community" (Mogensen

1997, p. 434). Socially-critical pedagogy deliberately and specifically deconstructs political, social and economic motivations for human action, thereby providing commentary on human values, value priorities, attitudes and beliefs (Fien 1993). As this pedagogy engages students in considering the complexity and dynamics of such human ideas, it supports the outcomes of ESD as "it is action on the basis of comprehensive reflection which decisively changes the conditions of human life" (Mogensen 1997, p. 431).

The effectiveness of a socially-critical pedagogy is also dependent upon the manner in which students partake in such significant and contextually specific experiences. This is highlighted by Freire's (1972) early work in which he identified two main educational forms with opposing relationships between power and school education—"banking" and "liberation" education—where students are positioned as either a "passive subject" or "active actor" respectively (Swain 2005, p. 1). The role of the learner as an active actor is central to a socially-critical pedagogy. Although critical pedagogy in general was seen to provide opportunities for developing awareness and engaging in effective critical reflection, Freire believed that this would be truly transformative only if accompanied by social action, or authentic participation (Schugurensky 2002, p. 63). In many ways this reflects Lucas' (1979) idea that learning about sustainable human–environment relationships from others does not necessarily lead to similar action. Transformative learning, or learning that empowers individuals to participate in the development of sustainable human–environment relationships, comes only from direct participation in these behaviours. In other words, socially-critical education *for* the environment encourages learning through:

> just, participatory and collaborative decision making, and involves critical analysis of the development of the nature, forms and formative processes of society generally and of the power relationships within a particular society, thus revealing how the world works and how it might be changed (Gough 1997, p. 107).

Similarly, Gruenewald (2003) proposed a "critical pedagogy of place" as an approach which draws upon the ideals of both critical pedagogy and place-based education to contextualise education in ways that enable students to "interrogate the intersection between cultures and ecosystems" (p. 10) so that it has a "direct bearing on the well-being of the social and ecological places people actually inhabit" (p. 3). In addition, if ESD through a socially-critical pedagogy is to be most effective, Schugurensky (2002) points out that student participation must be legitimately incorporated throughout the organisational structures of their schools, as:

> when people have the opportunity to actively participate in deliberation and decision making in the institutions that have most impact on their everyday lives, they engage in substantive learning and can experience both incremental and sudden transformations. The transformative effects are usually more significant when this institutional participation provides empowering experiences (p. 67).

Freire (1994) believed that in the absence of authentic participation, a socially-critical pedagogy not only failed to lead to behavioural change, but also actively discouraged such change.

Critical reflection, without an accompanying effort of a social organisation and without concurrent enabling structures to channel participation in democratic institutions, can nurture the development of individuals who become more enlightened than before, but who (because of their realisation of the immense power of oppressive structures) may become more passive and skeptical than before (Schugurensky 2002, p. 62). This effect may be caused by a tendency of social critique, in the absence of authentic participation, to emphasise negative relationships which contribute to student despair and feelings of being unable to influence their world. It is therefore essential that students are engaged in positive or "empathetic and optimistic" reflection orientated towards solutions to which they can personally contribute (Breiting et al. 2005). This is supported by John Dewey's ideas that democracy as an ideology cannot simply be studied, but must be lived to be understood (Wink 2000), and that this lived experience must be accompanied by a "language of possibility"—a belief that as an individual there are opportunities for positive change (Fien 1993, p. 10). In other words, effective learning through a socially-critical pedagogy depends on the manner in which teachers implement it.

2.3.6   Socially-Critical Pedagogy and Teachers

In order to best achieve the outcomes of social transformation through a socially-critical pedagogy, Gramsci (1971) noted that educators must first "recognise and acknowledge the existing oppressive structures inherent in schools" in order to actively empower learners to change "beliefs into behaviours for self and social transformation" (quoted in Wink 2000, pp. 82, 85). In other words, transformative education, or the ideals of transformative learning, requires educational processes to change from indoctrinating learners into accepting existing social structures, to empowering learners to actively shape, or indeed re-shape, their society. Both educators and learners are integral to the transformative process undertaken through a critical pedagogy as:

> a way of thinking about negotiating and transforming the relationship among classroom teaching, the production of knowledge, the institutional structures of the school, and the social and material relations of the wider community, society, and nation state (McLaren 1998, p. 48).

