ENVIRONMENTAL EDUCATION IN NEW ZEALAND SCHOOLS: RESEARCH INTO CURRENT PRACTICE AND FUTURE POSSIBILITIES

Volume 2: A review of national and international research literature on environmental education practices
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Volume 2: A review of national and international research literature on environmental education practices

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Environmental education research alongside the formal school sector

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Research on environmental education in schools prior to the Guidelines

Pre-service teacher education in environmental education

Surveys of schools’ use of the Guidelines

Recent research on environmental education programmes and practices in schools

Research on learners and learning in environmental education

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### Abbreviations

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<th>Description</th>
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<tr>
<td>ACEID</td>
<td>Asia and the Pacific Centre for Educational Innovation and Development</td>
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<td>APEID</td>
<td>Asia and the Pacific Programme of Educational Innovation and Development</td>
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<td>ARC</td>
<td>Auckland Regional Council</td>
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<td>ENSI</td>
<td>Environment and Schools Initiative</td>
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<td>NGO</td>
<td>Non-governmental organisation</td>
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<td>OECD/CERI</td>
<td>Organisation for Economic Co-operation and Development, Centre for Educational Research and Innovation</td>
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<td>SMF</td>
<td>Sustainable Management Fund</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organisation</td>
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<td>WCED</td>
<td>World Commission on Environment and Development</td>
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CHAPTER ONE: INTRODUCTION

In 1998, the Ministry for the Environment developed a national strategy for environmental education entitled *Learning to care for our environment: Me ako ki te tiaki taiao*. The key priority for schools outlined in this strategy was to incorporate the aims of environmental education across the school curriculum. In 1999, the Ministry of Education published *Guidelines for Environmental Education in New Zealand Schools*. This document links with *Learning to care for our environment* and shows how environmental education is a theme in all seven learning areas of the *New Zealand Curriculum Framework*.

The *Guidelines* promote an integrated curriculum approach to environmental education. However, there is no mandatory requirement for schools to teach environmental education. The extent of environmental education within the individual school curriculum is determined by the school and its Board of Trustees, and the *Guidelines* are intended to assist teachers and schools to plan and provide education in, about, and for the environment.

To date, the Ministry of Education has funded three specific programmes to support the *Guidelines*. The first two of these were *Environmental Education Professional Development* (Christchurch College of Education) and *Professional Development for Sustainable Organic School Gardens* (Massey University and the Soil and Health Association of New Zealand). Funding for both these programmes ended in June 2003. In 2002-2003, the Ministry-funded Environmental Education Advisors programme began. This programme funds seventeen regional environmental education advisors, whose role is to support schools and kūra in their region to incorporate environmental education into the curriculum. The Christchurch College of Education was contracted to coordinate the programme.

Scope of the Research

The Ministry of Education is now seeking information about the impact of environmental education in New Zealand schools, particularly with respect to the *Guidelines* and its related supporting initiatives. In June 2002, the Ministry of Education commissioned the New Zealand Council for Educational Research and the University of Waikato to research the implementation and impact of environmental education in New Zealand schools. The research is made up of three key components.

**Component one:** A review of national and international research literature on successful practices in environmental education, to compare some of the larger similarities and differences that exist between international practice and New Zealand practice.

**Component two:** A critical stock-take of current environmental education programmes and services in New Zealand schools, involving a survey of the characteristics of current environmental education practice in approximately 400 schools/kūra in New Zealand.

**Component three:** Eight case studies of environmental education in selected New Zealand schools/kūra.
Purposes of the Research

There are three purposes for the “Environmental Education in New Zealand Schools” research. The first two of these were given in the Ministry of Education’s original request for proposal. The third was added following feedback from the Ministry of Education and other reviewers on the first draft of this document. These purposes are:

- To analyse environmental education practice in New Zealand schools to identify strengths and opportunities for future school practice, and to provide information that can be used to inform New Zealand schools’ environmental education programmes.
- To provide direction for the Ministry of Education and government with respect to future initiatives in the planning, implementation, and evaluation of environmental education in New Zealand schools.
- To facilitate further discussion between New Zealand policy-makers, researchers, and practitioners in environmental education about the way in which environmental education in schools is conceptualised, discussed, practised, and researched in New Zealand.1

To meet these purposes, the research addressed the seven research questions below.

Research Questions

1. What are key characteristics of effective practice in environmental education nationally and internationally that lead to students developing and demonstrating the skills, knowledge, attitudes, values, and actions that support the aims of environmental education?

2. What are some of the larger similarities and differences that exist between international practice and New Zealand practice, including the role of central agencies?

3. What are the key characteristics of environmental education practice in schools/kūra in New Zealand at this time?

1 The rationale for adding this third purpose emerged from comments made by reviewers and the Ministry of Education on the first draft of this literature review. For example, one reviewer said the first draft succeeded in “drawing together multiple complex strands within environmental education” but did not sufficiently address “gaps in the way the field is conceptualised both here and in New Zealand” (Reviewer comment, February 2003). Another reviewer noted: “There is lots of reporting on what is being done or not done but a lack of in-depth dialogue among practitioners about the nature of EE. There is a lack of in-depth philosophising about key concepts and ideas etc. In particular there is a lack understanding of terms like ‘for’ the environment and the role of political action as well as practical action….We [New Zealand] also have little in the way of a strong thinking forum where this can happen”… (Reviewer comment, February 2003). Feedback from the Ministry of Education said: “Although the guidelines provide a definition of Environmental Education and this is the last formal comment from the MOE, we would like the literature review to explore the influences on NZ understandings of EE since the guidelines were drawn to provide a contemporary view…we acknowledge that defining EE beyond official documents is problematic because of sometimes highly diverse positions but even a sense of different perspectives/approaches would be useful for assessing the current fit of the guidelines, and the programmes …described [in the literature review].”
4. To what extent do environmental education programmes in New Zealand schools generally follow the planning process identified in the Guidelines for Environmental Education in New Zealand Schools?

5. What kinds of student learning opportunities in environmental education occur as a result of the implementation processes undertaken by New Zealand schools?

6. What kind of relationships exist between different environmental education services and programmes for schools, and what are the potential benefits for student learning of these relationships?

7. What are the characteristics of the delivery of environmental education that support/do not support the goals of environmental education?

Timeframe for the Research

The timeframe for the research was June 2002–June 2003 (Figure 1).
Figure 1

Timeline for the research components

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**Literature review**
- Develop literature review framework
- Meet with MOE to review framework
- Literature review, analysis, and writing
- First draft literature review
- Feedback on draft from MOE and other reviewers
- Revision of draft
- Second draft literature review
- MOE feedback
- Final literature review report

**Critical stocktake**
- Identification of potential case study schools
- Critical stocktake planning and instrument design
- Questionnaires sent out to schools
- Data entry and analysis
- Critical Stocktake Report

**Case studies**
- Planning and preparing for case studies
- 3 case studies
- School holidays
- 5 case studies
- Case study report
- Overview report
This document (Volume 2) reports on the first component of the research, the literature review. Separate documents report the results of the other two components: the school survey (Volume 3: Cowie et al., 2004) and the case studies (Volume 4: Bolstad, Eames, Cowie, Edwards, and Rogers, 2004). A summary document provides full details about the whole research project and a summary of findings from the three components (Volume 1: Bolstad, Cowie, and Eames, 2004).

**Literature Review Objectives**

This literature review (component one of the evaluation) has four main objectives:

1. To collate existing literature on environmental education in New Zealand, and therefore, to develop a preliminary picture of the context for environmental education in New Zealand schools at this time.

2. To identify examples of environmental education approaches and practices in other countries, which can be compared to New Zealand approaches and practices.

3. To highlight some of the current issues for environmental education in New Zealand and indicate possible directions for future policy and practice.

4. To provide a foundation for the critical stocktake and case studies components of the research.

**Overview of Literature Review Chapters**

Chapter two describes the literature review approach. The chapter discusses strengths and weaknesses of two approaches to reviewing literature that have been promoted as useful for informing policy and practice: the “systematic review” and the “user review”. A rationale is given for the approach adopted in this review which integrates features of both of these.

Chapter three describes the methodology used in this review including the development of a review framework, search strategies used to locate national and international literature in environmental education, and details about the review and analysis process. The chapter concludes with some comments on the limitations and boundaries of the review.

To engage with contemporary literature in environmental education, it is important to understand both the history, and the current trends, issues, and debates which characterise this field. These are introduced in Chapter four. The chapter also gives a brief contextual/historical overview of the development of environmental education in New Zealand, and describes key features of the Ministry of Education’s environmental education policy document, *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999a).

At present, existing research on environmental education within New Zealand schools is limited. Chapter five describes areas that have been the focus of environmental education research in New Zealand. Reviewing existing research that has been undertaken on the characteristics and impacts of environmental education practice in New Zealand schools and kūra, Chapter five proposes six characteristics of environmental education in New Zealand.
Chapters six and seven highlight some examples of international practice(s) in environmental education. These examples provide a context for comparing some of the major similarities and differences in environmental education policies, practices, and research in New Zealand identified in Chapter four. Chapter six describes two major cross-national networks of activity involving environmental education in schools. These are 1) the Environment and Schools Initiative (ENSI), and 2) the Asia-Pacific networks anchored by UNESCO-ACEID and Griffith University. Chapter six discusses general features of these networks and their relevance to environmental education policy, practice, and research in New Zealand.

Chapter seven describes specific examples of environmental education policy, practice(s) and research from six countries: Austria, the Netherlands, Norway, Australia, England, and the United States. Finally, Chapter eight draws together some of the insights from New Zealand and international literature reviewed in Chapters four, five, six, and seven to critically inform thinking and discussion about environmental education policy and practice in New Zealand.
CHAPTER TWO: LITERATURE REVIEW APPROACH

Purpose of the Literature Review

As outlined in Chapter one (see page 2), the “Environmental Education in New Zealand Schools” research is intended to inform New Zealand schools’ environmental education practice, to inform Ministry of Education policy and support for environmental education into the future, and to facilitate discussion between New Zealand policy-makers, practitioners, and researchers in environmental education.

This literature review seeks mainly to provide illumination on the first two of the seven research questions listed on page 1. Namely:

1. What are key characteristics of effective practice in environmental education nationally and internationally that lead to students developing and demonstrating the skills, knowledge, attitudes, values, and actions that support the aims of environmental education?

2. What are some of the larger similarities and differences that exist between international practice and New Zealand practice, including the role of central agencies?

A literature-based answer to these questions will help to frame the data about environmental education practice in New Zealand schools collected in the survey and case study components of this research. Having established the purpose and questions for the review, the next step is to develop an appropriate review approach and methodology which will define what literature to review, and how to review it. The two research questions posed several challenges for this review, because they require an extremely broad range of literature to be reviewed. Question 1 seeks information about the effectiveness of environmental education practice(s) in terms of impacts or outcomes for students. This calls for a review of research literature on environmental education involving school students. On the other hand, question 2 seeks descriptive information about different environmental education practice(s), where “practice(s)” must be taken to include policy, curriculum, and pedagogical practice(s). This calls for a review of a broader array of literature, which could include academic commentaries, curriculum document or policy analyses, or even policy and curriculum documents themselves.

This chapter and the next chapter outline the approach we took to reviewing the literature, and how we determined what would, or would not, be included in the review. This chapter discusses strengths and weaknesses of two literature-reviewing approaches that have been advocated as useful methods for informing policy and practice in education. These are: the “systematic review” (Boaz, Ashby, and Young, 2002) and the “user review” (Bassey, 2000). The “systematic review” is currently popular in other areas of educational policy research, while the “user review” is an emerging approach. To investigate the usefulness of these two kinds of review in the context of environmental education, this chapter describes the findings of two recent comprehensive reviews of international environmental education research. These reviews suggested to us that an approach which integrates features of both of the “systematic” and “user” review approaches was necessary.
to meet the objectives of the current review. The last part of this chapter summarises the rationale for our reviewing approach.

Reviewing Literature to Inform Policy: Possible Approaches

The Systematic Review

The systematic review seeks to synthesise the findings from all relevant existing research (Boaz et al., 2002). The rationale for the systematic review approach is to more fully exploit the knowledge base stored within existing data and research findings, in order to support better evidence-based policy and practice decisions. Two distinctive features of the systematic review approach are:

1. A thorough, unbiased search strategy is adopted to identify relevant studies, using a variety of search methods, and searching multiple, possibly overlapping, sources of information (Glanville, 2001).

2. The reviewing process is carried out to agreed standards (Boaz et al., 2002).

The systematic review approach has its origins in the field of clinical medicine, but in the UK at least, this approach has spilled over into other fields of professional practice including education and social development (Solesbury, 2001). Research groups and collectives have been established to synthesise evidence of “what works” in domains from childcare to social justice (Davies, Nutley, and Smith, 2000).

However, the systematic review approach has encountered criticisms as it has been transferred from clinical health science to various fields of social and educational policy (see Davies et al., 2000). Specific criticisms of this approach include: that it prioritises certain research methodologies above others (often based on the “gold standard” of the randomised controlled trial in medicine); that it is unsuitable for research involving complex interventions with multiple outcomes; and that it does not allow sufficient room for theory to play a role (Boaz et al., 2002). These issues are particularly problematic in the case of environmental education research literature. To illustrate the nature of these problems, the next section will consider two recent, comprehensive reviews of environmental education research (Hart and Nolan, 1999; Rickinson, 2001), and discuss the implications of their findings for the present review.

Implications From Two Significant Reviews of Environmental Education Research

A Review of the General Field of Environmental Education Research

In a recent international paper, Hart and Nolan (1999) reviewed 273 research studies in environmental education, including published articles, books, theses, and conference proceedings, from the period 1992–1999. The goals of the review were to describe the nature of environmental education research in the 1990s, and to comment critically on the focus and quality of inquiry in this field.
Hart and Nolan identified six broad categories of environmental education research:

1. **Quantitative research** on variables such as environmental knowledge, attitudes, and behaviour.
2. **Qualitative research** such as case study, narrative inquiry, action/participatory research.
3. **Descriptive reports** of research focusing on the efficacy of environmental education programmes or episodes, or on the results of large-scale status studies, policy analysis, and evaluative studies.
4. **Focused inquiries** on teacher thinking, student thinking, children’s ideas, significant life experiences, cultural studies, and teacher education.
5. **Meta-methodological discussions** which included critical/analytical, theoretical, and philosophical discussions of method, methodology, epistemology, and ontology, as well as reviews of other environmental education research.
6. **Research-based theoretical discussions** about environmental education research and its meaning within education and global societies.

