



Australian Government  
Department of the Environment and Heritage



# EDUCATING FOR A SUSTAINABLE FUTURE

A National Environmental Education Statement for Australian Schools





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# ABOUT THIS DOCUMENT

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This statement provides a nationally agreed description of the nature and purpose of environmental education for sustainability through all years of schooling, including a vision and a framework for its implementation. It is intended for teachers, schools and their communities, education systems and developers of curriculum materials. It is also intended as a companion to existing State and Territory policies and programs and does not replace them. Read in conjunction with these State and Territory policies, this statement will be a national reference point for:

- schools as they decide on their education programs from K to 12;
- professional learning programs for teachers;
- reviews of curriculum documents that refer to the environment and sustainability in relevant learning areas in all the States and Territories of Australia;
- developers of education materials for schools; and
- stakeholders who want to promote environmental education in schools.

Environmental education for sustainability is a broad concept and this brief statement cannot provide all the finer detail, or take account of the wide range of starting points of different users of the document. For some, this statement will be new and challenging but for others it will be very familiar. Extensive consultations on the initial drafts of this document indicate some elements are likely to remain subject to productive debate among educators.

The statement will assist in understanding the role of environmental education in creating a more sustainable future. It affirms our successes, indicates good practice and inspires our school communities to take action.





# INTRODUCTION

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**There can be few more pressing and critical goals for the future of humankind than to ensure steady improvement in the quality of life for this and future generations, in a way that respects our common heritage—the planet we live on ... Education for sustainable development is a life-wide and lifelong endeavour which challenges individuals, institutions and societies to view tomorrow as a day that belongs to all of us, or it will not belong to anyone. (United Nations Decade of Education for Sustainable Development 2005–2014)**

Environmental education for sustainability is a concept encompassing a vision of education that seeks to empower people of all ages to assume responsibility for creating a sustainable future.<sup>1</sup>

For many years environmental education has sought to develop knowledge about the environment and to establish an ethic of caring towards the natural world. It has also grown over time to recognise the need to engage with many different interests in society in order to address environmental issues. Environmental education for sustainability acknowledges what has always been true, ‘that how people

perceive and interact with their environment (their worldviews) cannot be separated from the society and the culture they live in’.<sup>2</sup>

Importantly, recognition of the many values—natural and cultural—which the environment may encompass now frames the contemporary Australian understanding of the environment, including the protection of places of National Heritage Significance, based on their natural, cultural and indigenous values.

It is timely that this statement, *Educating for a Sustainable Future*, is released during the first year of the United Nations Decade of Education for Sustainable Development (2005–2014).

## **Changing perspectives on the environment**

The holistic nature of indigenous Australia’s relationship with the environment has changed the international approach to identifying and managing world heritage sites. Australian recognition of the integrated cultural and natural values of Uluru—the idea that Uluru was a cultural landscape, not just a natural area—changed international practice. World Heritage sites, like the places now being listed on Australia’s new National Heritage Lists, can now be listed for their cultural (historical or indigenous) and natural values.



As we work towards achieving the goals of the Decade, schools will be important in preparing and empowering students to assume responsibility for creating and enjoying a sustainable future. Such a vision for school education is transformative. It is more than a curriculum issue and requires a whole-school approach and innovative teaching and learning (see Box).

Well in advance of the UN initiative, the 1999 Adelaide Declaration by Australian Ministers of Education included the goal that:

*When students leave school, they should have an understanding of, and concern for, stewardship of the natural environment, and the knowledge to contribute to ecologically sustainable development.*<sup>3</sup>

This means that students need to understand the complexity of the world in which they live and to have the knowledge, critical thinking skills, values and capacity to participate in decision making about environmental and development issues.

This national statement supports schools in ensuring that their students have achieved this goal.



### **Environmental education for sustainability: a national goal**

In April 1999, State, Territory and Commonwealth Ministers of Education met as the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) in Adelaide. At that meeting, Ministers endorsed a new set of *National Goals for Schooling in the Twenty-First Century* including: 'When students leave school, they should have an understanding of, and concern for, stewardship of the natural environment, and the knowledge to contribute to ecologically sustainable development' (1.7).

The vision of environmental education for sustainability discussed in this statement encompasses this goal and other aspects of the *Adelaide Declaration on National Goals for Schooling in the Twenty-First Century*:

- 'skills in analysis and problem-solving and the ability to communicate ideas and information ... and to collaborate with others' (1.1);
- 'the capacity to exercise judgement and responsibility in matters of morality, ethics and social justice, and the capacity to make sense of their world, to think about how things got to be the way they are, to make rational and informed decisions about their own lives, and to accept responsibility for their own actions' (1.3);
- 'an understanding and appreciation of Australia's system of government and civic life' so they can be active and informed citizens (1.4); and
- 'the knowledge, skills and attitudes necessary to establish and maintain a healthy lifestyle, and for the creative and satisfying use of leisure time' (1.8).

Uluru landscape, courtesy Michael Nelson



## WHY IS A SUSTAINABLE FUTURE IMPORTANT?

*Australians have a high stake in the state of their environment. Our lifestyles and livelihoods depend on its health. People have used the continent's natural resources over tens of thousands of years and, following European occupation, have employed technologies which accelerated this exploitation ... Despite some areas of significant improvement, Australians still have major challenges in the sustainable use of resources and in the maintenance of our natural and cultural heritage. This Report concludes, as did the SoE (1996), that progress towards sustainability requires the integration of environmental with economic and social policies. (Australia: State of the Environment 2001)*

The 2001 State of the Environment Report identifies a range of pressures on the Australian environment. These include:

- the degradation of land and waterways;
- population growth and associated problems of urban sprawl, high energy consumption, storm water pollution of estuaries and coastal waters; and
- continued decline in biodiversity through land clearing, habitat fragmentation and the introduction of pest species to terrestrial and marine ecosystems.

The Report also acknowledges global pressures including critical issues such as global warming.<sup>4</sup>

As Ecological Footprint (EF) calculations show (see Box), our present situation is unsustainable in the long term, and we need to find ways in which we can meet our current needs that do not diminish the quality of the environment nor reduce the capacity of future generations to meet their needs.

Humans are not the only species that need to be considered. Beyond a utilitarian view of the natural environment as something for humans to use is recognition that the environment has intrinsic natural and cultural values to be fostered.

Creation of a sustainable future is an essential response to the current state of the world's

ecosystems. 'Sustainability' acknowledges the economic, social and political pressures that can inhibit or support the capacity of individuals, communities or the nation to properly care for the environment. Sustainability also seeks to promote stewardship of the environment, encouraging everyone to assume the responsibility of being a caretaker or custodian for the environment. Indigenous Australians have much to offer in the development of this sense of stewardship. The nature of indigenous Australian's relationship with the environment provides many examples of sustainable use of the limited resources of the Australian landscape.

Holistic environmental stewardship is already being achieved by some school communities that have transformed their thinking and their immediate environment. These schools are creating a sustainable future for themselves and the broader community.

### Measuring our impact on the planet

The Ecological Footprint (EF) is an example of how we can compare the consumption of renewable natural resources between groups of humans, be it a school, a country or the world.

The EF for the average African or Asian consumer was less than 1.4 hectares per person in 1999, the average Australian footprint was about 7.1 hectares, and for the average North American person the EF was about 9.6 hectares.