This, however, is an enormous undertaking. "It is a very strong indictment to say that our conventional educational institutions are defunct and bereft of understanding of our present planetary crisis" and "transformative education fundamentally questions the wisdom of all current educational ventures" (O'Sullivan et al. 2002, p. 10). In other words, the practice of a socially-critical pedagogy, as transformative ESD, is a radical process. It requires educators to question their current educational practices and the broader practices of the society to which they contribute in order to build the capacity of their students to reflect critically on the predominant human–environmental relationships that support, and are supported by their society. In

order to embrace ESD, educators must actively challenge the predominant political values from which today's "relentless and expansive exploitation of nature" and the underlying notion that equality is a measure of equal access to consumer goods has evolved (Luke 2003, p. 239). They must find ways to re-direct the current economic and consumerist educational outcomes to goals that are more aligned with sustainable development. All of these actions require educators to challenge existing human-centred ideals with educational theories and practices that view human life as an integral component of Earth's natural systems (Spring 2004).

Socially-critical education implies dissatisfaction with current dominant social paradigms, many of which may be directly threatened by critical appraisal of their environmental ideologies. However, in a democratic society, the notion of educating for a specific type of social transformation, even with agreement regarding the types of transformation desired, understandably attracts concern.

2.4 Development of Socially-Critical ESD in Australia

The development of environmental education in Australian schools, in terms of both policy development and classroom practice, has been well documented by Fien (1993) and Gough (1997). By the late 1990s, Australian educational agencies began to re-consider their roles and responsibilities in defining and implementing environmental education in light of the developing notion of ESD. In 1999, the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) acknowledged the importance of environmental education as Goal 1.7 of The Adelaide Declaration on National Goals for Schooling in the Twenty First Century:

> Schooling should develop fully the talents and capacities of all students. In particular when students leave school they should have an understanding of, and concern for, stewardship of the natural environment, and the knowledge and skills to contribute to ecologically sustainable development (MCEETYA 1999, p. 1).

In 1999, the Department of the Environment and Heritage (DEH) established an educational reference group to explore ways in which Australian schools should respond to the United Nations Agenda 21 framework for environmental education. Their discussion paper, Today Shapes Tomorrow: Environmental Education for a Sustainable Future, defined environmental education as:

- raising awareness;
- acquiring new perspectives, values, knowledge and skills; and
- formal and informal processes leading to changed behaviour in support of a sustainable environment (DEH 1999, p. 4).

The paper noted that, despite the government rhetoric advocating sustainable development, "actions have failed to adequately reflect these commitments to environmental education" (DEH 1999, p. 22), as environmental education was isolated within schools and focused towards knowledge acquisition and attitudinal change.

They concluded that effective education *for* sustainability required "comprehensive, lifelong environmental learning integrated within education systems, industry, social organizations/neighbourhood groups and government" because the "transition from awareness to knowledge and action must be owned by all" (DEH 1999, p. 22).

