

# Environmental Education in Australian Schools\*

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In Australia each State and Territory has responsibility for its own primary and secondary education system. This paper concentrates on environmental programs and research in one state, the State of Victoria, to illustrate the development of environmental education in Australian schools. It begins with a brief description of the educational context in which environmental curricula have developed, looks at the goals and objectives adopted for environmental education, describes the policy frameworks, and concludes with an examination of issues for environmental education in the future.

## The Educational Context

The 1970s constituted a turning point for education in Australia. "Prior to the 1970s education was largely unchanging, didactic, textbook and exam driven ... (and) heavily streamed into academic (high schools) and vocational (technical schools for boys and secondary schools for girls)." (Hunt, 1992). Over the last 20 years the whole nature of education has been challenged. Curricula have been varied and expanded. Internal assessment has begun to replace sole dependency on the end of year examination. In Victoria, schools have developed new educational frameworks under the guidance of the Ministry of Education. As part of these reforms a new Victorian Certificate of Education (VCE) has been introduced to replace the previous Higher School Certificate. The VCE program has developed new curricula for the last two years of secondary schooling and substituted a considerable amount of internal assessment in place of external examinations for tertiary entrance. Some of the aims of the new VCE curriculum are to broaden overall skill development, encourage more independent thinking, develop the capacity of students to work in groups and develop greater personal organisational skills. To achieve these aims the assessment tasks have been expanded and varied and more research project work has been introduced.

In the overall Australian context the Victorian VCE program should be seen as an educational experiment. Despite much debate and some criticism of specific aspects of the new program, a recent poll has found that most school principals in Victoria believe that the VCE is an improvement on the old Higher School Certificate. (The Age, 5th October 1992).

## The Goals and Objectives of Environmental Education

The aims of environmental education in Victoria were defined in the Ministry of Education and Training Environmental Education Policy (Ministerial Policy, Environmental Education, 1990) as:

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- greater awareness of the environment and the consequences of human interactions with it;
- an understanding of how life is sustained and supported on earth both locally and globally;
- a wide range of knowledge and skills from different fields to assist in investigating environmental issues and choosing appropriate courses of action;
- an appreciation of the range of perspectives that impinge upon environmental issues - for example, the biological, the economic and the technological aspects;
- an environmental ethic which clarifies and enhances environmental values, leading to the appreciation of natural and human-made beauty, valuing a healthy environment, concern for the welfare of people and other living things, and belief in the wise use of resources;
- a commitment to work, personally and cooperatively, for a better physical and social environment and a willingness to apply the knowledge and skills acquired in action programs to improve or protect students' own environments;
- an understanding of the need to balance development and conservation to meet the needs of society.

(VEEC, 1991)

These aims correspond to aims adopted in other states and are broadly consistent with the goals, objectives and guiding principles set out at the Inter-governmental Conference on Environmental Education at Tbilisi, USSR, 1977 (see Appendix A). Environmental education can thus be seen to be concerned with raising awareness, increasing knowledge, affecting attitudes and changing behaviour (Westwood, 1992).

There has been much debate about the way in which these aims might best be achieved. Increasingly distinctions are being drawn between different emphases in environmental education. A common categorisation is:

Education *in* the environment (giving school children the experience of being in and observing particular aspects of individual environments).

Education *about* the environment (the scientific study of parts of the environment or the workings of different ecosystems).

Education *for* the environment (the examination of attitudes, values, ethics and decision making related to the environment).

Sometimes a further categorisation, education *with* the environment, is added. Its emphasis is on the achievement of a symbiotic relationship of humans with the environment.

In the past environmental education has concentrated on education *in* and *about* the environment. It is now increasingly agreed that a satisfactory program of environmental education must include a significant component of education *for* and *with* the environment. How well is this objective reflected in the School education system?

## **Environmental Education Policy in Victoria**

In earlier curriculum frameworks the environment was frequently combined with science and technology; environmental science was the description usually given to studies of the environment. The view that environmental education should be seen as belonging solely to a science framework is, however, coming under increasing challenge. One environmental educator, for example, has recently written "an emerging realisation that environmental education is equally a social and humane study (being concerned with processes of decision making, conflict resolution, values classification and social critique) is supported by the significant component of the Social Education Framework that can also be considered to be environmental education." (Hunt, 1992). The social curriculum being developed by the Australian Education Council, as part of its efforts to develop a National education policy, is designated "The Study of Society and the Environment". The aims and objectives of environmental education have also been incorporated into a number of study designs for the VCE (the last two years of secondary schooling). It is thus being recognised that environmental education needs to be carried out across a number of curriculum framework areas.