Hart and Nolan’s (1999) review suggests that it would be difficult to identify “key characteristics of effective practice that lead to students developing and demonstrating the skills, knowledge, attitudes, values, and actions that support the aims of environmental education”, the first research question for this review. Hart and Nolan’s review suggests that few studies in the field of environmental education have focused on the characteristics of different kinds of environmental education practices, and their subsequent effects, impacts, or outcomes for students. For example, many studies give contextual information about practices and contexts for environmental education. Many provide theoretical perspectives on the role, purpose, or meaning of environmental education. Few contain evaluative information about students’ learning experiences or consequent outcomes of environmental education for students.

**A Review of Research on Learners and Learning in Environmental Education**

Unlike Hart and Nolan’s review, which sought to review the whole field of environmental education research, a recent review by Rickinson (2001) was confined to only those studies that have produced empirical evidence on learners and learning in primary or secondary school environmental education. Rickinson’s (2001) review of more than 100 studies sought to systematically chart the nature of the current evidence base on learners and learning in environmental education in terms of its major foci, strengths, and weaknesses, and to identify key messages emerging from this evidence base.

Unlike the staggering theoretical and methodological diversity that Hart and Nolan (1999) identified in their review, Rickinson found considerable uniformity in the research on learners and learning in environmental education. While the number of studies in the area is substantial, many more studies have focused on learners than on learning. That is, more studies have investigated characteristics of school students (e.g., probing students’ existing environmental knowledge and behaviours), than studies which investigate processes or outcomes of students’ learning in environmental education. Rickinson found few studies linking student learning outcomes to
particular environmental education programmes or practices. Furthermore, studies that did make these links tended to occur in the context of short-term innovations (such as field trips, or school-based initiatives based on particular content areas or skills), rather than in the context of long-term environmental education practices. Rickinson found only two studies that focused on the outcomes of regular environmental education provision within the mainstream school curriculum.

Rickinson’s review indicated that most research on learners and learning in environmental education is underpinned by a view of students as passive receivers of environmental education teaching programmes. There is a strong science education influence in much of the research, thus many studies have focused primarily on students’ knowledge and understanding of the science of environmental issues. Further, few studies of learners in environmental education made cross-references to other pieces of research, and there were few review-style articles that sought to present and synthesise findings from different studies. Most studies were isolated, rather than seeking to build a coherent picture by drawing together and building on other research. Overall, Rickinson concludes that the field of research on learners and learning in environmental education appears to have been insulated from many of the changes occurring in the broader environmental education research field in terms of research methodologies and theoretical approaches.

Rickinson’s meta-analysis of the existing research evidence on learners and learning in environmental education indicates that environmental education programmes can effect changes in students’ environmental knowledge, attitudes and, in a few cases, behaviours. However, effects tend to be measured in the short term and in most cases their durability over time is unclear. Further, it is not well understood how or why particular learning outcomes do or do not occur. There is some evidence to suggest that certain aspects are helpful including: programme duration; preparatory and follow-up work; parental and community involvement with programmes; authenticity of content in terms of dealing with actual local environmental issues; role modelling and direct experience; and collaborative group discussions. However, all these characteristics need to be considered in relation to the nature, aims, and context of the particular programmes that were evaluated. They are not necessarily generalisable ingredients for any programmes of environmental education. Learning outcomes are also strongly affected by the students themselves. Research investigating students’ experiences of learning in environmental education clearly shows that students respond to learning situations in individual ways and can not be viewed simply as passive recipients of environmental education (Rickinson, 2001).

Rickinson concludes:

\[
\text{It is difficult to foresee precisely the kinds of ways in which people might use the evidence discussed in this review... it should be recognised that research evidence will rarely translate into simple ingredients for developing environmental education practice or policy (Rickinson, 2001, p. 303).}
\]

He also comments on the fragmented nature of the evidence base for learners and learning in environmental education, and identifies a need to increase the “interconnectedness” of the research base:

\[
\text{That is, future research needs to focus not only on enhancing methodological diversity and addressing substantive gaps, but also on forging stronger connections with and between many of the current concentrations of evidence in the area (Rickinson, 2001, p. 308).}
\]
Summary: Strengths and Weaknesses of the Systematic Review Approach for Environmental Education

Systematic reviews focus on presenting a critical and analytical account of the state of public knowledge of a topic. Many aspects of the systematic review are commendable, such as the systematic and thorough approach to seeking and appraising research evidence. However, both Hart and Nolan’s (1999) and Rickinson’s (2001) reviews suggest that a purely “systematic review” approach is likely to be neither practicable nor useful for informing New Zealand environmental education policy and practice. This examination of two recent comprehensive reviews of the field of environmental education research has raised several important points:

- Recent environmental education research is complex and varied in focus, methodology, methods, and theory.
- Systematic reviews of research evidence in the field of environmental education appear to provide only general indications about what is “effective” environmental education practice, and these are strongly dependent on specific contexts and circumstances.
- There appear to be few studies which have focused on the impact or effects for students of particular environmental education programmes or practices. Even fewer studies have focused on student outcomes or impacts of regular environmental education provision within the mainstream school curriculum.
- Systematic reviews of research in environmental education can give a clear picture of what has, and has not, been researched. Their findings do not seem to translate into simple ingredients for policy or practice.

For this review, one further issue weighed against the use of a “systematic review” approach: namely, the imbalance in the amount and nature of published environmental education research in New Zealand, compared to the amount published in the international literature. Initial searches and information from colleagues in the New Zealand environmental education community indicated that currently there is very little completed research (published or unpublished) on school-based environmental education practice in New Zealand. On the other hand, in numerical terms, the international literature on environmental education appears to be extensive and diverse in type (Hart and Nolan, 1999). This imbalance raised two questions for the reviewers about how to review and integrate the New Zealand and international literature. The first question was: what criteria should we use to review and evaluate the international literature, to provide relevant and useful information for informing New Zealand policy and practice in environmental education? The second question was: what parameters should we use to search for and evaluate evidence of environmental education practice in New Zealand schools? The question of “what constitutes evidence” is particularly problematic for systematic reviews of research evidence. In a critique of the “systematic review” approach in education, Solesbury (2001) points out that there are more kinds of evidence than just research evidence. For example, professional knowledge comprises not only researched knowledge, but also contextual and organisational knowledge. Some of this knowledge is explicit and documented, but much is tacit and carried in people’s heads. On the other hand, validity and availability are significant problems with unpublished knowledge.

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2 As described by, e.g., Boaz et al. (2002), Davies et al. (2000).
Nevertheless, a bias towards published research evidence may exclude these other important forms of knowledge. A “systematic review” approach did not seem to offer answers to either of these two questions.

User Reviews

Another way of using literature reviews to inform policy and practice is to produce what Bassey (2000) calls a “user review”. Bassey defines the user review as an offshoot of the more traditional “academic” review. While the latter is likely to focus on issues of concern to practitioners and policy-makers, it may not facilitate effective communication with these audiences. A characteristic of the user review is that it is devised by researchers and users working together. The user review brings together the findings of trustworthy research studies on a significant educational topic, with the aim of critically informing the thinking of a particular audience of policy-makers or practitioners, and stimulating discussion and worthwhile educational action (Bassey, 2000). Rickinson, McLeod, and Rogers (2002) assert that a user review needs to:

- draw on participants’ motivations and interests;
- keep research and practice in the picture;
- have direction as well as flexibility; and
- provide support for engagement.

Unlike the systematic review, where pre-existing methodologies and protocols have been adapted from other research fields, the user review has developed specifically within the field of education research. The approach is relatively new, and potential models for the process are only just being reported in the literature (Rickinson et al., 2002). Germane to the “Evaluation of Environmental Education in New Zealand Schools” research is a current project by the UK National Foundation for Education Research (NFER) entitled “Education for sustainable development (ESD): making research count”. In this project, a researcher prepared a systematic academic review of research literature on environmental education learning. The review itself took approximately one year to complete. The researcher then spent 12 months working with a small group of practitioners (primary and secondary teachers, and non-school environmental educators) to explore the practical implications and potential uses of the research findings, and ways of communicating these in engaging ways to practitioners in a “user review”. NFER describes the process as “collaborative, flexible, and reflexive”.

…the methodological onus has been on facilitating a genuine and open exchange of ideas between participants (collaborative), which is responsive to participants’ interests and open to unexpected project directions and outcomes (flexible), and provides opportunities for reflection about the process as it evolves and develops (reflexive) (Rickinson, 2002, p. 2).

The intended outcomes of the above project are to generate an innovative document and Website for teachers, highlighting recent research relating to ESD, and a model and reflexive account of taking a collaborative user review with practitioners.
Strengths and Weaknesses of the User Review Approach

A major strength of the user review approach is that it provides an avenue for accessing the knowledge and experience of practitioners, researchers, and policy-makers, while also assisting users to identify the amount and nature of research evidence available to support or contest that knowledge. Bassey’s user review is defined as a second-stage research paper that is developed after an academic literature review has been carried out. Therefore, for the purposes of the current review, a limitation of the user review as defined by Bassey (2000) and Rickinson et al. (2002) is the large time and budget required to produce the first-stage academic review, before the second-stage user review can be developed.

Conclusion: the Review Approach

In the interests of time and budget, and given that informing policy-makers and practitioners is of paramount importance in this research, this review will fuse key aspects of both the academic review and user review approaches. The review seeks to be systematic and thorough in its approach to searching the international and New Zealand research literature on environmental education. However, in seeking to analyse, synthesise, and draw implications from the research, elements of the “user review” approach (Bassey, 2000) will be used to strengthen the review’s usefulness for critically informing future policy and practice in environmental education in New Zealand. A key element of the review process is consultation with a variety of New Zealand stakeholders in environmental education during the development, writing, and revision of the review. This approach is coherent both with the complex characteristics of the field of environmental education research, and with the broad nature of the two research questions presented at the beginning of this chapter.

Although this research is intended to inform both policy-makers and practitioners, it should be noted that the first of these two audiences is the better served in this report. While we have tried to use a “collaborative, flexible, and reflective” approach to produce and refine this research, our primary partners in this process have been the Ministry of Education and other environmental education stakeholders. Although both primary and secondary teachers have been among those in the latter category, we think that further work would be needed to make the findings of this research genuinely accessible and practical for practitioners working in schools.

Details of the review framework, search strategies, and methods of analysis and synthesis of material will be described further in Chapter three.
CHAPTER THREE: METHODOLOGY

This chapter describes the methodology used in this review including the development of a review framework, search strategies used to locate national and international literature in environmental education, and details about the review and analysis process. The chapter concludes with some comments on the limitations of the review.

Development of a Review Framework

A diagram was drafted in late June 2002 to assist in the review process (see Appendix 1). The diagram served a twofold purpose: first, to locate the research questions in the context of environmental education in New Zealand, and second, to help us to refine and focus on the areas that would need to be included in the literature search and analysis. The planning diagram was circulated to a range of people involved in environmental education in New Zealand for comment and feedback. The diagram was then presented for discussion with the Ministry of Education at the end of the first milestone in early July 2002.

Search Strategies

The value of using a variety of search methods is that each method can uncover different clusters of references. Furthermore, when the same references are located by several approaches this provides a good internal check on search comprehensiveness. The strategies used to identify material for review included the following:

- consulting with the Ministry of Education and other central government agencies (e.g., Ministry for the Environment) to identify any relevant New Zealand research data/status reports held;
- contacting people known to be working in the field of environmental education, or environmental education research, in New Zealand and other countries;
- locating recent national and international environmental education research literature through library, electronic database, and Web-based searching;
- using reference lists from relevant meta-analyses and review articles;
- targeted searches for unpublished New Zealand research literature in environmental education.

It was clear during the early stages of planning for the review that a complex strategy would be needed for locating, analysing, and synthesising international and local research in environmental education. Seeking advice from experts is a useful method for identifying relevant published and unpublished research (Glanville, 2001). It is also a way to incorporate professional contextual and organisational knowledge into an evidence synthesis. The advantage of the “user review” approach described in Chapter two is that expert or practitioner knowledge can be accessed and
utilised as an entry point for structuring and presenting the findings of published research knowledge.

An important part of the process used in this review was to seek advice and input from a variety of “stakeholders” in New Zealand environmental education, including tertiary-based environmental educators, local and regional government staff involved in environmental education, and graduate and post-graduate students currently involved in environmental education research in New Zealand. This was done through a number of face-to-face meetings, and frequent use of telephone and e-mail where face-to-face meetings were not possible. Several messages were also sent out on a New Zealand environmental education listserv. Stakeholders were informed about the purpose of the research and asked to indicate relevant material or sources which might be useful for the review.

Library and Database Searching

Important features of the search process were the use of keywords to search electronic sources, following up key references suggested by the project team and national and international colleagues, snowballing from these references, and physical searches of key publications in environmental education held in the University of Waikato library.

Database searches were made for international articles on ERIC, and for New Zealand literature using Te Puna. Library catalogues searched included: Victoria University, Waikato University, National Library of New Zealand, Ministry for the Environment library, and the library of the Australian Council for Educational Research.

Hand-searching picks up articles that are missed in database or reference list searches, and is also an important way to identify very recent publications which have yet to be cited by others, or included in electronic databases (Glanville, 2001, p. 8). The contents pages of several key environmental education journals were manually searched in hard copy, or through online contents pages accessed via the University of Waikato library catalogue or on the Internet:

- **Environmental Education Research** 1995–2002
- **Canadian Journal of Environmental Education** (1996–2001)

Special issues of several general education research journals were also located through manual searches:

- **Cambridge Journal of Education** (1999) v. 29 n.3
- **Educational Action Research** (1993) v. 1 n.3
- **Educational Philosophy and Theory** (2001) v. 33 n.2

The Internet, E-mail, and Telephone

Useful research may be published in reports, technical reports, discussion papers, or other formats which are not indexed in library catalogues or journal databases. This “grey literature” (Glanville,
2001, p. 8) can be difficult to find through conventional searching. The Internet, e-mail, and telephone were used extensively in this review. Snowballing from references gathered in the early search phase frequently led to the discovery of further relevant material or information on the Internet. This was an extremely effective means of identifying useful published and unpublished material. E-mail and telephone were used to contact a range of people including:

- environmental educators in local government;
- the Royal Society of New Zealand;
- the Ministry for the Environment;
- the Parliamentary Commission for the Environment;
- the New Zealand Association of Environmental Educators;
- UNESCO New Zealand;
- a group of graduate students currently doing research in environmental education in New Zealand; and
- environmental educators and researchers in several European and Asia-Pacific countries.