This paper informed the Australian Government's Environmental Education for a Sustainable Future: National Action Plan, which was launched in 2000 as the "starting point for an enhanced national effort in support of Australia's ecologically sustainable development" (DEH 2000, p. 3). This plan acknowledged that environmental education must: involve everyone; be lifelong; be holistic and about connections; be practical; and be in harmony with, and of equal priority to, other social and economic goals (DEH 2000). Although the action plan was not intended to be a definitive model for environmental education, several important aspects of the earlier discussion paper were poorly represented, typified by the statement that a key element of environmental education "is a move from an emphasis on awareness raising to an emphasis on providing people with the knowledge, values and skills to actually make a difference to the protection and conservation of the Australian environment" (DEH 2000, p. 3). This outdated notion of environmental education embraced a parochial view of local conservation rather than a global perspective, and associated education with the delivery of appropriate ideas, or values, as instigating effective behavioural change. The role of knowledge acquisition was somewhat qualified by the statement: "Specialist discipline-based knowledge, while contributing critically, is no longer adequate by itself—an holistic appreciation of the context of environmental problems is essential" (DEH 2000, p. 4). In other words, the base line for evaluating good environmental education continued to be associated primarily with the acquisition of knowledge and understanding, rather than by outcomes evidenced by individuals' actions.

A critical element of the Action Plan was the establishment of several non-statutory bodies to initiate, monitor and evaluate environmental educational initiatives, provide expert advice to government, and collaborate to develop a national approach for environmental education presented as the National Environmental Education Statement for Australian Schools—Educating for a Sustainable Future. This statement, endorsed by the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), represented the first national approach to environmental education to be endorsed by all Australian federal, state and territory governments, and reflected the growing understanding at the time that effective environmental education was indeed a priority (DEH 2005).

Although this statement generally supported the visions and sentiments of environmental education outlined in preceding Australian Government documents, it succeeded in more comprehensively highlighting the global and holistic characteristics of environmental education by relating it to the "interdependence of social, cultural, economic and ecological dimensions at local, national and global levels" (DEH 2005, p. 8). Most importantly, the statement directly acknowledged "action and participation" as essential outcomes of environmental education, and indicated

(although did not state specifically) that changes towards a socially-critical peda-
gogy were desired. The educational "vision" for students was that they become
"active, self-directed and collaborative learners and ethical and responsible citizens
taking action for a sustainable future" (DEH 2005, p. 8) by developing:

- a willingness to examine and change personal lifestyles to secure a sustainable
  future;
- the ability to identify, investigate, evaluate and undertake appropriate action to
  maintain, protect and enhance local and global environments;
- a willingness to challenge preconceived ideas, accept change and acknowledge
  uncertainty; and
- the ability to work cooperatively and in partnership with others (DEH 2005,
  p. 10).

The vision for teachers similarly hinted at a need for change, as they were to
become "enthusiastic about teaching and about developing effective relationships
with their students, committed to the goals of education *for* sustainability, life-long
learners, adaptable, and open to new ideas and teaching strategies" (DEH 2005,
p. 8). However, the document contained mixed messages about how such 'visions'
for environmental education should be incorporated in classroom practices. The
most direct reference to a socially-critical pedagogy for environmental education
was reflected by the understanding that:

> An environmental education for sustainability curriculum involves understanding the pres-
> ent—how it has been shaped, the value in which it is held, and seeking to mitigate adverse
> effects on it. This involves an investigation of how we have come to this situation and
> accepting responsibility to work towards a sustainable future (DEH 2005, p. 13).

The suggested teaching strategy for this is outlined as an inquiry learning model
incorporating experiential learning and science in the community. In a move away
from a traditional vocational/neo-classical pedagogy, learning through social action
is encouraged through a requirement that "students be active in decision making
during the inquiry and at its conclusion" (DEH 2005, p. 21).

In 2007, the Australian Government presented a national strategy for fostering
sustainable development through environmental education: Caring for Our Future—
The Australian Government's Strategy for the United Nations Decade of Education
for Sustainable Development, 2005–2014 (DEH 2007). This strategy stated that
"the Australian community will have the understanding, knowledge, skills and
capacity to contribute to sustainable development and will embrace the intrinsic
value of sustainability as a national aspiration" (DEH 2007, p. 4) but provided little
evidence of encouraging actual action, or guidelines for how this should be achieved.
In terms of "communicating the concepts" (DEH 2007, p. 5) of sustainable develop-
ment, the strategy highlighted the need to foster collaborative partnerships between
government, business and community, and supported the Australian Sustainable
Schools Initiative (AuSSI) as one program through which this could be achieved.