The EF of the average world consumer in 1999 was 2.3 hectares per person, or 20 per cent above the earth's biological capacity of 1.9 hectares per person. In other words, *humanity now exceeds the planet's capacity to sustain its consumption of renewable resources.*

Source: *Ecological Footprint of Nations 2004*, <http://www.redefiningprogress.org/publications/footprintnations2004.pdf>; *WWF's Living Planet Report* <http://www.panda.org/livingplanet>.



# EVOLUTIONS IN ENVIRONMENTAL EDUCATION

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**Environmental education has been a part of Australian schooling for more than 30 years. It is an evolving idea in which Australians have influenced, and continue to be influenced by, national and international developments in relation to the environment and education systems.**

Australia's first environmental education conference was convened by the Australian Academy of Science in April 1970, with the title 'Education and the Environmental Crisis'.<sup>5</sup> This was followed at the international level in 1972 by the United Nations Conference on the Human Environment in Stockholm. At that time, the environment was seen primarily as a set of natural ecosystems and values with the environmental crisis coming from problems such as the increasing contamination of land, air and water, growth of the world's population and the continuing depletion of natural resources.

Ideas about environmental education continued to evolve during the 1970s, and by 1977 when the world's first Intergovernmental Conference on Environmental Education was held in Tbilisi, Georgia, there was emerging agreement that environmental education had three main goals:<sup>6</sup>

1. to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;

2. to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment; and
3. to create new patterns of behaviour of individuals, groups and society as a whole towards the environment.

These goals and the accompanying objectives and guiding principles have underpinned much of what happened in the name of environmental education in Australia and elsewhere since 1977. Many States and Territories started their environmental education initiatives in the 1970s and these have continued to evolve as notions of environmental education have developed over the decades.

Since the 1970s, the guiding principles of environmental education have emphasised consideration of the environment in its totality—natural and cultural, technological and social. This holistic approach to the environment was a major shift from programs that focused only on the natural environment and thus failed to understand the role of human decisions and actions in causing ecological problems. The guiding principles acknowledged that environmental problems need to be addressed through economic, social and political policies, and technological change.



During the 1980s and 1990s, use of the language of sustainability began to emerge, popularised by the World Commission on Environment and Development in 1987 (the Brundtland Commission) and revisited in 1992 through the United Nations Conference on Environment and Development in Rio de Janeiro. Since this time a much stronger emphasis has been placed upon trying to integrate thinking and action around ecological, social, political and economic systems. Acknowledging the complex relationships between these four systems came to be seen as critical to achieving a sustainable future.

The relationships between the four systems is illustrated in the interlocking jigsaw pieces at the centre of Figure 1, which represent the need for natural resources and life-support systems to sustain all life, skills to earn a living, social harmony, and involvement in the decisions that affect one's life. The principles of conservation, peace, equality and human rights, appropriate development and democracy that underlie the sustainability of the four systems, are also embedded in education for sustainability.

The 1980s and 1990s also saw a growing understanding that teaching and learning strategies for environmental education needed to emphasise

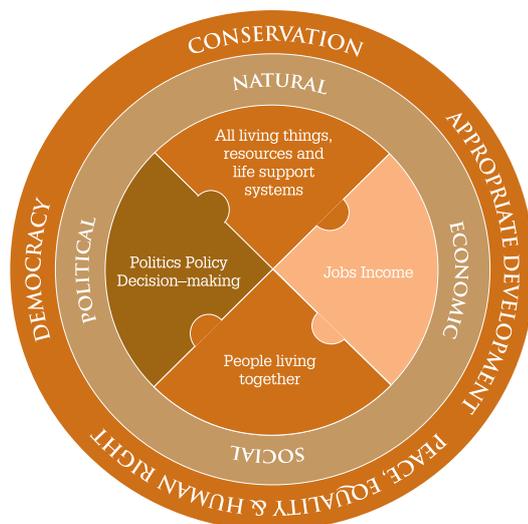


FIGURE 1:  
UNESCO's model of the interlocking dimensions of sustainability<sup>7</sup>

### About, in and for the environment

The framework *about, in and for* the environment is a popular way of organising the experiences within an environmental education program.

**Education *about* the environment** focuses on students' understanding of important facts, concepts and theories.

**Education *in* the environment** involves students in direct contact with a beach, forest, street or park to develop awareness and concern for the environment.

**Education *for* the environment** aims to promote a willingness and ability to adopt lifestyles that are compatible with the wise use of environmental resources.

more than knowledge and understanding, as important as they are as a foundation for learning. The clarification of environmental attitudes and commitments, the development of critical thinking skills and learning how to work collaboratively to improve human and environmental wellbeing are also important outcomes of environmental education. Thus, effective environmental education has implications 'not only for *what* we learn but also *how* we learn'.<sup>8</sup> This means that effective environmental education requires the regular use of learner-centred, interactive teaching and learning strategies that, in various education systems, are encompassed in terms such as 'new learning' and 'productive pedagogy'.

In 2002 the World Summit on Sustainable Development<sup>9</sup> confirmed this relationship in declaring education for sustainability as critical for promoting sustainable development. With the United Nations Decade of Education for Sustainable Development initiative, environmental education has now evolved in the 21st century to embody sustainability in the broadest sense, with an emphasis on transformational change in values and behaviour from the individual to a global scale. This statement relates these global initiatives to Australian schools by providing a framework for developing environmental education for sustainability in schools.



# A FRAMEWORK FOR ENVIRONMENTAL EDUCATION FOR SUSTAINABILITY



**Effective environmental education for sustainability is not just a curriculum issue; it requires the involvement of the whole school.**

Environmental education for sustainability pervades all aspects of the school operations, curriculum, teaching and learning, physical surroundings and relationships with the local community (see Figure 2 below).

All the groups that make up a school community are important in constructing and sustaining environmental education for sustainability: the leadership team, the administration staff, the teaching staff, the ground staff, the canteen staff, the parents, the students and the local community. External agencies can provide funding, support and advice, but it is the discussion, dialogue and reflection that occur within the school community that will drive the change.

Environmental education for sustainability is a core feature of the school ethos—the value structure of the school. It may be explicitly written in policy documents, but it is best observed in how administrators, teachers, students and parents interrelate; in how the school presents itself and responds to the community; in programs offered to students; and how the school embodies the principles of citizenship in the way it operates as a learning community.

Implementing environmental education for sustainability in schools requires the development of a shared vision, goals and objectives. These form the basis for a whole-school approach outlined in the remainder of this statement.