Unpublished Theses

A search was conducted on Te Puna for all New Zealand theses including the keywords “environmental” and “education”. Staff at tertiary institutions known to be active in the area of environmental education (Waikato University, Christchurch College of Education, Massey University, Lincoln University) were also contacted by phone or e-mail. Several New Zealand environmental education theses have been done through Griffith University in Australia. An environmental education course co-ordinator at Griffith supplied us with a list of all completed theses titles and authors, and several of these were interloaned through NZCER’s library.

Approach to Review and Analysis of Literature

New Zealand Research

A key purpose for reviewing New Zealand literature on environmental education was to assess the current status of environmental education research in this country. In order to scope the field thoroughly, broad criteria were used in the search for relevant New Zealand literature on environmental education in schools. Any material that could be considered to constitute research on environmental education in New Zealand was canvassed. Although we drew a distinction between literature that contained a visible “research” component, and literature that was descriptive, all incoming material was scrutinised carefully before making decisions about its relevance to the review.

Chapter five describes existing research on environmental education in New Zealand, and looks critically at current strengths and weaknesses, and gaps in the research base on environmental education in New Zealand schools.
A key purpose for searching the international literature on environmental education was to identify some of the major similarities and differences between New Zealand practice and international practice in environmental education, including the role of central agencies. Possible similarities and differences between New Zealand practice and international practice in environmental education are considered to apply to at least three levels:

- **The pedagogical level**: teaching and learning practice in environmental education.
- **The school organisation level**: how schooling structures support or do not support the aims of environmental education.
- **The systemic level**: the education and environmental policy contexts and/or national structures that support or do not support the aims of environmental education.

A fourth important point of similarity/difference to consider is:

- **The socio-cultural context**: that is, the unique social and cultural norms and traditions within a country that exert a shaping influence at all these levels of environmental education practice(s).

To draw comparisons between New Zealand practice and international practice, it is necessary to have information about similarities and differences in other countries at each of these levels. However, even when limited to the period 1992–2002, a comprehensive search of international literature on environmental education yields a huge amount of published material that could contribute to these sorts of comparisons.

For pragmatic reasons, international environmental education literature was selected for inclusion in this review according to four dimensions: relevance, interconnectedness, links between levels, and availability. After a broad search of international literature in environmental education using a variety of searching strategies, the analysis process concentrated on identifying and reviewing only material that rated highly on each of these four dimensions. Incoming material was assessed against each of the dimensions by asking the following sorts of questions:

- **Relevance**: does it provide sufficient detail to enable the identification of similarities or differences to practices, policies, or systemic structures associated with environmental education in New Zealand? Is it relevant for the New Zealand socio-cultural context?
- **Interconnectedness**: does it have direct links or connections to other available environmental education research? Does it build on an existing research agenda? Is it associated with a particular initiative in environmental education that is likely to have been the focus of more than one piece of research?
- **Links between levels**: in itself, or in conjunction with other available literature, does it provide evidence of links and connections between the different levels of environmental education “practice” (i.e., pedagogical, school organisation, and systemic)?
- **Availability**: can it be obtained within the time and budget available for the review?

Much of the relevant, interconnected, cross-linked, and available environmental education research to appear in the international literature can be traced back to a few co-ordinating
networks of activity. For example, two networks that have been particularly influential are the Environment and Schools initiative (ENSI), operating primarily in Europe, and the environmental education activities of UNESCO-ACEID/Griffith University, operating primarily in the Asia-Pacific. Chapter six describes the history and activities of the ENSI and UNESCO-ACEID/Griffith University environmental education networks. Each of these networks of activity has generated a significant amount of literature about the state and status of environmental education in a range of different countries. Chapter six discusses some key international trends in environmental education practice in these networks. Chapter seven then presents case studies of environmental education practice(s) in six countries.

Validity of the Review Analysis and Synthesis

The following measures were used to strengthen the validity of the analysis and synthesis of information about New Zealand and international practices in environmental education in schools:

- Using a broad and multi-method search strategy to locate New Zealand and international literature.
- Circulating an early review framework diagram to the Ministry of Education and other environmental education stakeholders for review and feedback.
- Using internal peer review\(^3\) during early analysis and writing of the review.
- Through conversations and correspondence with several environmental education stakeholders periodically during the review/writing process to discuss emerging themes and check these against stakeholders’ knowledge.
- Through peer review of the draft review document.

Each of these measures was consistent with the modified “user review” approach we adopted for the review. The draft literature review was given to the Ministry of Education and seven other people engaged in the field of environmental education in November 2002\(^4\) with a covering letter requesting feedback (Appendix two). Feedback from six reviewers was received by February 2003. The draft was then restructured and revised to address, as far as possible, the suggestions and points raised by the reviewers.

Limitations of the Review

The following limitations of this review should be acknowledged:

1. It is a selective, rather than exhaustive, review of the international environmental education literature.

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\(^3\) By members of the “Evaluation of Environmental Education in New Zealand Schools” review team.

\(^4\) The peer reviewers included two members of the NZCER/Waikato University evaluation team, two tertiary educators from two different education institutions, and two people working in non-governmental environmental education organisations.
2. The review has a bias towards international literature published in English language (although not all literature comes from English-speaking countries).

3. Due to the processes used to select international literature, the review tends to be Euro-centric and Australasia-centric.

4. The review found a dearth of research on school- or kūra-based environmental education practices in relation to Māori. While there is anecdotal evidence to suggest some current activity in this area, to the best of our knowledge, the details and outcomes of this activity are not yet published.

In general, the review contains little information about international environmental education involving indigenous knowledge and practices. The searches conducted in this review suggest that most material published in this area stems either from the science education research field, or from wider examinations of the issues surrounding the relationships between indigenous peoples and the environment, or indigenous peoples’ roles or rights in managing the use of the environment. These areas lay beyond the scope of this review.
CHAPTER FOUR: A BRIEF HISTORY OF ENVIRONMENTAL EDUCATION

To engage with contemporary literature in environmental education, it is important to understand both the history, and the current trends, issues, and debates which characterise this field. The evolution of environmental education during the last 30 years has been shaped to a large extent by a series of global summits and international status reports that reflect changing views about the environment and the role of education in contributing to the resolution of environmental problems. At the same time, theorists have worked hard to articulate and define the aims and characteristics of environmental education within a framework of educational theory. This chapter traces these evolving views of environmental education, and identifies the implications of current views for environmental education policy and practice in the school sector. To set environmental education in a New Zealand context, the chapter also gives a brief contextual/historical overview of the development of environmental education in New Zealand, and describes key features of the Ministry of Education’s environmental education policy document, *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999a).

The Global Origins of Environmental Education

The origins of environmental education as a coherent movement are usually traced back to the emergence of concerns about global environmental degradation during the 1960s and 1970s. The movement was given a boost when the 1972 United Nations Conference on the Human Environment in Stockholm recommended that environmental education be recognised and promoted in all countries (UNESCO, 1997). In 1975, UNESCO and the United Nations Environment Programme (UNEP) launched the International Environmental Education Programme (IEEP). The programme eventually led to the world's first Intergovernmental Conference on Environmental Education in Tbilisi (USSR) in 1977 (UNESCO, 1978).

The Tbilisi Declaration

The Tbilisi Declaration gave a framework, principles, and guidelines for environmental education at local, national, and international levels, for all age groups, both inside and outside the formal education sector. The three goals of environmental education adopted by 66 member states at Tbilisi were:

- 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; and
- to create new patterns of behaviour of individuals, groups, and society as a whole towards the environment.
These goals were supported by five educational objectives: awareness, knowledge, attitudes, skills, and participation (see Table 1).

Table 1

<table>
<thead>
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<th>The five Tbilisi objectives for environmental education</th>
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<td><strong>Awareness:</strong> to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.</td>
</tr>
<tr>
<td><strong>Knowledge:</strong> to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems.</td>
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<tr>
<td><strong>Attitudes:</strong> 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.</td>
</tr>
<tr>
<td><strong>Skills:</strong> to help social groups and individuals acquire the skills for identifying and solving environmental problems.</td>
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<tr>
<td><strong>Participation:</strong> to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems.</td>
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The Tbilisi Declaration also referred to the complex interrelationships between human social, cultural, and economic development, and the environment.

A basic aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic, and cultural aspects...a further basic aim of environmental education is clearly to show the economic, political, and ecological interdependence of the modern world.... (UNESCO, 1978, p. 25).

Although these interrelationships were recognised, the Tbilisi statements suggested that protection and improvement of the environment was the ultimate purpose of environmental education. In other words, education was a means to advance environmental goals. The Tbilisi Declaration also suggested that environmental education could facilitate changes to existing methods and practices of education.

Environmental education must look outward to the community. It should involve the individual in an active problem-solving process within the context of specific realities, and it should encourage initiative, a sense of responsibility and commitment to build a better tomorrow. By its very nature, environmental education can make a powerful contribution to the renovation of the educational process (UNESCO, 1978, p. 24).

The Tbilisi Declaration was well-received by many governmental policymakers, academics and environmentalists in member states. However, the immediate impact of Tbilisi on policy and practice in the formal education sectors of most countries was generally underwhelming. This signalled an ongoing and persistent tension for the environmental education movement: environmental education was seen as a high scientific, social, and political priority by scientists,
environmentalists, and academics, but it was not seen as an educational priority by those responsible for determining policy and curriculum within the formal education sector (Gough, 1997).

The Re-Orientation of Environmental Education

While environmental education continued to struggle to secure a place in formal education systems, the attentions of UNESCO and other international drivers of environmental education policy turned during the 1980s and 1990s towards issues of human poverty, economic and social development, and sustainability. In 1980, the *Strategy for World Conservation* was published (IUCN/UNEP/WWF, 1980). This document added to the view that environmental education would need to be reconceptualised to give greater prominence to the root social, political, and economic causes of environmental problems. It was also the first document to give fluency to the term “sustainability” (Tilbury, 1995). Later, the World Commission on Environment and Development’s “Brundtland report” (WCED, 1987) further highlighted the need to integrate environmental concerns with economic and social development and political contexts. The Brundtland report focused specifically on the needs and interests of humans, asserting that all humans should be able to achieve their basic needs. With appropriate technological and social changes, it was deemed possible to achieve social equity, economic growth, and environmental maintenance simultaneously. The Brundtland report provided a key statement on “sustainable development”, famously defining it as:

…development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Since the Brundtland report, international discourse about the wellbeing of the environment has been inextricably bound to issues of sustainable development.5

The 1992 Rio Earth Summit

The most significant landmark in redirecting the international agenda for environmental education was the 1992 Earth Summit (UN conference on Environment and Development) in Rio de Janeiro. Building on the recommendations of the Tbilisi Declaration and the Brundtland report, *Agenda 21* of the summit called for the re-orientation of environmental education towards sustainable development. Proposed activities included:

- That governments, in co-operation with all sectors of society, prepare strategies aimed at integrating environment and development as a cross-cutting issue into education at all levels within three years.

- That curricula be thoroughly reviewed to ensure a multidisciplinary approach, with environment and development issues and their socio-cultural and demographic aspects and linkages, with due respect given to community-defined needs and diverse knowledge systems, including science, cultural, and social sensitivities.

5 It should be noted that “sustainable development” has been criticised as a theoretical concept by some authors (for a summary, see Turner, 1997).
• That every school be assisted in designing environmental activity work plans, with the participation of students and staff.

• That governments should affirm the rights of indigenous peoples, by legislation if necessary, to use their experience and understanding of sustainable development to play a part in education and training (UNESCO, 1992).

Influenced by international summits and meetings and the release of documents like *Agenda 21*, the global literature on environmental education began to embrace the reorientation of environmental education towards education for “sustainability” (Tilbury, 1995). *Agenda 21* had major policy impacts in many countries, including within the education sector, as governments sought to respond to their Earth Summit obligations. References to sustainable development became increasingly common in the national curricula of countries where governments had direct influence over curriculum (Gough and Scott, 2001).

**Implications of the Re-Orientation of Environmental Education for Schools**

The mid- to late-1990s saw high-level policy and curriculum changes in many countries which seemed to acknowledge a global re-orientation towards environmental education for sustainability. However, concerns were raised that the implications of these changes for policy, curriculum, and practice in the school sector were still not well-articulated (Tilbury, 1995). Four key components of the reoriented environmental education are:

• sustainable development issues;
• socially critical education;
• participatory processes;
• partnerships for change (Tilbury, 2001a).

There is a widespread view that these concepts have generally failed to take root in most environmental education in schools (e.g. see Benedict, 1999; Rauch, 2002; Scott, Bruun Jensen, and Pereira, 1998; Scott and Reid, 1998; Sterling, 2001; Tilbury, 2001b). It has been argued that the goals and aims of environmental education are irreconcilable with existing structures of schooling (Stevenson, 1987), or at the least, challenge deep-seated concepts of knowledge, learning, and the disciplines (Benedict, 1999). By the same token, environmental education has been identified as a potential breeding ground for innovation and educational reform in schools (Elliot, 1999b; Rauch, 2002).

**Challenges for Curriculum and Pedagogy**

The re-orientated environmental education certainly poses significant challenges to curriculum and pedagogy in schools. Tilbury (1995) defines the “new” environmental education, environmental education for a sustainable future (EEFS), as being:

• Relevant
Environmental education in New Zealand schools

• Holistic
• Values-orientated
• Issues-based
• Action-orientated
• Critical education

The “action-orientated” aspect is perhaps the most widely accepted of these six characteristics. It is often stated that environmental education comprises three dimensions: education in the environment, education about the environment, and education for the environment. The “in-about-for” classification was Lucas’ (1979) attempt to categorise the different meanings that had been given to the term “environmental education”. The concept was picked up readily within the environmental education literature, and it is often asserted that genuine environmental education only takes place when the real intention is education for the environment (Fien and Greenall Gough, 1996).

Education for the environment denotes an action-oriented approach where students work towards the resolution of environmental questions, issues, and problems (Fien and Greenall Gough, 1996). Fien (1994) locates this kind of environmental education within the critical theory tradition of education. Critical theory directs analysis of environmental problems towards identifying social interests and forces which contribute to, or sustain, the degradation of the environment. Critical theory is “emancipatory” in the sense that it seeks to enable teachers and students to identify and critique the social structures which influence their own and others’ thoughts and actions, so that they might make choices that are not constrained by these influences.

A socially critical approach sees environmental education as having a transformative function. Through socially critical environmental education practice, students and teachers may begin to identify and challenge existing structures which contribute to the creation or perpetuation of environmental problems. The critical theory/critical pedagogy approach has wide support in the environmental education literature, although it is not without its critics. Walker (1997) argues that, in the case of environmental education, critical theory is more useful as a way of critiquing practice than changing practice.