2.4.1 The Australian Sustainable Schools Initiative, Victoria

In 2001 the Sustainable Schools Working Group was established to oversee the development and implementation of what was to become the Australian Sustainable Schools Initiative (AuSSI), an Australian Government initiative which aimed to assist schools and communities to move towards environmental sustainability by facilitating authentic co-learning opportunities as part of a whole-school approach to environmental education—in essence, to develop socially-critical ESD. In 2003, the AuSSI initiative began as an 18 month pilot study during which 300 schools across Victoria and New South Wales began to implement the Sustainable Schools Program (SSP).

In Victoria, 113 schools participated in the pilot study. SSP was funded jointly by the Commonwealth Department of Environment and Heritage (DEH) and the Victorian Department of Education and Training (DET), and delivered by the Gould League and the Centre for Education and Research in Environmental Strategies (CERES). Facilitators from the Gould League and CERES assisted schools with implementation issues, provided teacher professional development and liaised closely with in-school SSP coordinators. This high level of support was crucial because, at this time, environmental education was not mandatory in Victoria, and in many schools, neither teachers, nor students, were familiar with basic environmental concepts (Larri 2006).

2.4.2 Aims of the Sustainable Schools Program

The Sustainable Schools Program was developed to translate into effective educational practice the critical elements of government documents and statements which advocated environmental education as the essential precursor to sustainable development. The program was predicated on several key understandings that had been poorly expressed in education policies. The most important of these was the understanding that building awareness of environmental issues does not necessarily predict the willingness or ability of people to undertake pro-environmental behaviour (Hungerford and Volk 1990), because "there is often little or no relationship between attitudes and or knowledge and behaviour" (McKenzie-Mohr and Smith 1999, p. 10). In other words, there was a growing understanding that effective education *for* the environment or *for* sustainable development depended not so much on what was taught, but on how it was taught. SSP positioned schools as communities which modelled environmental sustainability—places in which environmental learning embraced collaborative ventures which contributed directly to the sustainable operation of the school and community. Table 2.1 shows that the program consisted of twelve steps that aimed to facilitate a school's journey from awareness to action in a manner that brought with them not only the teachers and students, but also their local community.

Table 2.1 The twelve key elements of the framework for facilitation of the Sustainable Schools Program

Key Element	Why this element is important
Introduction to sustainability	Provides a vision, unity, an understanding of the issues and a broad plan for the future. Without this introduction, there will be no common purpose or vision.
Collect baseline data	Provides key information against which future change can be measured. Provides a reference point to track progress.
Make a whole school commitment	A commitment from all sectors of the school to become more sustainable is crucial for a whole school change. Ensures change will develop beyond isolated pockets in the school, breaks down resistance.
Form a committee	A committee, with representatives drawn from teachers, parents, students and specialist advisors, will give ownership to all sectors in the school and a structure to ensure that the workload is spread over the group. A committee shares the load among dedicated teachers and provides ownership by the rest of the school.
Conduct an assessment / audit	Assessment and audits can give reliable information on how resources are used in a school and how waste and litter is being generated. A plan provides certainty.
Set goals and targets	By setting goals and targets, a school will focus on achieving measureable outcomes with clear direction.
Develop a policy	A policy embeds a programme in a school, gives the programme long-term approval.
Develop action plans	Action plans provide a structure and a sense of organisation to achieve outcomes.
Develop curriculum plans	Curriculum plans identify where sustainability is being covered in the school's curriculum and set an operationally coordinated approach.
Implement actions and curriculum plans	Implementation is the essential and exciting step for staff and students.
Monitor and evaluate the programme	Monitoring and evaluation assists a school to constantly re-evaluate its effectiveness and provide constant improvement in their programme.
Build community links	Community links enrich a school's programme bringing valuable resources, expertise and support to and from their wider community.

