

Summary of the Environmental Education Review – Formal Education Sector (Schools)

A CURRICULUM REVIEW OF ENVIRONMENTAL EDUCATION

Background to this review

The Commonwealth's National Action Plan *Environmental Education for a Sustainable Future*, released in July 2000, identifies the following priorities in relation to the formal education sector (schools):

- to provide quality environmental education materials to schools,
- to integrate environmental education principles into mainstream curricula and
- to provide accessible professional development for teachers working in environmental education.

In order to strategically address these needs, in 2001 the National Environmental Education Council commissioned a review of nationwide curriculum documents to develop a comprehensive map indicating where matters relevant to environmental education are represented and to identify national priorities. After a tendering process, the review was undertaken by the Curriculum Corporation, in conjunction with a national reference group and in consultation with the Commonwealth Department of Education, Science and Training.

Curriculum Corporation carried out this task under the leadership of Dr. Brian Sharpley and a review team consisting of Howard Brown, Shirley Sharpley, Emma Tunley, and Michael Walsh. An expert group, convened to support the project, met twice during the process to evaluate the review instrument and methodology, and to consider the preliminary findings and suggest possible recommendations to be included in the final report.

Curriculum documents from the Northern Territory, Tasmania (K–10) and Queensland (Mathematics and English) were not considered by the review team as they were being reviewed at the time of the mapping. Despite these omissions the findings of the review provide useful information and a starting point for further research.

Introduction to the scope of the review

All States and Territories of Australia have a curriculum framework or syllabus outline that directs curriculum delivery and guides assessment in schools for the compulsory years including primary and secondary schooling to the end of Year 10. This curriculum is generally divided into eight Key Learning Areas (KLAs). The names of the KLAs may vary across the States and Territories but they can be said to include English, Health and Physical Education, Languages other than English, Mathematics, Science, Studies of Society and the Environment, Technology, and the Arts.

Each State and Territory also develops curriculum documents or study guides, which prescribe the studies to be undertaken in an extremely wide range of subjects in Years 11 and 12. The review also examined these curriculum documents in order to identify where matters relevant to Environmental Education are represented.

Several popular textbooks were also examined in order to discover how the curriculum documents are interpreted in these books. It should be noted that a myriad of other interconnecting documents and resources exist in each State and Territory that attempt to inform and support Environmental Education. Some of them are direct, others less so. This review made no attempt to map these resources. The mapping of curriculum documents and a small number of other policy documents should be seen as a starting point – a part of the picture of how State and Territory departments support and encourage Environmental Education.

Defining Environmental Education

The mapping was designed to identify Environmental Education within curriculum outcomes and objectives from the start of school until the end of Year 12 according to the following categories:

1. Information about the environment;
2. Studies of humans and the environment;
3. Skills to investigate the environment;
4. Positive attitudes to the environment;
5. Investigating and clarifying environmental viewpoints;
6. Environmental problem solving; and
7. Taking environmental action.

An important consideration was the encompassing of the notion of 'Education for Sustainability' within Environmental Education. This decision is in line with the definition of Environmental Education identified within the National Action Plan *Environmental Education for a Sustainable Future (2000)* and reflects the intent of the review to be 'forward looking'.

Environmental Education for Sustainability

Sustainable development is that which meets the needs of the present without compromising the ability of future generations to meet their own needs. (Brundtland Commission, 1987)

Sustainability reflects a shift in focus for Environmental Education. According to the Department of Environment and Heritage, Environmental Education 'should be defined in its broadest sense to encompass raising awareness, acquiring new perspectives, values, knowledge, and skills, and formal and informal processes leading to changed behaviour in support of an ecologically sustainable environment' (Department of the Environment and Heritage, 2000).

Tilbury (1995) argues that Environmental Education for Sustainability differs from previous Environmental Education approaches in that it focuses more sharply on developing closer links between environmental quality, ecology and socio-economics and the political threads which underlie it. Its basis is the creation of a more holistic outlook on problems, requiring a deeper integration between the study of environment and development problems.

Although there is a great deal of work required to develop meaningful and workable definitions of Environmental Education for Sustainability, the following elements are important:

- Ethical awareness
- Shaping values and attitudes
- Skills and behaviour consistent with sustainable development
- Effective public participation in decision making
- Making decisions and taking action
- Consideration of future generations.