Educational researchers have carefully portrayed cases of exemplary practice, theorised about how practice could be improved, and worked with practitioners to implement environmental education in their schools. The key issue, then, is why has research in environmental education had so little influence on the learning and teaching of environmental education in schools? (Walker, 1997).

Walker contends that critical theory research approaches in environmental education are inadequate as tools for changing teaching practice because they do not take teachers’ own theories about teaching, learning, and curriculum into account, nor do they adequately recognise and accommodate the conditions and constraints of teaching practice. As a result, Walker suggests that socially critical environmental education will only be implemented in schools where there is

already a coherence between practitioners’ constraint structures (including their theories about learning and curriculum), and socially critical environmental education theory. Where there is no such coherence, Walker predicts that socially critical environmental education will fail to be implemented, because socially critical theory does not provide a mechanism for practitioners to change their theories and practice.

Whether or not Walker’s argument is robust, the literature certainly supports the claim that implementing environmental education in schools requires significant changes for teachers, learners, and other partners in the school education. Before reviewing some models that have been proposed to support these changes, it is useful to look further at how contemporary theorists have defined the educational goals of environmental education. Two areas of note are the concept of “action competence”, and the growing emphasis on pluralistic views in environmental education.

**Action competence in environmental education**

The Royal Danish School of Educational Studies has articulated a widely influential concept of the new environmental education in the notion of “action competence”, meaning students’ abilities to act with reference to environmental concerns (Breiting and Mogensen, 1999; Jensen and Schnack, 1997). The action competence approach is underpinned by the view that environmental problems are structurally anchored in society, and therefore have to be understood as community issues with conflicting interests at several levels: individual, social, and structural. Thus, environmental education must help students to identify, expose, and analyse all three levels of conflicting interest, and how they affect the environment, so that they might take actions which address the root causes of environmental issues (Breiting and Mogensen, 1999).

Action competence promotes the idea that the purpose of environmental education is not simply to modify students’ behaviour (Jensen and Schnack, 1997). Behaviour-modification approaches are those which seek to influence the behaviour of students in a previously determined direction, without necessarily allowing students to consciously choose whether or how to make a behavioural change. Jensen and Schnack argue that it is not and cannot be the task of the school to improve the world with the help of pupils’ activities. Instead, environmental education activities must be judged in terms of their educational value, according to educational (rather than purely environmental) criteria. The approach is underpinned by a democratic view of education. It is bound to the notion of “participation”:

> In a democracy, the members are not spectators, but participants; not equally active participants in everything all the time, naturally, but always potential participants who decide for themselves in what and when they will be involved (Jensen and Schnack 1997).

In this way, the “action competence” approach emphasises that environmental education must aim to involve students as active participants in all aspects of the environmental education experience. Students must be supported to identify problems, determine solutions, and take action in a way that empowers them to become competent (and willing) participants in future actions that contribute to the solution or avoidance of environmental problems. Wals (1994) emphasises that the learning value of environmental education experiences must be seen in these long-range terms.

> ...it does not mean that without immediate action the learning process has failed, but it does mean that the learner develops an action-readiness or action-
propensity; the ability and willingness to act when the conditions are right (Wals, 1994, p. 138).

Wals and others (Wals, 1994; Wals, Arjen, and Alblas, 1997) have developed a model to support the implementation of “action-taking” environmental education: the action research and community problem-solving (AR&CPS) model. This model involves students, teachers, and environmental educators in a “research triangle” as each group engages in a process of inquiry and reflection, revolving around an issue that is considered to be relevant by members of the school community.

…this means that students investigate a local environmental issue of their own interest (e.g. water quality, school beautification, school violence and safety), teachers investigate ways to improve their own teaching (e.g. working in groups, utilising community resources, conflict management), and outside facilitators who co-ordinate the research triangle, investigate contemporary issues in environmental education research (e.g. students’ perceptions of nature, student empowerment, curriculum design) (Wals, 1994, p.140).

Trials of the AR&CPS model in schools in the United States and the Netherlands show that the model can be successful, but that the process requires much time, energy, and commitment from those involved.

**Pluralistic Views in Environmental Education**

A common theme throughout much of the contemporary literature on environmental education is the notion that all those involved in environmental education should be empowered to participate in discussions, voice their opinions, and reflect on their roles throughout the environmental education process. Many authors believe that environmental education itself must be seen as an evolving process, rather than a fixed goal (Tilbury, 2001a), which requires local interpretation and debate (Sauvé, 2002; Scott et al., 1998). Responsible decision-making in a pluralistic society implies that learners must be capable of interacting with individuals and groups who think or act differently than they do (Lijmbach, Margadant-van Arcken, Van Koppen, and Wals, 2002), and there is a growing focus in environmental education literature on the acceptance and recognition of pluralistic views of both the environment and education.

Gough (1997) describes environmental education as not only marginalised within formal education systems, but also an historically marginalising discourse which has been dominated by western conceptions of the environment. Sauvé (2002) asserts that there are many ways that the “environment” can be viewed: for example, the environment as nature, as a problem to be solved, or a resource to be managed, or a system to understand, or a community project, and so on.

…environmental education is therefore not a “form” of education (an “education for…”) among many others. It is not simply a tool for environmental problem-solving or management. It is an essential dimension of basic education focused on a sphere of interaction that lies at the root of personal and social development: the sphere of relationships with our environment… (Sauvé, 2002, p. 1).
These multiple ways of viewing the environment each hold implications for education. Writing in the months prior to the 2002 world summit on sustainable development in Johannesburg, Sauvé called for widened debate among environmental educators.

It will be particularly important to stimulate discussion among all the actors in the field of education… and more specifically among those involved in environmental education, whose vision of education cannot develop fully unless the diversity of ways of apprehending and relating to the world is recognised and valued (Sauvé, 2002, p. 4).

Summary of International Trends and Issues in Environmental Education

This brief account of the history, trends, and issues in contemporary environmental education literature illustrates several important points. First, it is clear that views and perspectives about environmental education have continued to change and develop over time. It is also clear that the history of environmental education is strongly tied into wider social, political, environmental, and cultural discourses. Second, environmental education is a field that has developed mostly outside the mainstream education system, and certainly outside the traditional areas of curriculum. Gough (1997) describes environmental education as one of several forms of “adjectival education” (such as peace education, health education, and social education), that have developed in this way.

Environmental education was originally conceived as a tool for solving environmental problems. This is arguably still its primary end purpose. Along the way, environmental education has had to establish a place for itself within or alongside existing educational frameworks. Theorists have sought to define what environmental education means in educational (as opposed to only environmental) terms, and to understand how environmental education can or should impact on educational policy, curriculum, and practice. Whether or not environmental education is inherently in conflict with conventional structures of schooling (as some have argued), it certainly poses real challenges for policy, curriculum, and practice. Although a large body of literature and research on environmental education has built up over the last few decades, changes in school practice have been much harder to detect. The question of how environmental education can effectively become an authentic part of schooling raises further questions about what kind of changes are required within schools, and how change processes can be promoted and supported. There is a growing tendency in the environmental education literature to move away from seeking universal answers to these questions. Instead, much contemporary literature leans towards the view that environmental education can not be effectively implemented in schools without discussion among all those who have a stake in local environmental education, including those who are to participate as teachers and learners, about the goals, purposes, and meaning of environmental education for local contexts.

Recent History of Environmental Education in New Zealand schools

As in many countries, the international summits and declarations described in this chapter have influenced policy development in environmental education in this country. Prompted by Agenda 21, changes to New Zealand’s own environmental policies and legislation, and the New Zealand
government’s obligations to the Treaty of Waitangi, environmental education policy developments on the 1990s have come from both the Ministry of Education and the Ministry for the Environment. These policy developments have occurred more often in parallel than in co-ordination with each other. At the same time, grass-roots support for environmental education has fostered isolated instances of environmental education practice in New Zealand schools and communities. The next section outlines a recent history of environmental education policy and practice in New Zealand.

Environmental Education Prior to the New Zealand Curriculum Framework

There was no formal policy for environmental education prior to the introduction of the Guidelines for Environmental Education in New Zealand Schools in 1999. However, during the 1970s and 1980s a number of New Zealand primary and secondary schools developed courses and programmes dealing with the environment or environmental issues (Dowling, 1993). Significant milestones in the formalisation of environmental education in New Zealand during this period included: a series of meetings on environmental education facilitated between 1976–1978 by tertiary institutions, the Department of Education, and the Commission for the Environment (Dowling, 1993); a Department of Education conference on “environmental education across the curriculum” in 1981; and the formation of the New Zealand Association of Environmental Education in 1984.

In 1991, the New Zealand Natural Heritage Foundation (NZNHF) hosted an international conference on environmental education in Palmerston North (Springett and Hall, 1991). The conference brought a strong focus on environmental education curriculum and policy in New Zealand and in a number of other countries. In the absence of an existing policy statement or curriculum for environmental education from the Ministry of Education, the NZNHF had developed its own environmental education curriculum for schools. The Foundation’s “bicultural, integrated, whole school curriculum of environmental education” (Springett, 1991, p. 216) was built around the concept of the “eco-school”. An important part of the eco-school philosophy was to provide schools with the tools and infrastructure to make things work in their own environment and their own community. This meant involving the full school community (including students, teachers, parents, Boards of Trustees, and the wider community) in examining the school as a system, working together through consultation, and agreeing to monitor the resource management practices of the school as part of the school’s environmental education programme (Springett and Buchanan, 1991). Some of the initial activities of the first primary school to trial the NZNHF “eco-school” materials, included the formation of a parent/teacher “eco-committee”, a student committee, and a long-term eco-school plan (Buchanan, 1991).

Introduction of the New Zealand Curriculum Framework

In 1991, a draft version of the New Zealand Curriculum Framework included a proposed learning area called “Science and the Environment”. However, when the New Zealand Curriculum Framework was released in 1993, environmental education had been separated from science
education. “Science and the Environment” became *Science in the New Zealand Curriculum* (Ministry of Education, 1993b), and environmental education did not appear as one of the seven curriculum learning areas. The absence of a discrete learning area for environmental education in the curriculum reflected a debate at the time over whether environmental education should be a stand-alone learning area, or whether it would be most effective when infused across the curriculum (Barker, 2001). New Zealand’s curriculum took the latter approach. Direct references to the environment occurred in several essential learning areas, particularly science, social studies, and technology.

In 1993, New Zealand delegates attended a conference on environmental education and teacher education involving 13 Asia-Pacific nations (see Table 5, Chapter five). In a national report prepared for the conference, New Zealand was described as having “no coherent, directed approach to environmental education in primary schools” (NIER, 1993, p. 79), and “a lack of systematic approach” in secondary schools. However, it was noted that some primary and secondary teachers or schools with a special interest in environmental education were providing various environmental education opportunities for students. The report also noted that the Ministry of Education had established a working party to prepare a guideline statement on environmental education.

The NIER country report for New Zealand highlighted some environmental education initiatives involving groups such as NZNHF, other community groups, NGOs, and universities. Another initiative of this type began in 1993, when the first three “Enviroschools” were established in Hamilton by a taskforce including teachers, the Department of Conservation, Hamilton City Council, Environment Waikato, and the University of Waikato. The Enviroschool project was an indirect derivative of the NZNHF’s “eco-school” concept (Keown, McGee, and Carstensen, 1995). Though the NZNHF was involved in seeding the Enviroschool initiative, the two developed separately from 1993 onwards.

### Towards an Environmental Education Guidelines Document

In 1994/1995, three years after the Rio Earth Summit, the Ministry of Education commissioned the writing of a guidelines document that would give a rationale and direction for environmental education in schools within the *New Zealand Curriculum Framework* and associated curriculum documents (Law and Baker, 1997). Though completed in 1995, the guidelines were not published immediately, partly because some national curriculum statements (Health and Physical Education, and the Arts) were still under development, and the guidelines would need to be reworked to take account of these (Ministry for the Environment, 1998).

In the meantime, the Ministry for the Environment produced several significant documents concerning education and the environment. The first of these was a statement on the government’s strategy for the environment (Ministry for the Environment, 1995). One of the goals stated in the *Environment 2010 Strategy* was:

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7 NZNHF was established in 1988 as a non-profit educational trust “established to provide curricula, programmes and resources for environmental education within the formal and non-formal structures of education” (Springett, 1991, p. 215).
...to encourage environmentally responsible behaviour and informed participation in decision-making by promoting environmental education throughout the community (Ministry for the Environment, 1995, p. 57).

Two specific actions proposed to achieve this goal were: 1) the development of a strategy for an integrated national approach to environmental education across all sectors of the community; and 2) an environmental education guideline statement for schools. The first of these proposed actions came to fruition when the Ministry for the Environment released a draft discussion document, and later, a final version, of a national environmental education strategy called Learning to care for our environment: Me ako ki te tiaki taiao (Ministry for the Environment, 1996, 1998). Although the scope of environmental education in Learning to care extended beyond the formal education sector, at least three of the six priorities outlined in the document had strong implications for the school sector. Priority one was to encourage the integration and co-ordination of environmental education activities. Priority three was to maintain and enhance the capacity of tangata whenua (through formal and non-formal education) to fulfil their responsibilities as kaitiakitanga. Priority four was to incorporate the aims of environmental education across the school curriculum. Two explicit government actions linked to this last priority were that:

- The Ministry of Education was to undertake the preparation of guidelines for environmental education in schools, with endorsement from Ministry for the Environment, Department of Conservation, and Te Puni Kokiri.
- The Ministry for the Environment, as the administrator of the government’s Sustainable Management Fund (SMF), was to encourage projects which aim to develop resource materials which are fully integrated into the school curriculum.

These activities reflected a growing acceptance that environmental education was not just the responsibility of the formal education sector, and that the community of interest had a key role to play. As a result of priority one, the Ministry for the Environment began to host annual meetings for local government environmental education providers. However, this co-ordination did not extend to NGOs or Ministry of Education providers. Through such meetings, several local and regional councils became interested in a co-ordinated approach to environmental education in their areas. The Enviroschools programme was seen as one vehicle for doing this, and encouragement from other councils led the Hamilton City Council to produce an SMF-funded training programme and kit of resources for the programme to be made available nation-wide.

With as yet no official guidelines on environmental education from the Ministry of Education, a mandate for school-based environmental education could be read into several statements in the New Zealand Curriculum Framework. For example, schools’ ability to develop their curriculum “to take account of local needs, priorities, and resources…” (Ministry of Education, 1993a, p. 4) suggested an avenue for engaging with local environmental organisations. Further, many of the new curriculum documents included statements about the use of authentic contexts and local environments for curriculum learning activities. Finally, the New Zealand Curriculum Framework stated that the curriculum must help students to be adaptable and play their full part in a changing environment, with reference to gender and cultural issues, developments in technology, and environmental concerns (Ministry of Education, 1993a, p. 28).