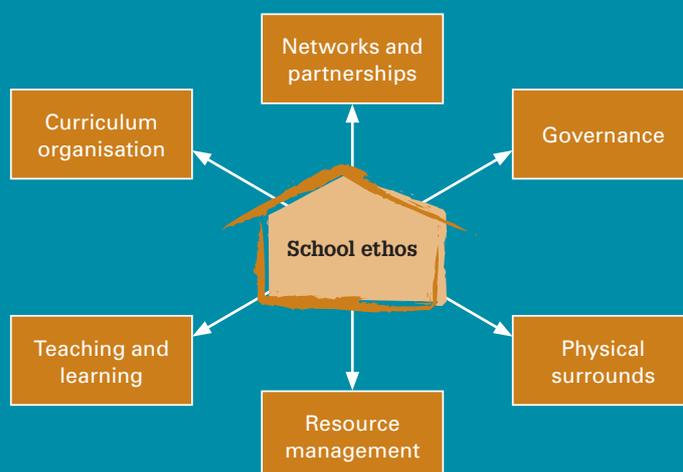


FIGURE 2:  
A framework for environmental education for sustainability



## A VISION

A shared vision is an important element of a whole-school approach to environmental education for sustainability. The vision has implications for how schools are organised and the roles that are assumed by administrators, teachers, parents and students. It envisages:

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Schools as:	flexible learning organisations where reflection and evaluation are valued and sustainability and community are central;
School leadership teams as:	supportive, proactive, and actively involved in implementing and growing all aspects of environmental education for sustainability in the school;
Teachers as:	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; and
Students as:	active, self-directed and collaborative learners and ethical and responsible citizens taking action for a sustainable future.

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Once developed, a vision is not static but is part of a regular cycle of reflection, replanning and evaluation. The vision informs and is informed by the goals and objectives that follow.

## GOALS

Environmental education for sustainability involves approaches to teaching and learning that integrate goals for conservation, social justice, cultural diversity, appropriate development and democracy into a vision and a mission of personal and social change. This involves developing the kinds of civic values and skills that empower all citizens to be leaders in the transition to a sustainable future.<sup>10</sup>

The long-term goals of environmental education for sustainability include developing the capacities of students to:

- understand and value the interdependence of social, cultural, economic and ecological dimensions at local, national and global levels;
- reflect critically upon how this interdependence affects communities, workplaces, families and individuals and be able to make appropriate decisions;

- develop attitudes and skills which are conducive to the achievement of a sustainable future;
- appreciate and respect the intrinsic value of the whole environment and a sense of the sacred;
- develop an ethic of personal responsibility and stewardship towards all aspects of the environment; and
- participate as active and involved citizens in building a sustainable future.

## LEARNING OBJECTIVES

Schools implementing this vision will plan learning experiences that enable students to achieve the following learning objectives or outcomes.

Some are specific to environmental education for sustainability, while others are more generic and relevant across several or all key learning areas.<sup>11</sup>



## Knowledge and understandings

This includes an understanding of:

- the nature and function of ecological, social, economic and political systems and how they are interrelated;
- the natural and cultural values intrinsic to the environment;
- the impact of people on environments and how the environment shapes human activities, with particular reference to unique and distinctive Australian heritage traditions and settings;
- the ways different cultures view the importance of sacredness in the environment;
- the role of cultural, socioeconomic and political systems in environmental decision making;
- the principles of ecologically sustainable development;
- the responsibilities and benefits of environmental citizenship, including the conservation and protection of environmental values;
- the importance of respecting and conserving indigenous knowledge and cultural heritage; and
- how knowledge is uncertain and may change over time, and why we, therefore, need to exercise caution in all our interactions with the environment.

## Skills and capabilities

The ability to engage in:

- explorations of the many dimensions of the environment using all of their senses;
- observations and recording of information, ideas and feelings about the environment;
- identification and assessment of environmental issues;
- critical and creative thinking about environmental challenges and opportunities;

- consideration and prediction of the consequences (social, cultural, economic and ecological) of possible courses of action;
- oral, written and graphic communication of environmental issues and solutions to others;
- cooperation and negotiation to resolve conflicts that arise over environmental issues; and
- individual and collective action to support desirable outcomes.

## Attitudes and values

These are reflected in an appreciation and commitment to:

- respecting and caring for life in all its diversity;
- conserving and managing resources in ways that are fair to present and future generations;
- building democratic societies that are just, sustainable, participatory and peaceful; and
- understanding and conserving cultural heritage.

### Values for Australian schooling

The nine 'values for Australian schooling' have emerged from Australian school communities and from the *National Goals for Schooling in Australia in the Twenty-First Century*:

- care and compassion
- doing your best
- fair go
- freedom
- honesty and trustworthiness
- integrity
- respect
- responsibility
- understanding/tolerance/inclusion.

Source: Commonwealth of Australia 2004, Values Education, Department of Education, Science and Training, Canberra, <http://www.curriculum.edu.au/values>.



## Action and participation

Environmental education for sustainability also involves applying such knowledge and understandings, skills, attitudes and values in active and informed participation to address environmental issues, problems and opportunities. This includes:

- 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.

*It is essential that we remember a sustainable future cannot be created without considering and involving young people. We all need to use our hearts, heads and hands to work in partnership with one another, to make sure that the systems we live by are owned by young and old alike, and that they are feasible, not only for this generation, but all generations that*

*follow. It is imperative that in creating a sustainable future, we are working with our youth, and not just for them. (Amy Ralfs, Youth Environment Council of South Australia)<sup>12</sup>*

## A WHOLE-SCHOOL APPROACH

A whole-school approach to environmental education for sustainability emerges from the school vision and is articulated in all facets of school life:

- how the school is organised and operates;
- school design (within the limitations of existing structures);
- development and management of school grounds;
- reduction and minimisation of resource use by the school (water, energy, products and materials);
- enhanced connections between the school, its community and other educational institutions;
- conservation and protection of heritage values in the school and its grounds; and
- reorientation of the curriculum and the teaching and learning towards sustainability.

### Australian Sustainable Schools Initiative

The Australian Sustainable Schools Initiative (AuSSI) integrates existing environmental education initiatives into a holistic program with measurable environmental, economic, social and curriculum outcomes. The initiative implements efficiencies in a school's management of resources (eg energy, waste, water, products and materials) and the management of school grounds (eg biodiversity, landscape design, soil, noise, and human and vehicular traffic) and integrates this approach into the existing curriculum and daily running of the school. The incorporation and involvement of the school's local community is a critical element of the initiative. A checklist of indicators for sustainable schools is included in the Appendix.

AuSSI began in 2002 with New South Wales and Victoria receiving initial funding from the Australian Government for program trials. Interest in the initiative by the other States and Territories has grown substantially, and now most States are involved in the planning or establishment stages. All Australian States and Territories have also agreed to participate in the development of a national program facilitated through the National Environmental Education Network (NEEN).

Source: Commonwealth of Australia 2005, *Australian Sustainable Schools Initiative*, Department of the Environment and Heritage, Canberra, [www.deh.gov.au/education/sustainable-schools/index.html](http://www.deh.gov.au/education/sustainable-schools/index.html).



## SCHOOL GOVERNANCE

In preparing students for life in an ever-changing world, schools themselves need to be highly adaptive. Schools need to build their organisational capacity to re-evaluate their operations and the educational experiences of their students. School systems have long recognised the importance of a planning cycle that involves reflection and evaluation of all elements of school activity. Good governance occurs where decision making is distributed across the school community and involves students in an appropriate way. Good governance is important for schools because it helps them to maximise their use of physical and human resources in a manner which is economically, ecologically and socially sustainable.<sup>13</sup>

## RESOURCE MANAGEMENT

Schools can move towards becoming sustainable organisations by committing to identifying, conserving and improving the environmental and heritage values of their school site, and by reducing their ecological footprint. As a starting point they can reduce waste, minimise energy, transport and water usage, increase recycling, encourage biodiversity in the school grounds, conserve the heritage value of the site, use sound purchasing practices and ensure canteen products are environmentally appropriate. Moving towards sustainability needs to become an important feature of how the school organises its daily operations. The savings made can be used for other sustainability initiatives.