Of the indicators used in the mapping process, a sub-set of 36 specifically pertaining to environmental education for sustainability were also used to further evaluate and rate course content in relation to the above elements.

Mapping the Curriculum Documents

A set of [Environmental Education indicators](#) was developed to provide a detailed map of the curriculum documents being analysed.

These indicators were developed from the content and issues pertaining to Environmental Education identified within the Agenda 21 document, as well as other sources. This set was used to conduct a preliminary mapping of Victorian curriculum documents, before being reviewed and reshaped by the expert group. The 147 indicators identified through this process were used in the mapping of all the documents in the review.

Student learning outcomes were the unit of analysis for the review of the compulsory years for all Key Learning Areas. The unit of analysis for the Years 11 and 12 subjects varied depending on the way that the documents were written. If student learning outcomes were provided, then these were the unit of analysis, otherwise it was by subject topics or units. Curriculum courses were analysed to see how many of these indicators were found in the learning outcomes.

Findings

The nature and extent of the references to Environmental Education varied widely across the States and Territories. In the compulsory years, Environmental Education learning outcomes are found predominantly in the Science and Studies of Society and the Environment (SOSE) Key Learning Areas, although some references can be found in Health and Physical Education, Technology and Mathematics. Subjects tend to emphasise those aspects of Environmental Education that interlink with the conceptual understandings pertaining to their area.

Two areas where environmental education was strong were Science and Society and Environment. In Science, all of the State and Territory documents examined contain learning outcomes based around learning **about** the environment (especially ecology, energy and resources). Many of the relevant learning outcomes emphasise exploring and investigating the local environment. A wide range of skills and competencies were found in each of the curriculum documents. All of the examined documents have included some outcomes that deal with ethics, values and viewpoints. The South Australian science document provides a strong Environmental Education framework. Learning outcomes dealing with personal action are rare.

In Society and Environment, all of the State and Territory documents examined provide an environmental education emphasis. Sustainability is a common theme. The conceptual foci of these courses are on broad ideas such as change over time, sustainability, land use planning, populations and resource usage. Most of the courses are strongly 'process' in approach.

Learning outcomes organised around ethics, values and viewpoints are to be found in all State and Territory documents. The Western Australian Society and Environment curriculum document provides a strong environmental education framework. A few learning outcomes featuring personal actions are to be found in each of the State and Territory documents except Victoria.

In the other Key Learning Areas a wide range of opportunities exist to include Environmental Education eg in English, Technology, Health and Physical Education, and the Arts. The Key Competencies (KCs) are an important feature of many of the State and Territory curriculum documents and they provide windows of opportunity for including Environmental Education.

In curriculum documents for Years 11 and 12 Environmental Education is a major feature in Environmental Science/Studies and most Geography subjects. Outside these subjects, however, there seems to be fewer opportunities than in the compulsory years. The Geography course outline in New South Wales and Queensland, and the Outdoor and Environmental Studies in Victoria provide strong Environmental Education frameworks.

The curriculum documents are accompanied by a variety of teaching materials and policy documents. These vary in nature and quality. For classroom teachers, the usefulness of the way in which they explain and exemplify Environmental Education principles varies. They may be more or less applicable to current curriculum documents. They may be written in such a way that they have a great or a much lesser chance that they will influence teaching and learning in a positive way because of their perceived relevance and ease of application to current classroom practice.

Two series of science textbooks were reviewed though Environmental Education is not a strong feature of either. Only a few chapters have a major Environmental Education focus. Environmental issues tend to be extensions or additions to the main thrust of most chapters. A survey of the subject associations indicated that most teachers do not use set textbooks for society and environment. Although teachers used a range of books for reference, no common list could be identified.

Curriculum findings for Environmental Education for Sustainability

The mapping highlighted that while environmental education may have a focus, there are aspects of sustainability education that are under represented or overlooked in the curriculum documents. Examples of areas not covered or only briefly mentioned include biodiversity, sustainability, values and viewpoints, intergenerational equity, and personal actions.