Larri (2006, p. 20)
Note: This table is an excerpt of documentation provided by the Gould League to the Victorian Department of Education and Training to describe their approach to the Sustainable Schools Program

Schools undertaking SSP began by implementing a core module of activities designed primarily to raise awareness within the school and school community, and to collect data regarding the resource usage of the school. This data informed the development of a plan to implement sustainable school management and operational policies, centred around four resource-based modules: water, waste, energy and biodiversity. The aim of the initial stages of SSP was to "foster school ownership and empowerment of their sustainability program with a focus on student involvement and learning" (Larri 2006, p. 3). Table 2.2 shows the conceptual model

Table 2.2 Conceptual model for the Sustainable Schools Program

Level					
Level 8	Schools are working as models of sustainability in their communities			**Ultimate impacts**	Intended longer term impacts of the AuSSI Pilot – criteria for success not yet clearly delineated
Level 7	PERSONAL RESPONSIBILITY	SCHOOL SUSTAINABILITY	COMMUNITY SUSTAINABILITY		
	7a. Active and empowered students continuously work towards sustainability	7b. Whole school change management is underpinned by decisions that work towards sustainability	7c. Changes in the wider community are based on decisions that work towards sustainability		
Level 6	Schools monitor and evaluate their plans, review and modify them as required, record benefits (environmental, economic, educational and social), and celebrate and build on their achievements			**Resource themes / modules**	Successive completion of each resource based module or theme through: a process of policy development, action planning, and curriculum planning; and then implementation of action plans, monitoring, review, and celebration of achievements
Level 5	For each resource theme, schools implement the action plans and curriculum plan, and build links to the wider community				
Level 4	For each resource theme, schools develop a policy, action plans, and curriculum plans				
Level 3	Schools make a whole school commitment to become a Sustainable School, with long-term goals and targets for operations, curriculum, and whole school engagement across four resource themes			**Core module**	Completion of the core module "Becoming a Sustainable School" is equivalent to achieving Levels 1, 2 and 3. This is documented by the 4-Year Plan which includes: the baseline data set and results of curriculum audits; an agreed school vision; and sub-strategies to achieve action in each of the resource areas (i.e. waste, water, energy, and biodiversity)
Level 2	School communities develop a deeper understanding of what it means to live sustainably and a shared vision of their school as a Sustainable School				
Level 1	Schools are aware of their current situation and identify the drivers and barriers to becoming a Sustainable School				

Larri (2006, p. 23)

Note: This outcomes hierarchy was developed as part of a larger comparative evaluation of both NSW and Victorian Sustainable Schools pilots. The evaluation of the NSW pilot was in collaboration with Sue Funnell, and this outcomes hierarchy was developed from the NSW outcomes hierarchy (See Larri 2006, pp. 19–23)

upon which SSP modules were based, and through which it was hoped that schools would progress to become "working models of sustainability in their communities" (Larri 2006, p. 23).

Larri (2006) reported that Victorian schools participating in the SSP pilot study viewed the program as "an wholistic approach to our environmental management and sustainability programme and its integration into teaching and learning" (p. 42). They believed that the program would be easy to implement because it "provided a mechanism for managing change by providing structure, direction and momentum" (p. 40). They also valued the associated accreditation scheme which formally acknowledged and rewarded schools for the completion of each module, and was seen as a way in which to increase community awareness of the environment and schools' engagement with sustainability issues (Larri 2006).