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8 Although draft guidelines had been written in 1995, these were still unpublished when Learning to care was produced.
Release of the Guidelines for Environmental Education in New Zealand Schools

In 1999, a revised version of the draft environmental education guidelines was published and distributed to schools (Ministry of Education, 1999a). Around the same time, the SMF financed the production of a national directory of environmental education resource materials and organisations (Ministry for the Environment, 1999). The Ministry for the Environment also commissioned a review of literature on environmental education (Rush et al., 1999) as part of a SMF project to assist local authorities and other organisations to develop strategic approaches to environmental education, and to design and implement effective environmental education activities. The literature review informed the development and publication of a practitioner’s guide for developing, implementing, and evaluating environmental education strategies and programmes (Blakely, Rush, and Callaghan, 1999).

Features of the Guidelines for Environmental Education in New Zealand Schools

The Guidelines for Environmental Education in New Zealand Schools outline the major underpinning aims, concepts, and dimensions of environmental education for New Zealand schools (see Table 2).

Table 2

<table>
<thead>
<tr>
<th>Five Aims</th>
<th>Four Key Concepts</th>
<th>Three Key Dimensions</th>
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<tr>
<td>Aim 1: students to develop awareness and sensitivity to the environment and related issues;</td>
<td>Interdependence</td>
<td>Education in the environment</td>
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<tr>
<td>Aim 2: students to develop knowledge and understanding of the environment and the impact of people on it;</td>
<td>Sustainability</td>
<td>Education about the environment</td>
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<td>Aim 3: students to develop attitudes and values that reflect feelings of concern for the environment;</td>
<td>Biodiversity</td>
<td>Education for the environment</td>
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<td>Aim 4: students to develop skills involved in identifying, investigating, and problem solving associated with environmental issues;</td>
<td>Personal and social responsibility for action</td>
<td></td>
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<tr>
<td>Aim 5: students to develop a sense of responsibility through participation and action as individuals, or members of groups, whānau, or iwi, in addressing environmental issues.</td>
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The Guidelines indicate that a balanced environmental education programme should address all three dimensions of environmental education (education in, about, and for the environment), and that multidisciplinary holistic teaching and learning approaches are appropriate for meeting the aims of environmental education. The Guidelines signal the commitment that New Zealand had
made to four key concepts (interdependence, sustainability, biodiversity, and personal and social responsibility for action), to the Treaty of Waitangi, and to the 1992 Rio Earth Summit. Ways in which Māori worldviews are embodied in these concepts are described in the Guidelines. The document outlines how environmental education is seen to fit within the New Zealand curriculum, school policies, and teaching and learning practice:

The New Zealand curriculum provides a context for developing teaching and learning programmes for environmental education. Schools will also have a range of policies and practices through which the aims of environmental education can be met. Such policies and practices can be used to establish appropriate organisational, operational, and curriculum objectives that promote a whole-school approach to a sustainable environment. (Ministry of Education, 1999a, p. 15).

Pages 17–20 of the Guidelines suggest an 8–step process for schools to plan their environmental education programmes (Table 3).

**Table 3**

<table>
<thead>
<tr>
<th><strong>Process for planning environmental education programmes within the New Zealand Curriculum Framework</strong></th>
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<tr>
<td><strong>Step 1:</strong></td>
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<td><strong>Step 2:</strong></td>
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<td><strong>Step 5:</strong></td>
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<td><strong>Step 7:</strong></td>
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<td><strong>Step 8:</strong></td>
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The remainder of the Guidelines consists of five appendices. The first appendix discusses how to choose and use environmental issues in environmental education programmes. The second appendix identifies opportunities within each of the seven learning areas for meeting the aims and exploring the key dimensions and concepts of environmental education. The third appendix lists some useful organisations. The fourth appendix illustrates five cross-curricular approaches to environmental education aimed at different levels of the New Zealand Curriculum Framework. Finally, the fifth appendix illustrates how an “action approach” to environmental education might be planned and undertaken with students.

**Ministry of Education professional development for the Guidelines**

In 2000, the Ministry of Education contracted Christchurch College of Education to run a professional development programme in support of the Guidelines. The programme involves a
three-step process, beginning with a “train the trainers” approach. In 2000, several educators\(^9\) from each region were trained as environmental education facilitators. In 2001, facilitators in each region held two two-day workshops for selected schools in their region. Two teachers from each school had to attend the workshops. In the third stage of the programme (2002) facilitators selected approximately 64 “pilot schools” to develop environmental education programmes with the support of their school facilitator.

Another Ministry of Education-funded initiative in environmental education, the Sustainable School Organic Gardens project, began in 2001. Massey University and the Soil and Health Association of New Zealand jointly deliver the programme. The programme currently involves 24 urban schools in Auckland, Hawke’s Bay, Wellington, and Christchurch, and 12 kūra throughout New Zealand. It aims to assist teachers and schools to create and maintain organic gardens, to develop policies and programmes to support organic gardens, and to develop curriculum integration plans that integrate environmental education across learning areas. The programme includes an emphasis on Māori perspectives on the environment. Marae-based training seeks to develop school facilitators’ understanding of environmental education and sustainable growing from Māori and western perspectives, and concentrates on integrated curriculum approaches, and organic and Māori gardening practice (Davies, Delidjani, and Moeed, 2002).

**Summary**

Environmental education in New Zealand schools seems to have evolved in New Zealand as a “grass roots” movement, which, over time, has become integrated within an education policy framework. In recent years, the Ministry for the Environment, and local and regional councils have become more influential, particularly since New Zealand became a signatory to *Agenda 21* and other multilateral conventions and protocols on the environment. These agencies have also contributed to environmental education initiatives to educate the public about specific New Zealand issues for environmental management, including New Zealand’s Treaty obligations, and the requirements of the 1991 Resource Management Act. These influences are also evident in the *Guidelines for Environmental Education in New Zealand Schools* with, for example:

- its focus on environmental education being “in” and “about” the environment, as well as “for” the environment;
- its specific emphasis on interdependence, sustainability, biodiversity, and personal and social responsibility for action; and
- the significance given to Māori knowledge and the Treaty of Waitangi.

Obviously, the *Guidelines* also reflect the structure of the *New Zealand Curriculum Framework*, with strong emphasis placed on linking environmental education to the mandated learning areas, and the essential skills of the *New Zealand Curriculum Framework*.

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\(^9\) Including primary and secondary teachers, regional and local council environmental educators, school advisors, and others.
The development of environmental education policy, curriculum, and practice in the formal education sector in New Zealand appears to be fairly typical of many developed countries, which have been influenced both by international environmental politics, and their own local environmental, social, cultural, and educational issues and concerns. The next three chapters will review New Zealand and international literature on environmental education in schools, to look at how these influences have impacted on environmental education policy, curriculum, and practice in schools in New Zealand (Chapter five) and in other countries (Chapters six and seven).
CHAPTER FIVE: EXISTING RESEARCH ON ENVIRONMENTAL EDUCATION IN NEW ZEALAND SCHOOLS

This chapter reviews existing New Zealand research on environmental education to develop a picture of environmental education in New Zealand schools. It is important at the outset to recognise that at present, there is only a limited amount of published research on environmental education within New Zealand schools. This chapter examines the degree and nature of this research, and identifies significant areas where there is currently a research deficit. The last section of the chapter proposes six characteristics of environmental education policy, practice, and research in New Zealand which the literature appears to support. These will be compared and contrasted with international examples of environmental education policy and practice in Chapters six and seven.

Research on Environmental Education in New Zealand

Overall, environmental education is an under-researched area in New Zealand, although graduate and post-graduate research in this area has been increasing since the mid-1990s. The existing field of New Zealand environmental education research includes studies that have focused on environmental education outside the formal school sector. The non-school focus of these studies is consistent with the broad definition of environmental education in *Learning to care* (Ministry for the Environment, 1998), which says that environmental education is not confined to the formal education sector. Indeed, Chapter four has already outlined how the origins of environmental education largely lie outside the formal education sector. However, there are a few New Zealand studies which have investigated aspects of environmental education within the school sector. Both areas of research (non-school and school-based) are included in this overview.

Environmental education research focused outside the formal school sector

Research which has focused on the scale and efficacy of environmental education programmes and practices located outside the formal school sector includes van Rossem’s (1995) survey of 60 local government councils to investigate the status and needs of environmental education for sustainable resource management at the local government level, and a small study evaluating the effectiveness of an Environment Waikato pest eradication education programme in bringing about changes in the environmental behaviours of community participants (Sanders, 1999).

Environmental education research alongside the formal school sector

Moving closer to environmental education in schools, at least two New Zealand studies investigated the views and perspectives of environmental educators who work alongside the school sector. The referents for both studies were Ministry for the Environment’s *Learning to care* documents. McKay (1998) interviewed 12 environmental educators in the Canterbury region who worked with groups from the school sector. This included outdoor/environmental educators, and primary and secondary teachers who were working as facilitators of environmental education in schools. The purpose of McKay’s research was to investigate the environmental educators’
conceptualisations of the goals, aims, and purposes of environmental education, and their own environmental education practice. McKay used descriptions of environmental education given in the draft *Learning to care* document (Ministry for the Environment, 1996) as the yardstick against which to evaluate and compare the environmental educators’ conceptualisations of environmental education. In a similar kind of study, Hodgetts (2000) interviewed environmental educators from local government and environmental groups and tertiary institutions involved in the development and delivery of environmental education in the Waikato region. Hodgetts’s study was explicitly linked to “priority one” of *Learning to care* (Ministry for the Environment, 1998, p. 16), to “[encourage] the integration and co-ordination of environmental education activities”. Hodgetts investigated the degree of integration and co-ordination of programmes and activities amongst key organisations involved in the development and delivery of environmental education in the Waikato region.

Both Hodgetts’s and McKay’s studies found a wide range of views among their study subjects regarding the meaning and purposes of “environmental education”. Both studies also found varying views in the processes and approaches that were seen to be appropriate for environmental education. Finally, in contrast to the imperative in *Learning to care* for an integration of environmental education across sectors, these two studies also seemed to suggest a lack of integrated, co-ordinated, and cross-disciplinary planning and environmental education activities involving schools and other sectors, at least among the people and schools they studied.

**Surveys of the Characteristics of Environmental Education in New Zealand Schools**

Two studies of regional councils’ environmental education activities have involved the collection of some data about environmental education in schools (Chidlow, 1997; Vowless, 2002). At the time of a study by Chidlow (1997), Auckland Regional Council (ARC) had developed school environmental education programmes in parallel to the emerging national strategy for environmental education, *Learning to care* (Ministry for the Environment, 1998). However, the Council had little systematic data on the status of environment education in schools, or the perceived and stated needs of teachers, on which to base the development of its policies and strategies for environmental education. Chidlow surveyed 269 Auckland schools to investigate some characteristics of environmental education in schools in that region, including: the personal characteristics of teachers who taught environmental education; information on various characteristics of teaching practice in environmental education, such as amount of time dedicated to teaching environmental education; and subject areas in which most environmental education was taught.

A study by Vowless (2002) evaluated Northland Regional Council’s (NRC) role in environmental education. As one part of the evaluation, survey and interview data were collected from 34 primary and secondary teachers who attended NRC’s annual teachers’ workshop. Like Chidlow, Vowless collected demographic data about teachers and their schools, and information about teachers’ personal environmental values. Vowless also looked at how teachers found out about NRC’s environmental education programme, which of its services they had used in the past, and how useful they had found the NRC’s teacher workshop. Teachers were asked how important environmental education was in their schools, and how influential they felt themselves to be in encouraging their schools to teach environmental education.
Both Chidlow’s and Vowless’ studies provide some information about teachers involved in environmental education, and some general indicators about environmental education practice in schools. Both studies implied that many teachers saw environmental education as having a higher priority in their own teaching than it had within their school. In Chidlow’s study, 70 percent of respondents rated environmental education to be very important in their teaching programme, but only 46 percent rated it as very important within their schools. However, from teachers’ comments about why environmental education was important, Chidlow surmised that most environmental education within the schools comprised education “in” and “about” the environment, with less incidence of education “for” the environment. In Vowless’ study, 12 out of 21 teachers surveyed said environmental education was of “low priority” within their schools. Secondary teachers in Vowless’ focus group described time pressure, and a lack of support from other staff, as the biggest barriers for whole-school approaches to environmental education.

Research on Environmental Education in Schools Prior to the Guidelines

In 1994, Buchanan case studied environmental education practice in two New Zealand secondary schools, both of which had offered “innovative” environmental studies courses since the early 1990s (Buchanan, 1996). One school had a strong environmental theme running through a junior school integrated studies syllabus, and also offered a sixth form environmental studies class. The environment featured strongly in the geography and science departments. The other school had a particular focus on agricultural programmes, and had focused on themes such as sustainable farming practices in all year levels. The technology programme included a focus on environmental concerns, such as environmentally sustainable building practices and re-use of scarce resources. The school also offered a senior environmental studies class (Buchanan, 1996). The case studies included document analysis, staff questionnaires administered to staff in all subject areas, and interviews with key management staff and environmental studies teaching staff. Buchanan found a high level of support for environmental education from senior management and department heads at both schools, with many teachers perceiving environmental education as an important aspect of the curriculum. However, there was also a perception that environmental education did not fit easily into the current secondary school curriculum structure. In addition, most teachers viewed environmental education as a study of the living and non-living world. The most common approaches to teaching environmental education involved increasing student awareness, understanding, attitudes, and values while learning “in” the environment and “about” the environment. Few teachers focused their teaching on the development of student action “for” the environment.

A study in two primary and two secondary Waikato schools (Hargreaves, 1996) investigated 16 teachers’ perceptions of environmental education, and the degree of supporting structures for environmental education within the schools. Hargreaves also interviewed school co-ordinators to investigate aspects of school structure to support environmental education, such as whether the school had a policy in environmental education; or a formalised recognition of environmental education in the curriculum. The four schools’ involvement in environmental education appeared to comprise individual teachers’ initiatives inside the classroom, maintenance of the physical school environment, and student initiatives (only in the two secondary schools). None of the schools appeared to have a formal school policy on environmental education, and none of the principals (or associates) from the four schools were aware whether anyone within the school had
gone through existing curriculum documents to identify opportunities for the inclusion of environmental education.

Both Buchanan's and Hargeaves' studies provide a one-time picture of the state and status of environmental education in the schools under study. However, neither study provides much information about the regular processes of environmental education within the schools, or their effects or impacts for students, or changes in school-based environmental education practice over time. Both studies were undertaken prior to the release of the *Guidelines for Environmental Education in New Zealand Schools*.