Although biodiversity is featured in most science and biology programs, it is not a major theme, and it appears in only a few Key Learning Areas. The term 'sustainability' is mentioned in all SOSE, Environmental Science and most Geography subjects, however, it is used in different ways. Sometimes 'sustainability' refers to resources, and at other times in reference to human settlements, consumption and the environment. Although mentioned in some science documents, sustainability is generally not a feature of other Key Learning Areas. Few Key Learning Area documents make reference to other perspectives or points of views. Social justice issues particularly as they relate to the developing world such as poverty and the transfer of pollution from developed countries are not well represented. Ethics is not a strong feature of most documents. There were few outcomes that directly considered our responsibility to future generations. Personal actions are rarely mentioned in the curriculum documents.

Specific environmental issues (such as the greenhouse effect, air pollution and endangered species) are rarely featured in the student learning outcomes. They can occur as indicators or as part of the description of the outcomes, although such specific detail is exemplary only and not prescriptive. This is in contrast to the textbooks where environmental issues are raised and where these topics are major features of Environmental Education. This is a reflection of the different roles that textbooks and curriculum documents play (resources or planning documents respectively) in the development of programs in schools.

Other Sustainability Education concepts such as: carrying capacity, eco-efficiency, ecological footprint, ecospace, life-cycle analysis, natural resource accounting, precautionary principles, suggested by Yencken, Fien and Sykes (2000), were not identified in any of the State and Territory documents. Some feedback from state reviewers suggested some of these concepts are present in some way in a small number of the documents.

Recommendations

The following recommendations have been provided by the review and are not necessarily the views of the National Environmental Education Council.

Policy

Because of the diverse nature of curriculum approaches across Australia, it would be useful to develop a National Environmental Education policy. This would be a general policy document to guide teaching and learning across all the years of schooling. The beginning point of its development could be current Commonwealth documents and the individual State and Territory documents where they exist. The development of such a policy will require consultation on a wide scale and over an extended timeline to ensure the support of all State and Territory jurisdictions, all relevant professional teacher organisations and all Environmental Education stakeholders.

Teaching and Learning

It is recommended that materials be developed to support the uptake of Environmental Education by:

- promoting exemplary teaching that incorporates and elaborates existing learning outcomes in State and Territory curriculum documents (including examples of whole school programs and subject specific programs).
- providing examples of opportunities to consider environmental issues within the more general learning outcomes in curriculum documents
- introducing aspects of Environmental Education that at present are overlooked or very poorly treated in the curriculum.

These materials may include units of work, readers, inter-active multimedia resources, guidance on how to use existing resources, links to existing Environmental Education initiatives and data sources, assessment resources, teacher guides and case studies.

The establishment of a nationally accepted set of criteria for the evaluation of effective Environmental Education resources and programs would also assist teachers in their development of environmental education programs.

It may be useful to also review documents and materials outside the K-10 curriculum, including Year 11 and 12, VET courses and alternative programs to identify the nature and scope of Environmental Education.

A plan to include a national program of professional development to support these materials, programs and other initiatives would provide a coordinated approach. The plan could include national activities for parents, teachers, principals and academics by working through their national organisations. A website to support all aspects of the program may include provision of access to materials, programs, further research resources and information about teacher professional development opportunities.

Holistic Approaches

The report also highlights that, as a community of learners, students and teachers do many things outside the formal curriculum that contributes to environmental education. It would be useful to find out to what extent teaching practices and external activities, such as excursions, community programs and competitions influence and support environmental education in schools.

The report findings also indicate that environmental education activities undertaken in schools should be holistic in nature and implemented school wide, as whole school initiatives have proved to be more successful in shaping student skills, values, actions and have measurable outcomes. These holistic approaches usually incorporate themes such as biodiversity, sustainability, values and viewpoints, and involve personal actions. It would also be useful to identify the current programs in place in the formal education sector, which attempt to encourage whole of school approaches.

References

General

Australian Education Council (1991). *Studies of Society and Environment Curriculum Map*. Melbourne: Curriculum Corporation.

Curriculum Corporation (1991). *Environmental Education Materials. A guide for Australian Schools*. Melbourne: Curriculum Corporation.

Curriculum Corporation (2000). *Formal Education Sector Ozone Review*. Melbourne: Curriculum Corporation.

Department of Environment and Heritage (1999). *Today Shapes tomorrow: Environmental Education for a Sustainable Future – A discussion paper*. Canberra: Environment Australia.