In an evaluation of one aspect of the pilot SSP implementation (the Stormwater Action Project) in six Victorian schools, the success of the program was attributed to the "shared vision of teachers, students and parents that the environment has a high profile in the school" (Gough 2004, p. 29). Schools reported a wide variety of "educational benefits for students, social benefits for the whole school community, and professional benefits for teachers" (Larri 2006, p. 36). The core units of the program assisted teachers with "understanding the issues around sustainability" (Gough 2004, p. 29), and the teachers valued the opportunities to engage and learn with others (Larri 2006). Teachers noted that the whole-school approach effectively encouraged their students to become involved in environmental decision making processes while adequately accommodating all students' learning needs and interests. This increased the students' understanding and engagement in sustainability issues and motivated them to assume greater personal responsibility for their actions, as evidenced by reports that many students had initiated changes in their homes. In other words, the implementation of SSP achieved behavioural change towards sustainable practices within the schools and the wider community. The schools also reported that changes made in response to the initial resource auditing module provided significant resource and monitory savings, the latter of which were often reinvested into environmental education resources and activities. The majority of the schools indicated that changes implemented through SSP, particularly those related to the routine usage of resources such as water and energy, appropriate management of waste, and the maintenance of new equipment such as rainwater tanks, would prevail for at least a year (Gough 2004; Larri 2006).

Although these reports indicated that the implementation of SSP was successful in achieving some critical environmental educational aims, other reports can be interpreted to indicate that some of these changes were temporary. Many schools felt that SSP facilitators did not always understand or appreciate the operational issues or the difficulties faced by schools trying to implement change. Despite this, most of the schools were concerned that SSP facilitators were not a permanent resource (Larri 2006). This implies that, although the core modules aimed to assist the schools to develop ownership of the change process, not all of the schools had achieved a state of confidence or self-sufficiency in their journey towards becoming more sustainable.

2.5   The Environmental Educational Rhetoric–Reality Gap

Despite consistent calls for ESD for many years now, uptake of effective ESD in Australian educational policy and classroom practice has been slow (Fien 2001; Tilbury et al. 2004). This illustrates the common observation that teaching practices have an inertia that is difficult to shift (Fullan 2007; Hargreaves 1997; Scott and Gough 2003). As noted by Donnison (2004), "teachers and educational institutions are resistant to change" (p. 26), in part, because "the way that teachers are trained, the way that schools are organised, [and] the way that the educational hierarchy operates…results in a system that is more likely to retain the *status quo* than to change" (Fullan 2003, p. 3, original italics). The "lack of coherence between learning objectives and the practice of teaching" (Sørensen 1997, p. 179), is referred to as an educational rhetoric–reality gap (Stevenson 1987, 2007a).

Environmental education rhetoric–reality gaps have been an observed phenomenon in Australian schools since the first calls for environmental education to depart from traditional science, knowledge-based instruction during the 1970s. An extensive investigation by Stapp and Stapp (1983) of the status of education *for* the environment in Australia during 1982 revealed significant rhetoric–reality gaps. They reported that at this time, teachers' practices: were not "interdisciplinary"; did not provide opportunities for "problem solving"; avoided controversial issues which required confronting "values"; and failed to place learning in outdoor or real world contexts. In general, teachers viewed the environment as "nature", excluding important human–environment relationships of the more "urban" regions which represented most students' "own local environment". This investigation concluded that teachers tended to act as "conveyors of information, not facilitators" with a "strong emphasis in the higher grades on academic achievement" (Stapp and Stapp 1983, p. 5). In 1984, a similar study concluded that Australian educators taught in a manner in which the environment was "portrayed as somewhere where people do not live. The focus is on the natural and the nice and not connected at all with the everyday real experiences of living in towns or cities" (Bishop and Russell 1985, p. 14). Such observations are not restricted to environmental education in Australia, nor just to the earliest attempts to introduce education *for* the environment. Despite over 40 years of calls for practices in schools to depart from a knowledge-based vocational/neo-classical pedagogy in order to accommodate the goals of education *for* the environment through socially-critical pedagogies, traditional vocational/neo-classical pedagogies remain predominant (McKeown 2002). Eilam and Trop (2011) noted that "Although the contents of learning have changed, the prevailing pedagogy is still the same as it was throughout the 100 years in which the environmental crisis was developing" (p. 43).