Tree planting, courtesy DEH

Youth forum (with representatives from 16 high schools at Dorrroughby EEC), courtesy DEC NSW

Water management, courtesy Dianne Ashman

## PHYSICAL SURROUNDS

Schools are often judged by the physical appearance and presentation of the grounds and buildings.

Increasing the diversity and extent of vegetation cover in school grounds not only enhances the image of the school but also maximises the potential of these spaces to provide educational and environmental experiences to the students.

Students, staff and parents can be actively involved in the sustainable management of the grounds through activities such as habitat creation, mulching, vegetable gardening, landscaping, productive enterprises (if appropriate) and litter reduction. The opportunities are limited only by the imagination and enthusiasm of the school community.

Although schools may be limited in what they can do about the design of their existing buildings, the refurbishing of older buildings should incorporate energy-efficient elements. For most schools it is *how* they use the buildings that will have the most impact. New buildings should be designed with energy conservation as a priority.

### Learnsapes

Learnsapes are places where a learning program has been designed to permit users to interact with an environment. They may be natural or built; interior or exterior; located in, near or beyond schools; and related to any one of, or many, key learning areas. They must be safe and accessible.

Schools involved in Learnscape projects have increased the diversity of their school grounds and buildings by adding features such as gardens, forests, ponds, shelters and outdoor classrooms. The increased diversity of the grounds and buildings allows for the design of a wider range of learning experiences and the creation of a Learnscape environment.

Learnsapes are gaining worldwide acceptance as valuable pedagogical innovations.

Source: The School Learnsapes Trust 2000, <http://www.learnsapes.org/>.

## NETWORKS AND PARTNERSHIPS

Many environmental education developments are best achieved through collaborative action with the local and broader community. This might include partnerships with other educational institutions, local councils, businesses, industry, and community groups and networks.

This links student learning to the workplace and to local environmental and social issues, and allows students to become active and involved participants.

Schools that have fostered partnerships have sometimes gained access to resources not otherwise available to the school.

Similarly, as schools are living communities, students should be encouraged to see themselves as creators and carers of the school's cultural and social heritage. Researching and documenting the history of the school can strengthen recognition of the school's heritage and its links with the community.

### A whole-school approach

Schools implementing a whole-school approach to environmental education for sustainability typically indicate the following key points as important for success:

- active participation of the school leadership team from planning through to implementation;
- a vision of future directions for the school, shared with the school community;
- sustainability principles embedded in school policies;
- an implementation group or committee drawn from the school community including teachers, non-teaching staff, parents, students and specialist advisors, to give ownership to all sectors in the school and a structure to ensure that the workload is spread;
- starting by getting a clear overview of school operations (waste, water, energy, grounds and canteen), school policies, curriculum, and teaching and learning, before moving on to action planning;
- moving at a rate that is compatible with the school's ability to change; and
- keeping the school and local community informed and ensuring that successes are celebrated.





# ORGANISING AND DEVELOPING CURRICULUM

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**An environmental education for sustainability curriculum involves understanding the present environment—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. Identifying what is distinctive about the local environment and understanding local community issues is essential to shaping the environmental education programs in a school.**

As discussed above, the environmental education for sustainability curriculum involves the whole focus of the school, not just the structured learning activities. This section is on planning and organising the content of the curriculum—that is, what we plan for students to learn and what we teach.

One important additional benefit from a vibrant environmental education for sustainability program in the school curriculum is an increase in student engagement, particularly with students at risk of disengaging with learning. Effective teaching and learning takes account of students' lives and interests and their individual learning differences. A well-planned

environmental education for sustainability program provides learning embodied with significance for students and provides opportunities for practical learning experiences, often outside the boundaries of the classroom.

Ideally, environmental education for sustainability will not be confined to any one learning area within a school. There are numerous ways for incorporating environmental education for sustainability into the curriculum. How these are manifested can depend on a school's particular situation.

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Organising and developing curriculum,  
courtesy Cam Mackenzie



## CURRICULUM PLANNING

An effective environmental education for sustainability curriculum provides the knowledge and understandings, skills, attitudes and values, and opportunities for participation and action that will help students to create a sustainable future. The basic characteristics of curriculum planning to promote environmental education for sustainability are:<sup>14</sup>

Coherence and rigor	the key concepts are clearly identified and coordinated wherever they appear in the curriculum and are reinforced through all key learning areas;
Prior understandings	students' experiences, knowledge, attitudes and skills from their own lives and previous educational experiences are identified and inform the planning process;
Relevance and connectedness	students are enabled to relate to their surroundings as a frame of reference and are consulted about what is important and relevant to their own lives;
Flexibility	schools adapt the curriculum in response to change and developments in the wider world;
Evaluation	procedures for monitoring and evaluating are built in from the beginning; and
Progression	there is a clear and identified path within and across year levels, matched to the needs and interests of the students and structured in developmentally appropriate ways.

### Port Vincent Primary School

Effective environmental education for sustainability is not a program you 'do', nor a policy you merely follow, but rather something that integrates and involves community capacity building. Since 1995 Port Vincent Primary School in South Australia has emphasised students' initiative and involvement around their environmental learning activities. An eco-club was formed and one afternoon a week was set aside for environmental education for sustainability focus activities, linked to the curriculum through the key learning areas of Science, Society and Environment, and The Arts. Each year the club has had a different name and focus. This is determined by students at a whole-school meeting at the start of each year. It has become a powerful forum for student voice and curriculum ownership in action. An Environment Committee, elected by students, runs the club, and coordinates activities and actions in consultation with staff.

School-based curriculum planning will need to be undertaken within the prevailing policy context in each State and Territory. While the terminology, programs and priorities will vary from State to State, these essentials of environmental education for sustainability will be common.

A favoured pathway to implementing environmental education for sustainability in the curriculum involves a whole-school approach, working across all curriculum areas and complemented by whole-school policies and activities in other related areas. Some specific approaches include:

- identifying environmental education for sustainability outcomes within a broader curriculum framework or in key learning areas or subjects, such as Creative Arts, English, Health and Physical Education, Languages Other Than English, Mathematics, Science, History, Studies of Society and Environment, and Technology;



- integrating environmental education for sustainability issues and topics into specific key learning areas or subjects (such as those noted above);
- having a separate subject such as Environmental Science or Environmental Studies that links to ongoing training, tertiary studies and career pathways;
- incorporating environmental education for sustainability into literacy and numeracy programs; and
- developing an environmental education for sustainability perspective across learning areas—either by one teacher or as a collaborative approach—which could include:
  - cross-curricular units
  - complementary teaching across several subjects
  - special projects and theme days or weeks
  - performances, excursions and visiting experts
  - collaborative projects with other schools (locally and globally)
  - integration with special literacy and numeracy or ICT programs.

The most effective environmental education for sustainability programs develop learning opportunities outside the classroom to support and extend the classroom program. Possibilities here include:<sup>15</sup>

- special environmental events, celebrations and projects to complement classroom activities;
- involving students in investigating, maintaining and improving the school and local environment;
- using the community to investigate practical and real-life situations;
- incorporating outside programs and services into school programs to bring learning to life;
- utilising the facilities of environmental education centres, and participating in such programs as Landcare and Waterwatch; and
- participating in State/Territory Heritage Festival programs, History Challenge and National Trust history research competitions, and similar events.