**Pre-Service Teacher Education in Environmental Education**

A study by McConnell (1998) sought to evaluate the effectiveness of pre-service teacher education courses in environmental education once teachers had begun teaching. McConnell investigated the destinations and first-year teaching experiences of 17 beginning secondary teachers, six to 18 months after they had participated in a 20-hour pre-service course in environmental education at Christchurch College of Education. McConnell found most respondents had made an effort to teach environmental education, but the study highlighted difficulties facing these beginning teachers in the areas of classroom management, workload, unsupportive or cynical colleagues, and resistance to changes to existing school structures and practices.

**Surveys of Schools’ Use of the Guidelines**

To date, the largest national school survey of environmental education is Chronis’ (2001) survey of 709 New Zealand schools (a response rate of approximately 26 percent). Chronis’ study is also one of two studies known to have investigated the status of the *Guidelines* (Ministry of Education, 1999a) in connection to environmental education programmes and practice in New Zealand schools. Chronis’ survey found that 51 percent of primary, 95 percent of secondary, and 70 percent of intermediate schools were aware of the *Guidelines*. However, only 43 percent of schools said they were using these for planning their environmental education activities or programmes. Eighty-one percent of schools said they had offered or participated in environmental education activities or programmes in the last two years. Popular activities offered by schools included conservation, tree-planting, native flora and fauna studies, recycling, composting and worm farming, and water and marine studies. The most common reasons given by schools who were not involved in environmental education activities or programmes were: a lack of time in an overcrowded curriculum, and environmental education not being a priority or current focus within the school. Three areas which many survey respondents identified current inadequacies in terms of environmental education support were: sponsorship (51 percent), funding (50 percent), and access to trainers (40 percent). In an open question, the survey also asked respondents what the priorities for environmental education in the formal education sector should be. Chronis’ report lists uncategorised examples of responses according to school type: (e.g., rural primary, urban primary, secondary, composite etc.). However, no further statistics or analysis are given that would enable conclusions to be drawn about what schools see as the key priorities for environmental education, nor whether there are significant differences across different kinds of schools.
In a small localised study, Bravo (2001) surveyed 39 Dunedin schools (representing a 45 percent survey response rate) to investigate their implementation of environmental education. Bravo found a higher level of environmental education reported by primary schools than intermediate or secondary schools. Most of the primary schools who returned surveys indicated that they were implementing “reduce, re-use, re-cycle” activities, while less than half of the non-primary schools indicated they were doing this. More primary than secondary schools reported their involvement in teacher development in environmental education. Bravo’s survey also asked about the accessibility, structure, and contents of the *Environmental Education Guidelines for New Zealand Schools*. Bravo’s survey found 31 out of 39 schools (79 percent) had access to the Guidelines, four schools did not, three were not sure, and one did not respond. When asked to comment on the structure and contents of the document, 12 respondents (31 percent) had either not read the document, or did not respond to the question.

Chronis’ and Bravo’s studies both give some general indications about environmental education practice, and use of the *Guidelines* in New Zealand schools. However, neither study gives a clear picture about the specific characteristics of practices in different New Zealand schools, nor the degree to which these practices support or do not support the aims, goals, and processes outlined in the *Guidelines for Environmental Education in New Zealand Schools*. It may be inferred from both studies that availability, awareness, and use of the *Guidelines* may be low in many New Zealand schools.

**Recent Research on Environmental Education Programmes and Practices in Schools**

A few studies have documented the initiation and development of environmental education practice in primary schools. For example, Keown, McGee, and Carstensen (1995; 1999) researched the development of environmental education at three primary schools in the Waikato region, during the first three years of the schools becoming Enviroschools. A recent report by Mardon and Ritchie (2002) collates questionnaire and hui feedback from Enviroschool teachers and other environmental education stakeholders from around two dozen Enviroschools. Chapman (2000) engaged in and evaluated the collaborative development and trialling of a primary school environmental education resource. McLean (2002) researched the implementation of environmental education in Otago primary schools.

Keown et al.’s case studies included parent, teacher, and student surveys in the first year, and teacher and student surveys in the third year. The study found that all three schools made quite substantial changes in curriculum, physical environment, and waste management over the three year period, and one school also made significant changes at charter and policy level. The Enviroschool approach resulted in increased teacher awareness and understanding of environmental education and more positive attitudes towards environmental education among teachers. Teachers considered the project had a positive effect on students’ environmental knowledge and attitudes and resulted in improvements in the school environment. This was supported by student data showing that their awareness and knowledge about environmental issues, and their concerns about the need for societal concern and action on environmental issues, had increased. The study found that a number of key factors facilitated these positive outcomes. Whole-school units and modules were found to be very effective, and “action projects” involving specialists from outside the school also provided motivation and focus and opened up interesting possibilities for environmental learning and understanding. Keown et al. found that the...
Enviroschool committees established within schools, and within clusters of schools, provided valuable forums for discussion, planning, and linking to community agencies. The authors of the study also noted the importance of involving all participants and stakeholders in the planning and running of environmental education, so that a negotiated shared agenda for setting and achieving clear goals for environmental education could be developed.

Chapman (2000) worked with a local city council and some teachers to develop cross-curricular environmental education curriculum materials “in which social decision-making, active democratic participation and action all play a prominent role” (Chapman, 2000, p. 37). The group developed an environmental education resource kit in the context of transport, called “Going Places”. The unit was evaluated through a group interview with six members of a teaching syndicate using the resource kit, and an end-of-unit group interview with intermediate-aged children who had been involved in the unit. In a follow-up teacher focus group interview, Chapman found that none of the teachers had seen the Guidelines. However, they did identify the social action focus of the unit to be the source of its appeal for themselves and their students. As part of the unit, students had conducted a survey of the safety of their local road crossing. Students who were interviewed after the unit indicated that the highlight of the unit for them had been a presentation to the local council of their survey, and their ideas for improving the safety of the crossing. Chapman reported that without their teachers’ knowledge, some students had written to the Minister of Transport and invited him to visit and see their road crossing.

McLean (2002) analysed surveys from 86 Otago primary schools (a 58 percent response rate from the 149 Otago primary schools sent the survey), and case studied three schools, to investigate the implementation of environmental education practice in that region. McLean found that all the schools were engaged in education “about” the environment, most often involving topics about plants and animals, water, and waste minimisation. Most schools also provided education opportunities “in” the environment. Although most (85 percent) respondents said they taught education “for” the environment, McLean’s analysis suggested that few of the self-reported examples aligned with the criteria for true education “for” the environment explicated in the literature. The reported examples seldom indicated student involvement in the decision-making process. In cases where students were reported to have taken some environmental action, (for example, in terms of waste minimisation), teachers and students did not appear to have addressed the root causes of the environmental problem. McLean’s survey also indicated that few teachers had read the Guidelines, and many were unaware of them.

However, McLean found examples of education “for” the environment in two of the case study schools. In these cases, McLean identified eight characteristic strategies that were used by teachers. These were: involving students in decision-making about their learning; action towards the resolution of environmental issues; teacher and student reflection; employing a whole-school approach to environmental education; utilising the teachable moment; utilising a multidisciplinary approach; utilising the real local environment; and visiting other schools that were conducting environmental education.

One point to note about the studies described here is that they focus primarily on the perceptions of teachers and other environmental education stakeholders. There is generally less information about the impacts of environmental education programmes or practices for learners, or learners’ perceptions of these environmental education programmes and practices. There is a significant gap in this area of New Zealand environmental education research.
Research on learners and learning in environmental education

The few New Zealand studies related to learners and learning in environmental education that were found in this review were mainly studies of learning about the environment. For example, Leith (1996) used interviews and a concept-mapping exercise to investigate primary children’s awareness of, and interest in learning about, New Zealand’s natural environment, and the causes and consequences of environmental degradation. Hunt (1993) investigated the influence of natural history videos on 13- and 14-year-olds’ knowledge and awareness of New Zealand conservation and natural history issues, using a pre- and post-test experimental design. The study found that students scored higher in post-viewing tests of their factual knowledge about the specific conservation and natural history issues addressed in the video.

A very small study by Wilton (2000) investigated science learners learning in the environment. Wilton studied nine Year 6, 7, and 8 students’ learning following a visit to a local stream to study fresh-water plants and animals, during a teaching unit designed to meet objectives from the Making Sense of the Living World curriculum strand, including: to “use simple food-chains to explain the feeding relationships of familiar animals and plants, and investigate the effects of human intervention on these relationships”. Wilton found that students developed ideas about the variety of organisms found within the habitat; about the food-webs that existed within the stream; that variations in water level are caused by irrigation; and that there are dangers from the presence of stock or people. The students could discuss these ideas, with reference to their observations and experiences at the stream, twelve weeks later.

The focus of New Zealand studies of learners or learning in environmental education seems to resonate with Rickinson’s (2001) findings in an international review of learners and learning in environmental education (see Chapter two). Rickinson found far more studies of learners’ environmental knowledge or environmental attitudes, than studies of student learning in the context of regular (i.e., ongoing) environmental education programmes in schools. However, he did find a small number of studies which investigated students’ perceptions of their learning experiences in environmental education contexts. No studies of this kind were found in this review. However, Keown (2002) administered a survey called “Young People and the Environment” to 700 16- and 17-year-olds at six Auckland and Hamilton secondary schools. Keown’s research, which also included focus group interviews with the students, was part of a large-scale international project to assess young people’s knowledge, awareness, interests, and concerns about the environment and environmental issues in a range of Asia-Pacific countries (further details of this project appear in Chapter six). The study also asked young people about the degree to which the environment and environmental issues featured in their existing secondary education. Keown found that the environment was rarely discussed in the students’ classrooms. Students’ comments and responses suggested that they were not particularly knowledgeable about the environment, nor very active in helping to improve it, which Keown attributed to a lack of development of environmental education in New Zealand schools.

Summary of Existing New Zealand Research in Environmental Education

• In total there has been little research in environmental education in New Zealand, although graduate and post-graduate research in the area is increasing.
• The existing field of New Zealand environmental education research includes studies of environmental education in schools, and studies that have focused on environmental education involving community agencies, local and regional government, and other groups working outside or alongside the school sector.

• Several surveys have sought to identify characteristics of environmental education practice in New Zealand schools. However, not one of these studies gives a clear overall picture of the current status of environmental education in New Zealand schools, nor details about specific environmental education practices or their subsequent impacts or effects for students.

• New Zealand studies relating to environmental education in schools have investigated themes such as: teachers’ views of environmental education; personal characteristics/attributes of teachers committed to environmental education; curriculum areas in which environmental education is taught; and identifying problems or barriers for the implementation of environmental education in New Zealand schools.

• A few recent studies have begun to document environmental education teaching and learning practice (and the development of such practice) in New Zealand schools.

• New Zealand research on learners and learning in environmental education appears mainly to comprise studies of learners’ knowledge, awareness, or understanding about the environment or environmental issues, or students learning in the environment. There appears to be a lack of research which directly investigates the perceptions or learning outcomes of students engaged in education for the environment.

• There is a lack of comprehensive research on the processes or outcomes of regular school-based environmental education practice(s) for students within New Zealand schools.

Areas in Need of Research

This review identified several areas that were notable as “gaps” in the present knowledge base. We have divided these into two categories: mainstream practice, and Māori and environmental education.

Mainstream Practices in Need of Research

Many New Zealand papers, documents, and articles located in this review described various aspects related to environmental education in New Zealand schools, but lacked an identifiable research or evaluation component. In some cases, these papers seek to illustrate programmes or practices that are thought to be coherent with or contradictory to the goals and aims of environmental education as outlined in the Guidelines for Environmental Education in New Zealand Schools. These include: descriptions of pre-service teacher environmental education courses in New Zealand (Abrams and Barker, 2002; Law and Tasker, 2000); and descriptions of programmes and activities involving school students in extra-curricular environmental education (Rowarth and Buchan, 1999), special species conservation projects (Galbraith, 1999) or environment programmes run by local councils (Timaru District Council, 2001, 2002). However, none of the above literature involved the systematic collection or analysis of research data to investigate the educational impacts or outcomes of these different programmes or practices for participants. These and other similar documents located during this review, suggest some areas
where further research and evaluation might enhance the existing knowledge base about environmental education practices in New Zealand. For example:

- the impact of teacher pre-service and in-service environmental education on teachers’ subsequent teaching practice, and on environmental education practice in the schools in which they teach;
- the impact or outcomes for students of participation in special environmental education programmes offered to New Zealand schools or to students outside the regular school programmes, and their relationship to regular school teaching programmes;
- the impact of the involvement of external agencies or people on New Zealand schools’ own environmental education programmes, and the actual outcomes or effects of this for teachers and students; and
- the long-term impact or effects of environmental education provision for New Zealand students within regular school programmes.

This kind of research would help the published knowledge base to shift beyond the descriptive or anecdotal, and towards a clearer picture of the processes and impacts of environmental education practices on New Zealand teachers, students, and communities, and what constitutes effective or sustainable environmental education practices.

**Māori Environmental Education Practices in Need of Research**

This gap in the published literature is notable, particularly given the emphasis placed on Māori knowledge and the Treaty of Waitangi in the Guidelines. For example, the Guidelines state that:

> Māori views of the world are… embodied in the concepts of interdependence, sustainability, biodiversity and personal and social responsibility for action. Environmental education provides a context for learning about:

- The partnership established by the Treaty of Waitangi for managing New Zealand’s natural resources;
- The special position of the Māori people in relation to the natural resources of New Zealand;
- The cultural heritage of New Zealand;
- The significance of this heritage to present and future generations

(Ministry of Education, 1999a, p. 11).

A lack of Māori perspectives has been highlighted as a concern among environmental educators in New Zealand (Mardon and Ritchie, 2002). Although this review could not locate research focusing specifically on Māori and environmental education, a number of documents and articles which shed light on some of the issues alluded to in the Guidelines are available.
Roberts, Norman, Minhinnick, Wihongi, and Kirkwood (1996) provide some perspectives on the Māori environmental concepts of kaitiaki and kaitiakitanga. An important theme expressed in Māori world view is that humans are a part of nature: what Roberts et al. (p. 6) term “environmental whanaungatanga' or a 'familial relationship' with the other components of the environment”. Roberts et al. describe how the concept of kaitiaki underpins traditional and contemporary Māori relationships to the environment and the care and use of the environment. The nature and characteristics of a traditional Māori conservation ethic has much relevance to the New Zealand context for environmental education. Roberts et al. argue that without an understanding of Māori cosmogony and culture, conservationists may fail to appreciate that a Māori “conservation ethic” might convey a different perspective to their own and yet be equally valid (or even more so in its own indigenous setting). Roberts et al. caution that an assumption that Māori environmental ethics are the same as those of western conservation movements may contribute to an inability to properly serve the needs of, and to fully empower, Māori conservation aspirations as guaranteed under the Treaty of Waitangi.