Department of Environment and Heritage (2000). *Environmental Education for a Sustainable Future: National Action Plan*. Canberra: Environment Australia.

Gough, A. (1997). *Education and the Environment: Policy, Trends and the Problems of Marginalisation*. Melbourne: Australian Council for Education Research.

Griffith University and the Department of the Environment, Sport and Territories, (1997). *Teaching for a Sustainable World: International Edition*. <http://www.ea.gov.au/education/publications/tsw/modules/index.html>

Ministry of Victoria (1990). *Mapping the Australian Curriculum. Audit and Evaluation of Environmental Education Materials*.

Tilbury, D. (1995). Environmental Education for Sustainability: Defining a new focus of Environmental Education in the 1990s. *Environmental Education Research*, 1(2) 195–212.

UNESCO (1997) *Educating for a Sustainable Future: A transdisciplinary Vision for concerted action*. A paper prepared by UNESCO in its function as Task Manager for chapter 36 of Agenda 21.

Yencken, D., Fien, J. and Sykes, H. (2000). *Environment, Education and Society in the Asia–Pacific*. London: Routledge.

State Documents on Environmental Education

Queensland

Environmental Education in Queensland Schools (1989).

Teaching for Ecologically Sustainable Development. Guidelines for Years 11–12 Geography (1992).

New South Wales

The Environmental Schools Program (1996).

Eco Schools Program (1998 Update).

Environmental Education Centres Policy Statement (1998).

Best Practice in Environmental Education in NSW schools (1998).

Environmental Education Policy for Schools (2001).

Implementing the Environmental Education Policy in your school (2001).

Support for the Environmental Education Policy: Science 7–12 (2001).

Support for the Environmental Education Policy: Technological and Applied Studies (2001).

Support for the Environmental Education Policy: Personal Development, Health and Physical Education (2001).

Support for the Environmental Education Policy: Creative Arts (2001).

Support for the Environmental Education Policy: HSIE (2001).

Support for the Environmental Education Policy: English (2001).

Support for the Environmental Education Policy: Mathematics (2001).

Support for the Environmental Education Policy: Languages (2001).

Victoria

Investing in the Future: Environmental Education for Victoria's Schools (May 1998).

South Australia

Environment: A handbook for teachers (1991).

Educating about, in and for the environment (1995).
Sustainable Environmental Education (1998).

Western Australia

Draft Environmental Education Guidelines (1994).
Environmental Education. A Discussion Paper (December 2000).

Curriculum Documents

Websites: State and Territory Curriculum Documents

Australian Capital Territory

K–10

<http://www.decs.act.gov.au/publicat/acpframeworks.htm>

The ACT framework for each of the learning areas works in conjunction with the nationally developed Profiles in the learning areas.

Years 11 and 12

<http://www.decs.act.gov.au/bsss/bssscrs.htm>

New South Wales

K–6

<http://www.bosnsw-k6.nsw.edu.au/index.html>

7–10

http://www.boardofstudies.nsw.edu.au/syllabus_sc/index.html#4_5

Years 11 and 12

http://www.boardofstudies.nsw.edu.au/syllabus_hsc/index.html

Northern Territory

<http://www.education.nt.gov.au/index.shtml>

K–10

Currently under review.

Years 11 and 12

Use the South Australia documents.

Queensland

K–10

http://www.qsa.qld.edu.au/yrs1_10/index.html

Years 11 and 12

http://www.qsa.qld.edu.au/yrs11_12/index.html

South Australia

K–10

http://www.sacsa.sa.edu.au/index_fsfc.asp?t=Home

Years 11 and 12

<http://www.ssabsa.sa.edu.au/public.htm>

Tasmania

K–10

Consultation on revision of curriculum in progress.

Currently using the nationally developed profiles in the eight Learning Key Areas.

Years 11 and 12

<http://www.tassab.tased.edu.au/0179/RND01>

Western Australia

K-10

<http://www.curriculum.wa.edu.au/pages/framework/framework00.htm>

<http://www.eddept.wa.edu.au/centoff/outcomes/>

Years 11 and 12

<http://www.sea.wa.edu.au/pages/subject/subject00.htm>

Victoria

K-10

<http://www.vcaa.vic.edu.au/csfdc/home.htm>

Years 11 and 12

<http://www.vcaa.vic.edu.au/vce/studies/index.htm>