Assessment is an integral part of curriculum planning—effective assessment will serve diagnostic, formative and summative purposes. Effective assessment strategies need to be congruent with the different approaches to curriculum planning and content being adopted in an environmental education for sustainability program. Environmental education for sustainability programs have skills, attitudes and values, and participation and action as well as knowledge outcomes. This means assessment strategies will

### Orbost Primary School

During their involvement in the Science in Schools Research Project, the staff at the Orbost Primary School highlighted the need to improve the profile and image of science in the school and in the local community. ‘We needed to have students involved in “real” science with the purpose of offering their community a service through committed studies and community projects’, said Sue Legge, the school’s project coordinator.

The Snowy River Rehabilitation Project had just begun and it was seen as a perfect link for the school to establish. ‘We felt it would be a very positive and powerful vehicle to have the children involved in the rehabilitation of the Snowy River. It is also an ongoing project that the students will have ownership of and therefore a sense of value’, said Sue.

As part of this project, students have conducted Internet research on native fish, monitored the water quality of the Snowy River and participated in tree planting with staff from the Department of Sustainability and Environment. Students also work with the local garden club on an area enhancement project by planting butterfly-attracting species and continually maintaining the area through mulching and weeding. They have also been involved with Native Fish Australia, the Snowy River Alliance and Waterwatch which has helped to direct small-group, long-term studies of ‘caring for Bass’ in the school, and water-quality testing.



need to emphasise problem-solving, teamwork, decision making, holistic thinking, clarifying and analysing values, and opportunities for action, as well as providing opportunities for students

to demonstrate that they have also acquired the requisite skills. In many instances, students can benefit from being involved in negotiating the criteria and methods by which they are assessed.

## CURRICULUM CONTENT

Environmental education for sustainability is underpinned by several concepts and principles, as shown below.

### **Concepts and principles of environmental education for sustainability**

Interdependence	Humans are an inseparable part of the environment and we are part of a system that connects individuals, their culture and their natural surroundings.
Resource management	The natural world contains a range of renewable and finite resources that humans can develop to satisfy their needs and wants according to the lifestyle choices they make and with regard to long-term sustainability of these choices.
Diversity	Variation and variety can take several forms—biological, cultural, social and economic. We need to understand the importance and value of each of these forms of diversity to the quality of human life.
Natural environment	The natural environment comprises ecosystems which include the plants and animals of an ecological community and their physical surrounds, forming an interacting system of activities and functions regarded as a unit.
Cultural environment	The cultural environment comprises all the tangible and intangible evidence of human activity, including buildings, traditions and beliefs. Significant elements of the environment have cultural and historic values that may require protection from unplanned or unwise human activity.
Values and lifestyle choices	The balance of natural ecosystems and cultural heritage can be affected by unplanned or unwise human use of resources. Sometimes the resulting problems are so severe that changes in management practices and human lifestyles are necessary to protect the cultural environment or to allow ecosystems to, if possible, rebuild their ecological balance. Poor choices may affect the wellbeing and lifestyle of future generations.
Social participation	Attitudes of concern for the quality of the environment are required to motivate people to develop the skills necessary for finding out about the environment and to take the necessary actions for environmental problem-solving.



These concepts and principles relate closely to the learning objectives listed in detail earlier, and they can be incorporated into the different key learning areas. Our current understanding of best practice favours cross-disciplinary studies that develop students' knowledge, skills, attitudes and values, and provide opportunities for participation and action.

For example, objectives related to the nature and function of systems and how they are interrelated can be achieved through teaching about interdependence. Similarly, the requirements of citizenship relate to social participation, and values and lifestyle choices.

The learning associated with environmental education for sustainability often involves abstract concepts, however, and teachers need to be selective in matching content to the developmental needs and preferred learning styles of students. In many instances, it will be most appropriate to teach these concepts through concrete case studies of local, national or global examples in order to make the

abstract concepts meaningful to students' everyday lives and practical experiences.<sup>16</sup>

Some of these concepts and principles may be relatively new to many teachers and school communities.

Some of these concepts and principles can be related to each of the four UNESCO systems of sustainability (see the table below), but others are more holistic and relate to all four systems. These include the concepts and principles of ethics, holism, indigenous knowledge, needs and rights of future generations, precautionary principle, quality of life, spirituality, stewardship and sustainable development.

These are key values to be fostered and concepts to be considered, but the list is not finite (see Glossary for definitions).

Achieving the vision and objectives of environmental education for sustainability is a function of the whole curriculum and the whole school.

### Key concepts and themes of education for sustainability

<b>Ecological sustainability</b>	<b>Social sustainability</b>	<b>Economic sustainability</b>	<b>Political sustainability</b>
Biodiversity	Basic human needs	Cost-benefit analysis	Citizenship
Habitat	Cultural diversity	Economic development	Democracy
Carrying capacity	Cultural heritage	Eco-efficiency	Decision making
Conservation	Human rights	Life-cycle analysis	Tolerance
Ecological footprint	Intergenerational equity	Natural capital	Power
Ecology	Participation	Natural resource accounting	Respect
Ecospace	Peace	Steady-state economy	Conflict resolution
Ecosystems	Risk management	Sustainable consumption	
Interspecies equity	Social justice	Sustainable production	
Natural cycles and systems		Triple bottom line	





# LEARNING AND TEACHING WITH AN ENVIRONMENTAL EDUCATION FOR SUSTAINABILITY PERSPECTIVE

## THE LEARNER

An essential part of the environmental education for sustainability vision is students learning to achieve a better understanding of the world in which we live and provide opportunities for them to be empowered to create a sustainable future. Within this vision, students' knowledge, skills, values and actions are enhanced through active, self-directed learning and ethically responsible citizenship.

Learning within an effective environmental education for sustainability program is complex and can be understood if broken down into four dimensions: the reflective and deep thinker, the autonomous learner, the ethical and responsible citizen, and the relevant and connected learner (Figure 3).