Reflecting these changing views the new environmental program for the VCE is called Environmental Studies. There are four units:

- Unit 1: The study of environments
- Unit 2: Environmental impact and conservation in Victoria
- Unit 3: Conservation and development
- Unit 4: A sustainable earth.

The principles for the Environmental Studies study design were that it should have a holistic approach, that it should provide a worthwhile challenge for students, that there should be a balance of treatment between theory and practice and that it should give teachers as much flexibility as possible. A further aim is the development of an environmental ethic. A recent survey of teachers found that these objectives are by and large being met although there are aspects of the new study design that need further development and improvement. One interesting commentary from teachers interviewed for the survey was about overlap of Unit 1 of Environmental Studies with Unit 1 of Biology and Unit 1 of Geography. The survey, however, suggested that the treatment in the three study areas was entirely different. (VCAB, 1992). The main problem related to environmental studies is, however, how to encourage more student enrolments. It is not currently perceived as a core study leading to a traditional profession. This is a problem typical of multidisciplinary studies.

There has therefore been some considerable development in the design of Environmental Studies in the Victorian School system. Nevertheless many difficult problems remain to be solved.

## **The Issues for Environmental Education**

Australia is a participant in the Environment and Schools Initiative (1988) of the Organisation of Economic Cooperation and Development (OECD). As part of this project school

environmental programs were surveyed in a number of OECD member countries. The main findings of this survey (Hunt, 1992) were:

- environmental education was seen to be marginal in a school program. It required committed teachers and motivated students and was typically an "add-on" to the curriculum;
- teachers of environmental education experienced difficulties with colleagues who felt threatened and were unconvinced by the merits of environmental education programs;
- teachers were constrained by existing patterns of curriculum and timetable organisation in Schools which prevented them from working together as interdisciplinary teams and prevented their students from synthesising subject matter to deepen their awareness of real environmental problems. The learning of isolated bits of information hinders rather than helps the resolution of environmental problems;
- environmental education requires a synthesis of knowledge and values, which is something that the natural sciences, a traditional home of environment education do not often foster;
- teachers often did not receive the preservice and in service training that these educational approaches require;
- school leaders and administrators need to accept and support the educational approaches that occur as the impediments are as often organisational as pedagogical;
- the required educational approaches challenge teachers to examine their practice and require both teachers and students to take risks;
- assessment processes in environmental education, which aims to develop change in attitudes, value and behaviour, are difficult to reconcile with traditional assessment methods;
- student participation in action programs may lead to charges that students are being encouraged in inappropriate political activity and/or to adopt the values of the teacher.

It is generally acknowledged that the problems identified in the OECD survey are likely to typify problems shared by education systems across the country. Two recent pieces of research support the OECD findings and illuminate other issues for environmental education in Australia.

The first of these studies (Spork, 1992) examined the apparent mismatch between contemporary theory of environmental education (what environmental education should be) and current environmental education 'reality' in schools (what is generally being implemented under the label of environmental education) by surveying a sample of 228 full time state primary school teachers in Brisbane. One of the objectives of this study was to identify to what degree environmental education was concerned with education *in* the environment, education *about* the environment and education *for* the environment.

The research particularly concentrated on the significance and extent of education *for* the environment in primary school curricula and activities (the focus on values, ethics, problem

solving and action objectives). The assumption underlying this emphasis was that education *for* the environment should be the 'real end purpose' of environment education. The research found that teachers recognised the importance of education *for* the environment but that environmental education was mostly concentrated on education *in* and *about* the environment. Other key findings were:

- nearly all teachers ranked environmental education either most important or second most important for classroom programs out of nine different learning areas. Only human relationship education was ranked higher;
- teachers considered lack of time, lack of resources, lack of knowledge of departmental regulations and lack of their own knowledge and skills (in that order) to be more important barriers to the implementation of environmental education programs than such matters as lack of school or principal support or lack of student interest;
- 86% of the teachers sampled had received no training in environmental education.

The second piece of research was on the attitudes, commitment and knowledge of late secondary school students and their teachers (Yencken and Sykes, pending). The sample was large involving the whole of the Year 10 (approximate 16 year old age group) school population in 52 Melbourne schools. 5784 students and 338 teachers were surveyed during 1991. The survey compared responses from Independent (private), Catholic and State schools. It also compared a random sample of all schools in Melbourne with a full sample of advantaged schools (advantaged schools being defined as those from which come the largest number of high scoring students in university entrance examinations). The survey questionnaire had nine sections with questions related to:

- general world views and rankings of environmental issues;
- attitudes towards urban issues;
- commitment to urban issues (what student say they would do);
- action about urban issues (what students say they actually do);
- general knowledge about urban issues;
- attitudes to environmental issues;
- commitment to environmental issues (what student say they would do);
- action about environmental issues (what students say they actually do);
- general knowledge about environmental issues.