Māori and Biodiversity

In 1994, Te Puni Kokiri produced a document called *Biodiversity and Māori* (Te Puni Kokiri, 1994). The document was produced in response to the 1992 Rio Earth Summit, where New Zealand signed a Convention on Biological Diversity, which included specific recognition of the role of indigenous people in the management of the environment. As a signatory to the convention, the New Zealand government was required to set up a process that would meet its requirements under the Convention. *Biodiversity and Māori* raised issues that would arise for Māori in relation to the Convention, and discussed ways that Māori could actively participate in conserving and sustaining biodiversity at the national, regional, and local levels. (Interestingly, however, the document makes no reference to education or the role of the education sector in this process.)

The Partnership Established by the Treaty of Waitangi for Managing New Zealand’s Natural Resources

Recently, the Parliamentary Commissioner for the Environment (2002) engaged in a scoping study into the concept of a Treaty-based environmental audit framework. The study involved consultation with a range of individuals, iwi, and hapu representatives, people from councils and government departments, and other resource management professionals. While the study could not establish a clear consensus on the feasibility of such a framework at the national level, there appeared to be a greater feasibility at a local or regional level as long as the framework and process was based “in the experience, wisdom and practical requirements of the people who would be using it” (Parliamentary Commissioner for the Environment, 2002, p. 22). Further, the study identified two critically important principles to guide the efforts of agencies and tangata whānau to improve the effectiveness of their work and relationships in environmental management:

- active participation of all the relevant parties; and
• a clear focus on kaitiakitanga, and the environmental outcomes that the agency, iwi, or hapu intend to achieve.

Kura Kaupapa Māori

Many practices advocated as being appropriate and necessary for good environmental education practice in schools are strongly coherent with principles outlined in *Te Aho Matua* (Mataira, 1997), the foundation document for kūra kaupapa Māori. *Te Aho Matua* provides a basis for curriculum planning and design of kūra kaupapa practice. The te reo Māori document is written in an elliptical/metaphorical style, and the English language version is an interpretation rather than a translation. Two of the six underpinning concepts for kūra kaupapa, Ngā Iwi, and Te Ao, parallel the elements underpinning whole-school environmental education practice. Ngā Iwi focuses on the social structures which support and influence the development of children. Ngā Iwi recognises the active role of the entire community in the education and socialisation of children, the importance of infusing and maintaining Māori social structures throughout the entirety of the kūra, and the necessity for maintaining processes to maximise whānau participation and involvement in kūra. Te Ao focuses on the world which surrounds children, and their awareness of their place within it:

> The task for kūra whānau is… optimising those experiences which contribute to [children’s] understanding and appreciation of the natural environment and the interconnectedness of everything within it. Further to this, children need also to understand that the activities of people, including themselves, can have a detrimental effect on the environment and its resources (Mataira, 1997, p.11).

Te Ao also asserts that the role of kūra kaupapa Māori is to legitimise Māori knowledge of nature and the universe as an integral part of learning, and develop children’s understanding that they are caretakers of the environment. Kura kaupapa Māori aims to develop children who are true to the laws of conservation passed down by their Māori forebears, as well as those practices which are environmentally friendly (Mataira, 1997).

**Characteristics of Environmental Education in New Zealand Schools**

This chapter has reviewed existing research on environmental education in New Zealand schools and identified some areas where there are significant research gaps. The next two chapters (Chapters six and seven) will describe some examples of different international practices in environmental education. These three chapters will help to inform research question two:

• What are some of the larger similarities and differences that exist between international practice and New Zealand practice, including the role of central agencies?

Before reviewing the international literature, it is worth drawing some general conclusions about the characteristics of environmental education in New Zealand schools. This concluding section describes six characteristics of environmental education practice in New Zealand which seem to be supported by the literature reviewed in this chapter. Consistent with the “user review” approach adopted in this review (see Chapter two), this list has also been informed by ongoing
discussions with people involved in environmental education in New Zealand. Each of the six characteristics is supported by a summary which:

- refers to relevant New Zealand policy documents or other systemic support structures or resources which support these characteristics;
- discusses the available evidence of current school practices which reflect or do not reflect these characteristics;
- comments on whether there is current research evidence to indicate the impacts, effects, or outcomes of these characteristics for students; and
- highlights areas where there are notable gaps in the research.

These summaries provide a context for comparing some of the major similarities and differences in international environmental education policies, practices, and research described in Chapters six and seven.

**The Six Characteristics**

**Characteristic 1: An emphasis on creating and exploiting links between programmes in schools, and extra-school agencies (e.g. regional authorities, conservation and environment societies, and other interest groups)**

At a policy level, linking environmental education across sectors is an explicit priority of New Zealand’s national environmental education strategy (Ministry for the Environment, 1998). Likewise, step 4 of the 8-step environmental education planning process in the *Guidelines for Environmental Education in New Zealand Schools* (see Table 5) encourages schools to identify possible links between school programmes and initiatives undertaken by regional councils, local councils, and other community or environmental agencies. Many local, central and regional environmental agencies have developed a range of resources or services to support and promote the inclusion of environmental education in schools (Chidlow, 1997; New Zealand climate change programme, 2002; Vowless, 2002; Wilson-Hill and van Rossem, 2001). Much of the available research on school-based environmental education practice in New Zealand has sought to identify the extent and impact of links between schools/teachers and external agencies (e.g. Chidlow, 1997; Hodgetts, 2000; Keown et al., 1995; Keown et al., 1999; Vowless, 2002). However, this research tends to originate from people outside schools with an interest in environmental education. A current weakness of research on schools’ relationships with external agencies is the lack of an “inside” view of the impacts of these linkages and relationships on school-based teaching and learning, and the degree to which these relationships actually support teachers and students to meet the aims of environmental education as outlined in the *Guidelines*. There is a need for further school-based research in this area.
Characteristic 2: The endorsement of “whole-school” approaches to environmental education

The Guidelines provide schools with suggestions for policies, practices, and processes which:

…can be used to establish appropriate organisational, operational, and curriculum objectives that promote a whole-school approach to a sustainable environment (Ministry of Education, 1999a, p. 15).

At the level of school practice, the NZNHF’s “eco-school” (Buchanan, 1991; Springett and Buchanan, 1991), the “Enviroschools” (Keown et al., 1995; Keown et al., 1999), and the “pilot schools” associated with the Ministry of Education’s environmental education professional development contract all embody whole-school approaches to environmental education. The whole-school approach is also coherent with many of the underpinning philosophies of kūra kaupapa Māori. The concept of Ngā Iwi, outlined in Te Aho Matua (Mataira, 1997) asserts that it is:

…immensely desirable that the whānau, which in this context, are all those people associated with the kūra and its children, should be established as a fully functioning socialising agency, where each member of the whānau contributes to the education of all of the children (Mataira, 1997, p. 8).

For kūra kaupapa Māori, the Ngā Iwi philosophy is directly relevant to delivery of curriculum, to the functioning of Boards of Trustees, and to the interaction of kūra with its whānau.

The whole-school approach also aligns with many aspects of Health and Physical Education in the New Zealand Curriculum (Ministry of Education, 1999b), including the directive that:

the whole school community should be involved in developing policies and practices that support learning… healthy school communities are those in which a commitment to haoura is consistently reinforced in the classroom, in the whole-school environment, and in positive relationships with parents and caregivers (Mataira, 1997, p. 53).

However, there is currently a lack of research to evaluate the actual characteristics of whole-school approaches in schools and kūra in practice, and the effects or impacts they have on students, teachers, and communities, let alone the degree to which these different whole-school approaches may overlap. Focused research on the characteristics and effects of whole-school approaches to environmental education would be necessary to evaluate the uptake and impact and effect of these practices for teachers, students, communities, and the environment.

Characteristic 3: The advocated inclusion of Māori knowledge and values in environmental education

The Guidelines for Environmental Education in New Zealand Schools places a major emphasis on the connections between environmental education, Māori worldviews, and New Zealand’s Treaty partnership. The NZNHF’s original “eco-school” curriculum, although developed separately from national curriculum policies in environmental education, was described as bicultural in its
approach (Springett and Hall, 1991). As discussed earlier in this chapter, while there is New Zealand literature dealing with many aspects of the relationship between Māori and the environment, there is a notable absence of published research on environmental education practice in Māori schooling contexts. However, there is a danger in assuming that such research would necessarily fit into the nominal category of “environmental education” because of the underlying cultural differences between Māori and western relationships to the environment (Roberts et al., 1996), and between mainstream school practice, and kūra kaupapa Māori practice (Te Runanga Nui o nga Kura Kaupapa Maori o Aotearoa (Mana Topu), 1998).

Although the incorporation of indigenous values in environmental education may be advocated in policy documents and now starting to be included in environmental education programme development, it remains to be seen how much this occurs in mainstream schools. For example, feedback from Enviroschool facilitators and teachers indicates obstacles for schools to bring in Māori perspectives which include:

- lack of confidence by teachers about how to incorporate Māori perspectives;
- lack of knowledge by schools and environmental education facilitators about who to contact in their local area;
- lack of Māori educators to respond to schools’ requests (Mardon and Ritchie, 2002).

Knowledge of “environmental education” practice in Māori contexts is best accessed through networks of people currently engaged in research and practice in this area.

**Characteristic 4: In practice, a tradition of education “in” the natural (and local) environment - e.g., through school camps, biology field trips, and learning experiences outside the classroom**

Education outside the classroom (EOTC) activities are accepted as an essential part of the New Zealand curriculum. *Anywhere, Everywhere* (Ministry of Education, 1992), the EOTC curriculum guidelines document for primary, secondary and early childhood education, states that EOTC experiences are intended to enable New Zealand children to gain new knowledge, understandings, skills, abilities, and attitudes, as well as building on those they already have. A 1998 survey of 102 schools found that the schools engaged in a wide range of education outside the classroom (EOTC) activities (including all camps, field trips, and organised LEOTC10 programmes) (Jordan and Strathdee, 1998). Trips outside the classroom were highly valued by the schools and were integrated into many learning areas. Seventy-three percent of the schools named “compatibility with the New Zealand curriculum framework” as the main reason for attending LEOTC programmes.

Another survey of 40 schools which had participated in LEOTC programmes (Julian, 1998) found that LEOTC providers covered all seven curriculum learning areas, with a particular emphasis on

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10 Since 1994, the Ministry of Education has run a contestable annual tender round for the purchase of Learning Experiences Outside the Classroom (LEOTC) services on behalf of New Zealand schools. Organisations such as science and technology centres, museums, observatories, zoos, galleries, and historic parks and other providers can apply for LEOTC contracts by submitting proposals for programmes which demonstrate relevance to national curriculum statements and the *New Zealand Curriculum Framework*. 
science and social science. Among the specific topics covered by the science and social science LEOTC programmes included some described as “environmental studies”.

The *Health and Physical Education in the New Zealand Curriculum* (Ministry of Education, 1999b) also emphasises the importance of outdoor education, which:

> ...provides students with opportunities to develop personal and social skills, to become active, safe, and skilled in the outdoors, and to protect and care for the environment (Ministry of Education, 1999b, p. 46).

A recently published resource to support the health and physical education curriculum for year 7 and 8 students, *The Curriculum in Action in the Outdoors* (Ministry of Education, 2001), highlights opportunities and contexts for integrating outdoor education and environmental education learning opportunities for students.

The evidence suggests that current New Zealand school practices allow many opportunities for students to engage in learning “in” and “about” the environment. However, this review has located no research to evaluate the extent to which these learning experiences do or do not reflect the special goals, aims, and characteristics of environmental education as outlined in the *Guidelines*. In particular, there is a lack of research on whether school practices involving students learning “in” the environment, link to students taking action “for” the environment.

**Characteristic 5:** The frequent selection of certain areas of content “about” the environment in school environmental education programmes, and an abundance of resource materials to support these (for example, biodiversity, local flora/fauna, nature conservation, water, air, waste and recycling, tree-planting and bush studies, and various aspects of gardening)

Surveys such as Chidlow (1997) and Chronis (2001) indicate that these topics are often named as examples of environmental education practice in many New Zealand schools. The popularity of gardening as a context for environmental education is reinforced through its adoption in the Ministry of Education’s *Schools’ Organic Gardens Project*. The popularity of these kinds of topics differs from some topics common in environmental education programmes overseas, for example, population control, acid rain, energy conservation, war, fossil fuels, or disease and hygiene. The massive report on *The State of New Zealand’s Environment* (Taylor and Smith, 1997) also devotes large chapters to the issues of air and atmosphere, marine and freshwater, land, and biological diversity, suggesting that these have a special significance for New Zealand.

*The New Zealand Environmental Education Directory* (Ministry for the Environment, 1999) uses a similar set of “environmental issues” categories as described above (e.g., air, biodiversity, wastes, water, etc.) to organise its database of environmental education resources. The preface to the directory notes that:

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11 The categories are: air, biodiversity, coasts, energy, hazardous substances, heritage, infrastructure, land, Māori, minerals, natural hazards, plant and animal pests, transport, wastes, and water.
...numerous organisations and individuals have produced materials about, in or for the environment. Many materials merely inform people about the environment without attempting to influence values, attitudes and behaviour (Ministry for the Environment, 1999, p. 2).

The structuring of the directory around common New Zealand environmental issues positions it as a useful index of background resources and information for educators “about” many environmental topics. However, the directory also says that:

...the range of materials included in this directory is extensive and includes a variety of approaches for education about the environment, education in the environment, and education for the environment (Ministry for the Environment, 1999, p. 2).

Materials listed in the directory are said to be designed to meet at least one of the objectives of environmental education stated in Learning to care (Ministry for the Environment, 1998), namely: awareness, participation, attitudes and values, knowledge and understanding, and skills. However, the “environmental issues” organising structure used in the directory does not clearly identify how each of the resources contained within it might contribute the specific goals and aims of environmental education as defined in Learning to care or the Guidelines. Nor does the directory index which “dimension(s)” of environmental education (i.e., “in”, “about” or “for”) is supported by each resource.