The development of such educational rhetoric–reality gaps is not unexpected, due to the demands of the socially-critical and transformative educational goals of education *for* the environment, and more recently, ESD (Bishop and Russell 1985; Fien 2001; Robertson and Krugly-Smolska 1997; Stapp and Stapp 1983; Stevenson 2007b). Embracing socially-critical pedagogies requires educators and institutions to alter the well-established ways of thinking that have not only underpinned the

educational routines that traditionally act to reproduce current human–environment relationships, but which also ideologically and practically contradict ESD outcomes (Kemmis 1991).

In other words, environmental education programs, and the social and cultural discourses embraced by socially-critical pedagogies, are inherently political such that "if properly implemented, they could be most threatening" (Greenall 1987, p. 13) for teachers, particularly during instances of conflict between their own views and those presented by the school, students and their families (Linke 1984). In light of the challenge of such a significant change, Scott and Oulton (1999) noted that teachers and schools have been poorly guided by "a bewildering mixture of often contradictory instruction", particularly in terms of maintaining a traditional academic assessment process while implementing learning that addresses the socially-critical, transformative goals for sustainable development (p. 90). There is generally a "lack of clear guidelines regarding EE/ESD pedagogy that contributes to this ambiguity and lag between practice and rhetoric" (Eilam and Trop 2011, p. 56). Many teachers do not believe that they either have the expertise to undertake such teaching, or that it is their responsibility to do so (Fien 1993).

More than anything else, the long history of observed rhetoric–reality gaps in the implementation of ESD suggests that the theory of environmental education is "not sufficiently grounded in teachers' experiences and in what they feel schools can do, or what the school day is really like" (Robertson and Krugly-Smolska 1997, p. 232). This has led to such rhetoric–reality gaps being attributed to myriad causes, including deficient teacher training, insufficient teacher knowledge, and a lack of time and school resources (e.g. Barrett 2007; Chapman 2004; Fien 1993; Grace and Sharp 2000; Spork 1992; Thomas 2005; Vongalis-Macrow 2007). A socially-critical approach to ESD is often viewed as impractical in that it not only fails to provide teachers with an "implementation" framework, but also "denies their own practical knowledge" (Walker 1997, p. 5). Stevenson (2007a) however, predicts that despite the "substantial" rhetoric–reality gap in environmental education, with increased dialogue and "research for addressing the gap", the "possibilities for enacting critical and substantive environmental education practices in schools" can be identified (p. 137), particularly if the rhetoric–reality gap is reconceptualised so that "practices in schools are not simply assessed in relation to policy discourse but policy discourse itself is re-examined in relation to teachers' practical theories and the contexts shaping their practices" (p. 265). Thus, there remains "a need to provide updated information on many aspects of environmental education in the school curriculum to inform policies for curriculum development and teacher education" (Lee and Williams 2001, p. 218).

2.6 Moving Forward

The documents from which this brief history of the development of ESD as effective education *for* the environment was compiled focused almost entirely on desired educational outcomes. Embedded within the outcome statements of these

documents were the assumptions that not only could ESD learning outcomes be pre-determined, but that students would also embrace ESD and actively respond to what they learned. In light of these assumptions, programs such as SSP endorsed a socially-critical pedagogy as the most appropriate classroom approach to the goals of this socially transformative education. However, as these documents failed to indicate how the practice of ESD relates to the ontology of the educational environments in which it is implemented, it is difficult to assess the relationship between the stated ESD outcomes and student learning, or the appropriateness of a socially-critical pedagogy. As a result, the implementation of ESD programs often result in the development of educational rhetoric–reality gaps. In order to find ways in which to more effectively implement ESD, it is essential to understand the educational environments and pedagogical practices through which ESD outcomes are to be achieved. Chapter 3 introduces Anthony Giddens' theory of structuration as an ontological framework that outlines and explains the complexity and dynamics of the social interactions that constitute an educational institution, and that can effectively inform investigations into the development of rhetoric–reality gaps in the practices of teachers implementing ESD programs such as SSP.

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