There was a final question related to career choices.

The survey was designed to collect information about urban as well as environmental issues in part because comparatively little attitudinal survey work has been done on urban issues (even though their significance is increasingly recognised) and in part because there are clear relationships between environmental and urban education.

The questions on world views and rankings on issues were designed to elicit the general conceptual frameworks of students and teachers. Some questions regularly used in adult opinion polls were included in this section to enable comparisons to be made with adult Australian attitudes.

The survey canvassed attitudes, commitment, action and knowledge not only because they are different dimensions of changes needed to bring about a more sustainable society but also because commitment and action are increasingly recognised as key dimensions of environmental education. In its discussion paper *Educating for Our Environment* the Victorian Environmental Education Council, for example, makes the point that "environmental education and environmental action are impossible to separate ... people learn from the action they see taken by others. Also very importantly they can learn a great deal through trying different ways of taking action themselves (learning by doing). Thus many of the ... ways for achieving environmental education are actually based on encouraging direct environmental action."

The survey also sought to investigate the degree to which commitment and action were related to awareness and knowledge.

The first question in the survey was:

"Do you think Australia should:

- concentrate on economic growth even if it means some damage to the environment  
or
- concentrate on protecting the environment even if it means some reduction in economic growth?"

As shown in Table 1 the findings were consistent for students and teachers and for the adult population of Australia (as identified in an earlier poll: Saulwick Age Poll, May 1990)

**Table 1**

	Students	Teachers	Adult Population
Concentrate on economic growth	18%	17%	24%
Concentrate on the environment	62%	76%	67%
Not sure	19%	7%	10%

(Percentages rounded to nearest whole number in all tables)

A further question was:

"Which of these statements comes closest to your view:

- concentrating on protecting the environment and improving our cities is bound to be at the expense of the economy  
or
- investments in high environmental standards and more livable cities can greatly assist our economic development?"

Again responses for students and teachers were generally consistent as is shown in Table 2.

**Table 2**

	Students	Teachers
Environmental improvements will:		
- be at the expense of the economy	27%	19%
- assist the economy	55%	71%
- not sure	18%	9%

When students and teachers were asked to rank eight policy issues for Australia the answers were very different as is shown in Table 3.

**Table 3**

<b>Most Important Issues for Australia</b>			
Students' most significant issue		Teachers' most significant issue	
Protecting the environment	25%	A fairer and more humane society	45%
Reducing unemployment	17%	Protecting the environment	13%
Preventing war and nuclear threats	15%	Preventing war and nuclear threats	11%
Strengthening the economy	13%	Reducing unemployment	10%

When asked about the most important environmental issues for the world, the students' and teachers' answers were again very different as shown in Table 4.

**Table 4**

<b>Most Important Environmental Issues for the World</b>			
Students' most significant issue		Teachers' most significant issue	
Weakening of the ozone layer	21%	Overpopulation	41%
The Greenhouse Effect	21%	Cutting down of the forests	16%
Cutting down of the forests	20%	The Greenhouse Effect	13%
Overpopulation	14%	Weakening of the ozone layer	12%

A significant number of students stated that concern for the environment would influence their career decisions as shown in Table 5.

**Table 5**

<b>Influence on Career Decisions</b>			
	Yes	No	Not sure
Concern for the environment	33%	41%	23%

When asked to choose between alternative definitions of ecology and the Greenhouse Effect and alternative causes of ozone layer depletion the responses were as shown in Table 6.

**Table 6**

**Definitions of Environmental Terms**  
% of correct answers

	Students	Teachers
Ecology	31%	77%
Greenhouse	57%	84%
Ozone layer	67%	86%

When asked to select an appropriate definition of ecology students had difficulty in choosing between "the relationship between humans and the environment" and "the relationship between organisms and the environment." 26% of students and 16% of the teachers incorrectly chose the first of these definitions.

These are some preliminary findings only from a long and complex questionnaire. One further finding was that girls and women consistently, in all of the attitudinal questions referred to above, rated environmental issues as being more important than did their male counterparts.

Follow up interviews with some of the students a year later suggest that students might now give more emphasis to strengthening the economy and reducing unemployment in their assessment of important issues for Australia. However, the strength of the view that Australia should "concentrate on protecting the environment even if it means some reduction in economic growth" appears to be undiminished. The survey thus shows that there is high environmental awareness, strong commitment and reasonable environmental knowledge amongst Australian secondary school students.