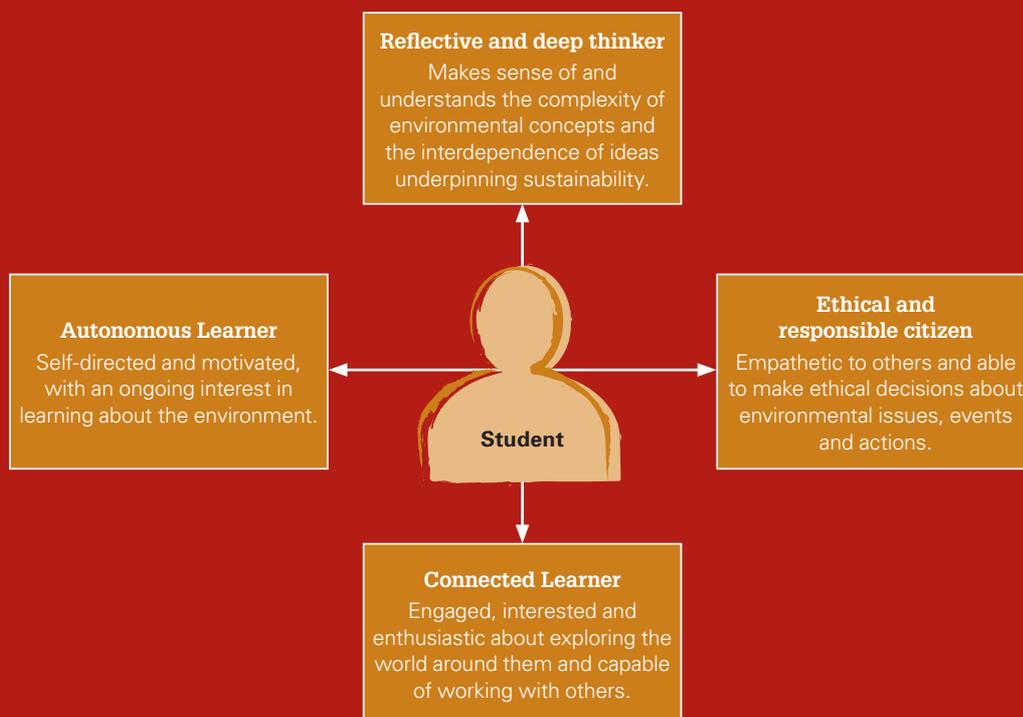


FIGURE 3.

The four dimensions of an environmental education learner (adapted from the *Productive Pedagogies*, Education Queensland)



## THE TEACHER

Effective teachers of environmental education for sustainability recognise and respond to these four dimensions of the learner. Effective learning will be characterised by the quality of the relationships that teachers foster with and between their students. Student empowerment and 'voice' is a strong

feature of successful learning relationships both in negotiating the curriculum content and the ways of learning. Pre-service and in-service education programs must take up these emerging challenges for practising teachers.

### Successful learning and effective teaching

The learner	Effective environmental education for sustainability teacher
Reflective and deep thinker	<ul style="list-style-type: none"> <li>▪ Encourages higher-order and critical thinking about the environmental education knowledge outlined earlier.</li> <li>▪ Promotes deep understanding of this knowledge.</li> <li>▪ Provides substantive conversation about this knowledge and how it relates to attitudes, values, action and participation.</li> <li>▪ Presents this knowledge as problematic.</li> <li>▪ Encourages students to communicate environmental education ideas clearly and confidently.</li> </ul>
Ethical and responsible citizen	<ul style="list-style-type: none"> <li>▪ Considers social justice issues when reflecting on classroom and school practices.</li> <li>▪ Values diversity and acts for a just and equitable society.</li> <li>▪ Strives to model desirable behaviour towards the environment.</li> <li>▪ Encourages students to actively participate in the community.</li> <li>▪ Works towards helping students to develop a positive vision for themselves and their future, and act with moral autonomy.</li> </ul>
Connected learner	<ul style="list-style-type: none"> <li>▪ Provides opportunities for students to 'connect' to the local environment and beyond.</li> <li>▪ Builds on students' experiences, awareness and prior understandings of the environment.</li> <li>▪ Integrates knowledge about the environmental, social, political and economic systems.</li> <li>▪ Provides opportunities for environmental problem-solving.</li> <li>▪ Supports students in formulating constructive futures for themselves and others.</li> <li>▪ Provides opportunities for students to consider the consequences of scientific and technological innovations and their applications.</li> </ul>
Autonomous learner	<ul style="list-style-type: none"> <li>▪ Facilitates the efforts of students rather than instructing them.</li> <li>▪ Encourages student autonomy and self direction.</li> <li>▪ Provides a supportive, democratic learning environment.</li> <li>▪ Participates with students in the learning process.</li> <li>▪ Provides opportunities for students to 'make a difference'.</li> </ul>



## THE STRATEGIES

The challenge is to provide a wide range of effective learning experiences that promote and support environmental education for sustainability.

Some learning strategies are more appropriate than others, depending on the needs of the student. Appropriate strategies place the student at the centre of the learning, are negotiated with students and are highly interactive within and beyond the classroom.

A few important strategies supportive of environmental education for sustainability are described below. These strategies are very flexible and are rarely mutually exclusive. They may overlap or interrelate with other strategies, depending on the school program.

**Experiential learning:** Sometimes called 'learning by doing' or 'hands-on', experiential learning engages students in constructing knowledge, skills and values from direct experience and in contexts that are personally relevant to them.

Such experiences are supported by feedback, reflection, critical analysis and the application of the ideas and skills to new situations. Experiential learning takes many forms, ranging from scientific predict–observe–explain situations to drama and creative art. Experiences outside the classroom are also important. These can include participating in activities at environmental education centres, national and state parks, heritage sites, farms, zoos, museums, beaches and many other sites.

**Values clarification and analysis:** Dealing with controversial issues in a balanced and sensitive manner is one of the greatest challenges for teachers. Values clarification is an approach that encourages students to analyse their own thoughts and feeling about an environmental issue, while values analysis encourages students to think about and analyse a range of perspectives in relation to their own. Students can be encouraged and enabled to explore concepts of spirituality and sacredness of place and the stewardship of finite resources.



Cabbage Tree Creek tree planting, courtesy Peter Waddington



**Creative thinking:** A range of techniques is available that encourages students to explore environmental issues, generate possibilities and look for possible answers or solutions. We need to provide opportunities for divergent, multidimensional thinking in addition to the more convergent reductionist approaches favoured in the sciences. Developing students' creative thinking skills helps them develop a vision for a sustainable future.

**Future problem-solving** is a strategy for helping students develop skills for analysing an environmental problem. Working through step by step can help them decide, from a futures perspective, what can be done about the problem.

**Storytelling:** Learning through storytelling is deeply instinctive. An entertaining and interesting narrative can be used as a gateway for students of all ages to explore environmental education for sustainability concepts, attitudes and skills. Stories can come from different sources, including the full range of electronic media. Storytelling is also important in indigenous knowledge, and can be a strategy for understanding and exploring other ways of knowing.

**Inquiry learning:** Inquiry learning encourages students to respond to their own concern or curiosity and to investigate and act on an environmental issue. Students are encouraged to think through and solve problems associated with that issue. They are responsible for collecting and analysing data in order to reach their own conclusions and to decide on appropriate courses of action.

**Science in the community:** Collecting scientific data from the local environment is a common activity in many schools. A wide range of data can be collected from the local environment, including data on soil, air, water, energy, solar radiation, transport and biodiversity. Such activities have the potential to link scientific ideas with community concern and activity, and provide opportunities for students to actively participate in local issues. Projects such as Waterwatch (<http://www.waterwatch.org.au>) provide frameworks and forums to extend local activities to the national and global arenas.

### A model of inquiry learning

#### Tuning in

- Identifying and defining the issue.

#### Finding out

- Collection of data is not an end in itself, but a means towards developing understandings.

#### Drawing conclusions

- Drawing conclusions requires students to express their understandings and communicate them to others.

#### Considering social action

- Social action requires that students be active in decision making during the inquiry and at its conclusion.

#### Reflection and evaluation

- Requires students to reflect on the outcomes of their actions and use this information for further planning and inquiry.





# RESOURCES

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Any detailed bibliography is soon out of date but the following principles of good practice for educational resources can be used by teachers and curriculum developers to plan and evaluate print, multimedia and web-based educational resources for classroom use.<sup>17</sup>

## Principles of good practice for educational resources

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<b>Principle 1: Principles of sustainable development</b>	Effective resources will foster understanding of the key concepts and principles of sustainable development.
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<b>Principle 2: Integrity</b>	Any information and data provided will be accurate, current and verifiable.
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<b>Principle 3: Balance</b>	When purporting to give a balanced account of an issue, resources will accurately reflect the broad range of informed opinion on the subject.
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<b>Principle 4: Values and attitudes</b>	Resources will help people to explore values and develop responsible attitudes in relation to their fellow citizens and the environment, from local to global level.
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<b>Principle 5: Knowledge and skills</b>	In addressing environmental and development issues, resources will help develop the knowledge, skills and competencies to enable people to participate effectively in their resolution.
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<b>Principle 6: User-centred approach</b>	To ensure maximum take-up, resources will be easy to use and appropriate for the intended audience.
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## FURTHER SUPPORT

The following websites are a good starting place for resources and support.

- *AAEE website*: <http://www.aeee.org.au>
- *Australian Government Department of the Environment and Heritage—Kits and Resources*: <http://www.deh.gov.au/education>, and *Publications*: <http://www.deh.gov.au/about/publications/list.html>—see particularly Australian Natural Heritage Charter for the Conservation of Places of Natural Heritage Significance, and *Ask First: A guide to respecting Indigenous heritage places and values*
- *Australian Heritage Directory*: <http://www.heritage.gov.au>
- *Education for Sustainable Development Toolkit*: <http://www.esdtoolkit.org/>
- *Gould League*: <http://www.gould.edu.au/>
- *International Council on Monuments and Sites*: <http://www.icomos.org/australia> for copies of the Burra Charter
- *Local Agenda 21*: a search on Google or a similar search engine will yield a number of links to this United Nations initiative
- *National Environmental Education Network*: <http://www.deh.gov.au/education/neen>. Select 'Projects' to link to a range of activities
- *Teaching and Learning for a Sustainable Future*: <http://www.unesco.org/education/tlsf/>
- *The Earth Charter Initiative*: <http://www.earthcharter.org/>
- *The National Trust of Australia*: <http://www.nationaltrust.org.au>
- *United Nations Decade of Education for Sustainable Development*: <http://www.unesco.org>
- *The History Teachers' Association of Australia*: <http://www.historyteacher.org.au> for history challenge information.

Also check relevant teacher associations, education department and environment department websites in your State or Territory and their links to other networks, State authorities and programs. Your local municipal council will be aware of some of the major initiatives, projects and groups in your own local area.



# GLOSSARY

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**This Glossary has been compiled from various sources.**<sup>18</sup>

<b>Basic human needs</b>	The needs and rights of all people and societies for fair and equitable access to the resources they need for survival and to provide quality of life.
<b>Biodiversity</b>	The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. Biodiversity includes diversity within and between species and the diversity of ecosystems.
<b>Carrying capacity</b>	Conventionally defined as the maximum population size of a given species that an area can support without reducing its ability to support the same species in the future. In the human context, it is sometimes defined as the maximum 'load' (population [×] per capita impact) that can safely and persistently be imposed on the environment by people. See also <i>Ecological footprint</i> .
<b>Conservation</b>	Conservation is the careful use, protection and management of ecosystems, heritage and natural resources to ensure their long-term viability. It is different from 'preservation' which refers to maintaining a pristine state of nature as it is or might have been before the intervention of human activities.
<b>Cost-benefit analysis</b>	A systematic quantitative method of assessing the feasibility of projects or policies when it is important to take a long view of future effects and a broad view of possible side effects.
<b>Cultural heritage</b>	Movable and immovable objects of artistic, architectural, historical, archaeological, ethnographic, palaeontological and geological importance and includes information or data relative to cultural heritage pertaining to Australia or to any other country.
<b>Culture</b>	A collective noun for the symbolic and learned, non-biological aspects of human society, including language, custom and convention. The concept of culture is often used synonymously with 'civilisation'. However, it does have a range of meanings, including understandings of culture as norms and values; culture as meaning; and culture as human activity.
<b>Diversity</b>	The quality of being different or varied. Diversity occurs in many aspects of our lives—culturally, socially, economically and biologically—and our lives would be impoverished without it.



<b>Eco-efficiency</b>	A strategy for maximising the productivity of material and energy inputs to a production process while also reducing resource consumption and waste production and generating cost savings and competitive advantage.
<b>Ecology</b>	The relationship between living things and their environments.
<b>Ecological diversity</b>	Refers to the variety of biological communities or ecosystems in a given area.
<b>Ecological footprint (EF)</b>	A measure of the consumption of renewable natural resources by a human population. A population's EF is the total area of productive land or sea needed to produce all the crops, meat, seafood, wood and fibre it consumes, to meet its energy consumption and to give space for its infrastructure. The EF can be compared with the biologically productive capacity of the available land and sea to see if the population is sustainable in the long term. The measure can be applied to an individual, a family, a school, a community, a country or the whole world.
<b>Ecologically sustainable development</b>	Ecologically sustainable development (ESD) involves decision-making processes that integrate both long-term and short-term economic, environmental, social and equitable considerations. ESD incorporates the principle of intergenerational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
<b>Economic development</b>	Improvements in the efficiency of resource use so that the same or greater output of goods and services is produced with smaller throughputs of natural, manufactured and human capital.
<b>Ecospace</b>	The total amount of energy, land, water and other resources that can be used regionally or globally without damaging the environment, disadvantaging the capacities of others to meet their basic needs, or impinging on the rights of future generations.
<b>Education for sustainability</b>	Education for sustainability includes many of the founding principles of environmental education but with a stronger human focus, recognising that fundamental human rights and social justice are just as essential to sustainable development as environmental sustainability.
<b>Environment</b>	Environment includes ecosystems and their constituent parts, natural and physical resources, the qualities and characteristics of locations, places and areas, the heritage values of places, and the social, economic and cultural aspects of these things.
<b>Ethics</b>	Our beliefs about what is right and wrong behaviour.
<b>Heritage</b>	The heritage value of a place includes the place's natural and cultural environment having aesthetic, historic, scientific, social, or other significance, for current and future generations.



<b>Holism</b>	The idea that a whole is greater than the sum of its parts in an ordered grouping. When applied to environmental thinking, it means that all factors—biophysical, social, political, geological and spiritual—should be considered when making a decision.
<b>Human rights</b>	The fundamental freedoms of conscience and religion, expression, peaceful assembly and association which ensure access to democratic participation and meeting basic human needs.
<b>Indigenous</b>	Indigenous people or things that are native to or exist naturally in a particular country, region or environment.
<b>Indigenous knowledge</b>	Indigenous knowledge is the local knowledge that is unique to a culture or society. Other names for it include: 'local knowledge', 'folk knowledge', 'people's knowledge', 'traditional wisdom' or 'traditional science'. This indigenous knowledge is passed from generation to generation, usually by word of mouth and cultural rituals, and has been the basis for agriculture, food preparation, health care, education, conservation and the wide range of other activities that sustain societies in many parts of the world.
<b>Interdependence</b>	The relationships of mutual dependence between all elements and life forms (including humans) within natural systems, and the connections and links between all aspects of human lives and those of other people and places at a local and global level. It means that decisions taken in one place will affect what happens elsewhere.
<b>Intergenerational equity</b>	Intergenerational equity is a notion that views the human community as a partnership between all generations. It is the hallmark of sustainability—meeting the needs of the present generation while leaving equal or better opportunities for future generations.
<b>Interspecies equity</b>	Consideration of the need for humans to treat creatures decently, and to protect them from cruelty and avoidable suffering based on an understanding of humans as one of the many species on the planet and that all deserve respect.
<b>Life-cycle analysis</b>	A management tool for identifying the net flows of resource and energy used in the production, consumption and disposal of a product or service in order to leverage eco-efficiency gains.
<b>Local–global links</b>	The recognition that the consumption of a product or service in one part of the world depends on flows of energy and materials in other parts of the world and that this creates potential opportunities and losses economically, socially and environmentally at all points in the local–global chain.
<b>Natural capital</b>	The Earth's natural resources and ecological systems that provide vital life-support services to society and all living things. The services are of immense economic value; some are literally priceless since they have no known substitute.