### **A Korean Survey**

We are now proposing to carry out a survey in Korea using the same survey instruments. Professor Kwi Gon Kim of Seoul National University is arranging a survey of school



children of comparable age in Seoul. The Australian questionnaire has already been transcribed into Korean and then back into English by a different translator to check the accuracy and assumptions in the translation. The survey should be carried out in 1993 and is intended to include follow up interviews with some of the sample groups.

## Conclusion

The overall conclusions that can be drawn from this brief overview of school based environmental education in one state in Australia might be summarised as follows:

- there is increasing recognition of the importance of environmental education in schools;
- this recognition is apparent in the attitudes of education bodies and of individual teachers;
- education *for* and *with* the environment is increasingly seen to be at least as important as education *in* and *about* the environment;
- there is a high level of environmental awareness and general commitment amongst students;
- there have been several important initiatives taken to develop and improve environmental education. Some Australian states could be considered to be at the forefront of environmental education worldwide.

There are nevertheless very significant problems still to be dealt with. Many are endemic to environmental education programs around the world and are well summarised by the OECD survey carried out as part of the Environment and Schools Initiative Project referred to earlier in this paper. Significant changes are needed to curriculum frameworks, school systems and structures and teacher training before we can develop fully effective environmental education programs.

The sharing of these experiences across national boundaries is important. The same problem may be perceived differently in different cultures; the structure of the educational system may make a particular approach easier in one place and more difficult in another; societal values may shape responses in quite different ways. Nevertheless, there is common international agreement about the nature of global environmental problems, about the imperative for increased cooperative action amongst nations and about the importance of environmental education as one of the key means of achieving an environmentally sustainable world. We have much to learn from each other and much that we need to do together.

The comparative surveys of the attitudes, commitment and general knowledge of school children in Korea and Australia should help us understand better those environmental attitudes and approaches that are shared between our countries and cultures and those that are different. It should not only help us in our approaches to environmental education and environmental decision making but also in our understanding of each other.

## References

- Hunt, G. (1992) Environmental Education: Local and Global. Presented at the 10th annual Conference of the Victorian Association for Environmental Education. may 29 & 30th.
- Hunt G. (1990) From Ideas to Reality: Establishing Environmental Education in Victorian Government Schools. Curriculum Perspectives Vol 10. No. 2. May.
- Spork, H. (1992) Environmental Education: A Mismatch Between Theory and Practice. Australian Journal of Environmental Education. Volume 8. August.
- Victorian Curriculum and Assessment Board (1992) Unpublished report to the Earth Studies Field of Study Committee. October.
- Victorian Environmental Education Council (1991) Educating For Our Environment: Towards an Environmental Education Strategy for Victoria. September.
- Westwood, D (1992) Development of methods for evaluation and a preliminary evaluation of earthkeepers, an environmental education program. Unpublished research project. School of Environmental Planning, The University of Melbourne.
- Yencken, D. & Sykes, H. Survey of Urban and Environmental Issues. Unpublished research. Pending.

## Appendix A

### Goals, Objectives and Guiding Principles for Environmental Education

The following statement on goals, objectives and guiding principles for environmental education is from the intergovernmental Conference on Environmental Education at Tbilisi, USSR, in 1977. This statement reflects the directions established by a succession of previous international conferences and has received widespread and enduring recognition.

"The Conference endorses the following goals, objectives and guiding principles for environmental education:

The *goals* of environmental education are:

- to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;
- to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;
- to create new patterns of behaviour of individuals, groups and society as a whole towards the environment.

The categories of environmental education objectives are:

*Awareness:* to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.

*Knowledge:* to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.

*Skills:* to help social groups and individuals acquire skills for identifying and solving environmental problems.

*Participation:* to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems.

*Guiding principles* - environmental education should:

- consider the environment in its totality - natural and built, technological and social (economic, political, cultural-historical, moral aesthetic);
- be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and nonformal stages;
- be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective:

- examine major environmental issues from local, national, regional and international points of view so that students receive insight into environmental conditions in other geographical areas:
- focus on current and potential environmental situations while taking into account the historical perspective;
- promote the value and necessity of local, national and international cooperation in the prevention and solution of environmental problems:
- explicitly consider environmental aspects in plans for development and growth;
- enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting their consequences:
- relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;
- help learners discover the symptoms and real causes of environmental problems;
- emphasise the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;
- utilise diverse learning environments and a broad array of educational approaches to teaching/learning about and from the environment with due stress on practical activities and first-hand experience."

Victorian Environmental Education Council (1991)