<b>Natural resource accounting</b>	The process of adjusting national accounts such as gross national product (GNP) to reflect the environmental costs of economic production. Although methods are still being developed, natural resource accounting strives to determine the costs of depleting natural resources and damaging the environment.
<b>Needs and rights of future generations</b>	Considering the rights and needs of future generations whose choices may be limited by our current decisions and actions.
<b>Precautionary principle</b>	The need to act judiciously and with an awareness of unintended consequences when we do not possess all the facts on a situation or when scientific advice on an issue is divided.
<b>Quality of life</b>	The standard of life that an individual enjoys. Quality of life goes beyond equating wellbeing with income. It includes such things as environmental health, the satisfaction of relationships with others and dignifying work.
<b>Risk management</b>	Risk management is the identification, assessment and reduction of risks associated with the activities with which we are involved. As risk is an integral part of taking groups into an outdoor setting, risk management is an important way of ensuring greater safety and enjoyment in the outdoors by focusing on the planning stages before doing the activity.
<b>Social justice</b>	The concept that all people should have equal access to services and goods produced in a global community. It includes ideas of environmental health, and gender, religious, sexual, racial and ethnic equality.
<b>Steady-state economy</b>	An economy in which the demands of resource consumption for economic growth and improving social wellbeing are in balance with resource supply and production and the Earth's capacity to regenerate and maintain itself.
<b>Stewardship</b>	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.
<b>Sustainability</b>	Sustainability is the quest for a sustainable society; one that can persist over generations without destroying the social and life-supporting systems that current and future generations of humans (and all other species on Earth) depend on.
<b>Sustainable change</b>	Understanding that there is a limit to the way in which the world, particularly the richer countries, can develop, and that the consequences of unmanaged and unsustainable growth are increased poverty and hardship and the degradation of the environment, to the disadvantage of us all.



<b>Sustainable consumption</b>	The use of services and related products to satisfy basic human needs and bring a better quality of life while minimising the use of natural resources and toxic materials as well as emissions of waste and pollutants over the life cycle of the service or product.
<b>Sustainable development</b>	Development that meets the needs of the people today without compromising the ability of future generations to meet their needs. To be sustainable, any use of resources needs to take account of the stock of resources and the impacts of its utilisation on the ecological, social and economic context of people today and in the future.
<b>Sustainable production</b>	Industrial processes that transform natural resources into products that society needs in ways that minimise the resources and energy used, the wastes produced, and the effects of work practices and wastes on communities.
<b>Triple bottom line</b>	At its narrowest, the term 'triple bottom line' is used as a framework for measuring and reporting on the performance of organisations against economic, social and environmental parameters. At its broadest, the term is used to capture the whole set of values, issues and processes that an organisation needs to address in order to minimise any harm resulting from its activities and to create economic, social and environmental value.



# APPENDIX

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## INDICATORS FOR A SUSTAINABLE SCHOOL

The indicators for a sustainable school have been developed by the Sustainable Schools Initiative Working Group of the National Environmental Education Network, comprised of representatives from Australian, State and Territory Government education and environment agencies. The indicators are intended as a practical means of measuring certain aspects of change through the Sustainable Schools Initiative and not as a comprehensive evaluation tool.

### Educational

- The extent to which the school staff has participated in professional development in environmental education.
- The extent to which all staff members have participated in professional development activities to gain an understanding of Ecological Sustainable Development (ESD).
- Whether the school curriculum supports the principles of environmental education.
- The extent to which the school community (eg students, administrative, grounds and canteen staff, and teachers) has been educated to actively participate in the sustainable management of the school.

### Environmental

- Whether the objectives of the school's overarching management plans and/or policies explicitly mention ESD.
- Whether the school has a School Environmental Management Plan (SEMP).
- Whether the school is implementing the SEM.

- Extent to which the plan incorporates a long-term vision for the school in its move towards sustainability.
- The extent to which the school considers the environmental consequences of its actions (eg when purchasing products, during construction/demolition).
- The extent to which there is support from other levels of the education system to assist the school achieve sustainability (eg facilities and operations sections).
- Whether an environmental audit has been completed to collect baseline data.

### Water

- Extent to which water consumption at baseline date and since participating in the initiative has been reduced in KL per annum.
- Extent to which factors may have influenced the results (eg a leaking pipe, reduction strategies implemented, not targeted in SEM and other).

### Electricity

- Extent to which electricity consumption at baseline date and since participating in the initiative has been reduced in kilowatt hours per annum.
- Extent to which factors may have influenced the results (eg a heat wave, reduction strategies implemented, not targeted in SEM and other).

### Waste

- Extent to which waste to landfill (from the audit and bills) at baseline date and since participating in the initiative has been reduced by the number of bins.



- Extent to which factors may have influenced the results (eg construction, reduction strategies implemented, not targeted in SEMP and other).

### School grounds

- The extent to which the school has increased the variety of habitats in the school ground.
- Whether the school grounds contain local native or indigenous vegetation.
- The extent to which the area of local native vegetation and local native habitat has increased since participating in the initiative.
- Extent to which factors may have influenced the results (eg projects undertaken, drought, not targeted in SEMP and other).
- Whether landscape design reduces the consumption of resources (eg shade trees planted near buildings, mulch added, or drip irrigation installed).

### Social

- The extent to which partnerships have been established between the school and the local community (eg environmental experts, local businesses, government and non-government organisations).
- The extent to which the school community is actively involved in the development and implementation of the SEMP.
- The extent to which the local community (eg environmental experts, state government agencies, local government, businesses and industry) is actively participating in the development and implementation of the SEMP.
- The extent to which the school community has shifted towards more sustainable practices and processes.
- The extent to which the school has encouraged the broader community to shift towards more sustainable practices and processes.

### Economic

- Extent of savings from a baseline or previous year of reduction of waste to landfill.
- Extent of savings from a baseline or previous year of reduction of energy use.
- Extent of savings from a baseline or previous year of reduction of water consumption.
- Whether the school has attracted additional funds from sponsorships and other sources.
- Extent to which commercial enterprises in the school (eg the canteen) support the SEMP.



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Tallebudgera Beach School Dune Care Demons, courtesy Rix Ryan Photography



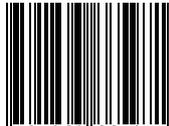
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