Another way of classifying New Zealand’s existing environmental education resources might be to indicate which sorts of learning contexts or processes for environmental education they support. This would align more closely with the format and structure of some of New Zealand’s curriculum documents, which generally provide guidance on possible learning contexts, processes, and approaches, as well as content. For example, Technology in the New Zealand Curriculum (Ministry of Education, 1995) describes learning activities in terms of areas of technology content, but also suggests as a useful organising principle-schools could locate learning activities within a range of overlapping social contexts (such as: personal, home, school, recreational, environmental, community, business, and industrial). The technology document gives learning and assessment examples which combine different technology areas in a range of different contexts. A similar concept could be adapted to develop example learning and assessment activities or indexes of useful resources that are cross-referenced to the aims, key concepts, and dimensions of environmental education outlined in the Guidelines.

Several reports and documents located during this review suggest that various producers of New Zealand environmental education resources do attempt to evaluate the uptake and use of their resources and services in schools (e.g. Burgon and Boyd, 1993; Department of Conservation, 2002; New Zealand climate change programme, 2002). However, there seems to be a lack of co-ordinated research which examines:

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12 The “Technological areas” listed in the document are: biotechnology, electronics and control technology, food technology, information and communication technology, materials technology, production and process technology, and structures and mechanisms.

13 As an example, “Recycling and Waste Disposal” (Ministry of Education, 1995, p. 49) combines the contexts of: home, school, community, environmental and industrial; with the technology areas: biotechnology, materials, and process.
how teachers actually use various resources in the planning and conduct of their environmental education programmes;

- which resources are most useful; and

- how (or whether) these resources contribute to environmental education experiences for students which reflect all the dimensions of environmental education: in, about, and for the environment.

Characteristic 6: A central focus on the relationship between environmental education development, and the content of curriculum statements in the seven learning areas of the curriculum framework

The largest section of the Guidelines (Appendix two, comprising 38 pages in the 77-page document) is devoted to exploring each of the New Zealand curriculum statements (in English and Māori) to identify opportunities for integrating environmental education. Several New Zealand studies suggest that environmental education is most often linked to the learning areas of science, social studies, or technology (Buchanan, 1996; Chidlow, 1997). The Guidelines also illustrates examples of how teaching and learning approaches can be planned for environmental education that are cross-curricular (Appendix four) or action-oriented (Appendix five). Further research would be necessary to illuminate first, how environmental education is actually planned for and implemented in schools, and second, how this relates to the seven areas of the New Zealand Curriculum Framework.

This chapter has also highlighted a scarcity of evidence to indicate whether the intent of the Guidelines is informing the planning and implementation of environmental education programmes in the school sector.
CHAPTER SIX: CROSS-NATIONAL NETWORKS TO SUPPORT ENVIRONMENTAL EDUCATION INITIATIVES IN SCHOOLS

This chapter and the following chapter highlight some examples of international practice(s) in environmental education. These examples provide a context for comparing some of the major similarities and differences in environmental education policies, practices, and research in New Zealand identified in Chapter five.

The brief history of environmental education outlined in Chapter four described how environmental education has often faced issues of marginalisation in formal education systems. At the same time, international events like Agenda 21 have exerted strong pressure on governments to develop environmental education policies and curricula, often with slow results. Consequently, the environmental education community has relied heavily on national and international networking as a means of sharing ideas and strategies to further the implementation of environmental education in schools, and for leverage to promote governmental policy developments in environmental education.

This chapter describes two major cross-national networks of activity involving environmental education in schools. These are: 1) the Environment and Schools Initiative (ENSI); and 2) the Asia-Pacific networks anchored by UNESCO-ACEID and Griffith University. The ENSI and Asia-Pacific cross-national initiatives in environmental education have influenced environmental education in schools to varying degrees across a range of countries, particularly during the last decade. Both networks have generated a large amount of literature about environmental education policy, curriculum, and practice in a range of countries. A synthesis of this information indicates some of the factors which have helped and hindered the implementation of environmental education in schools, with a particular focus on strategies aimed at moving environmental education from the periphery of the school system and into mainstream practice.

The Environment and Schools Initiatives (ENSI)

Environmental and School Initiatives (ENSI), is a decentralised international network initiated in 1986 by OECD/CERI. ENSI’s aim is to:

…support educational developments that promote environmental understanding, active approaches to teaching and learning, and citizenship education, through research and the exchange of experiences internationally (Elliot, 1999a, p.1).

14 It should be noted that ENSI and the Asia-Pacific initiatives are not the only examples of international networks and initiatives in environmental education. A number of other similar networks and initiatives in environmental education were identified during the review of international literature. However, compared to ENSI and the Asia-Pacific networks, these other networks did not rate as highly in the four dimensions used to select the international literature (see Chapter three), namely: relevance, interconnectedness, links between levels, and availability. However, a brief summary of some of these other initiatives is included in Appendix 3.

ENSI involves voluntary co-operation of mostly European member countries (see Table 4). It has no official legal status, and cannot pass legally binding resolutions. Governments of member countries pay annual contributions to fund the ENSI work programme, but the practical realisation of focus projects is organised and funded by the national education authorities of member countries. Each member country has a national co-ordinator, who is responsible for keeping contact between their government and ENSI, and for organising the national ENSI activities along the ENSI work programme (OECD/CERI, 2001).

Table 4

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<tr>
<th>ENSI member countries (see <a href="http://www.ensi.org">www.ensi.org</a>)</th>
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ENSI’s features include:

- a strong theoretical position on the nature of environmental education;
- a sustained focus on teacher education, both in-service and pre-service;
- an emphasis on the formation of national and international collaborative initiatives and networking between schools, and between schools and other institutions (particularly teacher education institutions); and
- a progression of focus over time, away from the development of school-based environmental education pilot projects, towards a focus on systemic changes to enable environmental education to become a sustainable feature of mainstream education.

As a multi-national initiative in environmental education, ENSI is interesting for both its size and its longevity (Pettigrew and Somekh, 1994). Over 16 years, ENSI has produced a great deal of literature. Published material includes case studies written by teachers, national country reports and evaluations of environmental education practice, and evaluations of the environmental and educational policy contexts of ENSI member countries. Much of the published ENSI literature stems from an ongoing series of intensive international conferences involving co-ordinators, teachers, pedagogic support persons, experts, and in some cases, students, from participating countries (e.g. see Elliot, 1999a; Ministry of Education Research and Church Affairs (Norway), 1999; OECD, 1994; OECD/CERI, 1995, 1998, 1999, 2001).

The Four Phases of ENSI

The ENSI programme has progressed in four phases. In phase one (1986–1988), school environmental education initiatives were piloted and experiences were shared between schools. Phase two (1989–1994) concentrated on evaluating the ENSI school initiatives, and examining the policy contexts for environmental education in each ENSI country. After the 1992 Rio Earth Summit, phase three (1995–1997) picked up on the priorities of Agenda 21 and looked at ways that whole schools could change to become more environmental and more sustainable. The focus
of the fourth phase (1998–ongoing) has been to identify strategies for “mainstreaming” good
environmental education practice.

Education Initiatives

Phase one of the project involved schools in eleven countries within Western Europe. The focus
was on environmentally-oriented project teaching (OECD/CERI, 2001). This was a relatively
low-budget, small-scale programme of pilot schools (numbering from one to eight per country)
developing their own environmental education projects, and sharing their experiences with one
another via regional networks and international conferences.

The goal of the ENSI school projects was to actively involve students in interdisciplinary
inquiries relating to local environmental issues. These projects were intended to support ENSI’s
guiding educational principles, namely:

- the promotion of students’ environmental awareness; and
- the development of students’ “dynamic qualities” such as initiative, independence,
  commitment, and readiness to accept responsibility (OECD, 1994).

The ENSI theoretical position on environmental education shares much in common with the
“action competence” approach described in Chapter four (see page 26).

Teacher action-research was fundamental to the ENSI approach from its inception. ENSI sought
to link curriculum development and professional development by involving teachers in
researching and reporting on their own practices, in order for them to examine, reflect, and
improve on these practices. The teachers’ case study reports of initiatives within their own schools
formed a knowledge base for the development of subsequent phases of ENSI. This was seen as
unusual in the participating ENSI countries, where it was more common to use university-based
researchers to investigate educational practices in schools (Elliot, 1999a; Posch, 1993).

Several clear issues emerged at the end of the first phase of ENSI. The first issue was that
teachers’ reports of the environmental education initiatives in their schools were not of high
quality. ENSI national and international co-ordinators found these reports “varied as a source of
insight and understanding” (Elliot, 1999b, p. 327). The poor quality was attributed to insufficient
support for teachers engaged in the action-research process. To address this issue, in phase two of
ENSI (1989–1994), “pedagogical support persons” were appointed to work alongside teachers, to
facilitate teachers’ action research activities, and to help teachers systematically reflect about the
problems of curriculum and pedagogical change in schools.

The phase one case studies also suggested several other issues of concern regarding the success
and sustainability of the ENSI projects. For example:

- There were indications that ENSI was driven by enthusiastic teachers, frequently operating in
  extra-curricular time.
- There was little evidence of innovation transfer either within schools, or more widely from the
  initial cluster of participating schools.
Rather than being a catalyst for systemic changes, it appeared that ENSI was operating at the margins of the existing schooling systems of many of the participating countries.


Given the marginal, small-scale nature of most of the first phase ENSI initiatives, phase two included an increased emphasis on understanding the policy context for environmental education in the participating countries. There was a concern to establish whether each country’s national environmental and educational policies were consistent with each other, and how these policies supported or constrained the underlying objectives of the ENSI school initiatives.

Partway through the second phase of ENSI, one significant OECD/CERI policy shift occurred (Somekh, 1994). This was the introduction of a new requirement for evaluation, rather than simply reporting, of the ENSI school initiatives. The phase two evaluation requirement coincided with a general search in educational systems for “indicators” for measuring the quality of educational programmes (Elliot, 1999a). In 1990, a major conference was held to discuss methodologies for preparing and reporting research on environmental education school initiatives, and to plan the evaluation of ENSI. For example, the evaluations were to be carried out by ENSI co-ordinators and pedagogical support persons. The question was whether this could be done without creating a tension for individuals carrying out the dual role of evaluator and action research facilitator (Somekh, 1994). These and other complex issues concerning the evaluation of innovations in environmental education discussed at the conference were later published in an edited book (OECD, 1994).

In some countries the evaluation of ENSI initiatives appeared to evolve as a collaborative process: teacher action-research data informed the evaluation, and the evaluation informed the teachers’ action research:

Such a process reconciled evaluation goals that are often perceived to conflict; namely, the use of evaluation as an instrument of accountability/quality assurance, and its use as an instrument for quality development/enhancement (Elliot, 1999a, p.7).

Some countries actually placed an explicit emphasis on teachers producing written, rather than verbal accounts, of their action-research. This was encouraged so that teachers’ research could be used to inform policy decisions at Ministry level, and to enable the further professional learning of teachers to be grounded in the learning of their peers through the use of teachers’ research reports in training programmes (Elliot, 1995).

During phase 2, in-depth studies of environmental education policies were carried out in six ENSI countries: Australia, Austria, Finland, Germany, Hungary, and Norway. These, along with nineteen national reports, were presented for discussion at a conference in Germany in 1994 (OECD/CERI, 2001) and were synthesised by House (1995) in an effort to construct a composite portrait of environmental education policies across countries. Each country had its own unique set of issues, problems, and dynamics. However, some general themes identified and discussed by House are shown in Box 1.
Box 1

*Synthesis of findings of in-depth studies of environmental education policy in five ENSI countries (from House, 1995)*

**Environmental education as a social movement**

In most countries environmental education operated as a social movement, sometimes involving “charismatic leaders, intensely committed participants, competing factions, differing beliefs and ideologies, orthodoxies, and a highly decentralised social structure” (P. 91). Generally, a small group of highly active individuals played a critical role in mobilising public awareness and interest in environmental education. Decentralised national and international supporting networks, often provided support and lobby on these issues.

**Dynamics of environmental education policies**

Environmental education policies were most advanced in countries where the environment appeared threatened to the people that live there. For the most part, governmental agencies did not initiate environmental actions on their own but in response to public concerns and “grassroots” initiatives. However, public concerns had not always translated into educational policies to support or co-ordinate environmental education. For example, Switzerland had many active environmental groups, but no co-ordinated environmental education policies or structures.

**Government policies**

In general, governments enacted voluntary and permissive policies on environmental education, rather than mandatory ones. In most countries, many diverse groups had developed a range of curriculum materials. These materials varied in quality, and were often distributed by groups themselves and not actually being used by schools. In some countries, “lighthouse” schools demonstrated new teaching methods and curriculum materials, and in other places local schools were given governmental grants to develop their own projects. Environmental education appeared to be more successful in countries where responsibility was assigned to education ministries rather than environmental ministries. The impact and effect of governmental policies also varied between countries depending on the extent to which their schooling systems were centralised/decentralised, or in a process of decentralisation.

**Effects on schools**

In most countries, classroom practice in environmental education varied dramatically within each country. The most successful results appeared to occur where policies encouraged, supported and sustained networks of teachers, schools and supporting organisations at local and regional levels. Teacher professional development was the focus of many networking projects. Teacher action-research was also a feature of many initiatives. However, there was a general lack of evaluation of environmental education in all countries.

**Values issues in environmental education teaching and learning**

Pedagogical approaches that were endorsed and enacted in different countries showed some significant cultural differences. For example, some countries seemed to have a greater cultural tolerance than others of teachers and students acting as environmental “activists” within or outside their schools. In some countries, it was expected that teachers should assume a neutral role in the classroom when dealing with controversial issues. Some countries incorporated moral or values issues in their environmental education principles. Interdisciplinary teaching of environmental education was rare overall. Environmental education was usually taught in one of a few subject areas, particularly biology. Where efforts had been made to combine subjects, this was usually multi-disciplinary rather than interdisciplinary.

**Higher education**

Interdisciplinary environmental education programmes in higher education were rare. More often environmental education in higher education was placed within science faculties. In many countries environmental education was not included in teacher training at all. Most universities retained very traditional teaching practices and prospective teachers were unlikely to learn action-research or other innovative teaching methods in their pre-service education.

Phase three of ENSI emerged in the context of a policy agenda stemming from the 1992 Earth Summit in Rio de Janeiro. The priority areas for phase three of ENSI extended on the priorities of ENSI phase two, and were strongly linked to the Earth Summit’s *Agenda 21*. These priorities were:

- the development of eco-schools (the “ecologisation” of schools);
- evaluating the quality of environmental education; and
- a focus on teacher training to prepare teachers as environmental educators in schools.

A number of initiatives and activities were undertaken in different countries in line with these priorities (Elliot, 1999a). For example, in Austria, two related projects were established: ECOLOG (the ecologisation of schools) and ENITE (Environmental Education in Teacher Education). Further information about the ECOLOG project will be given in the Austrian country profile in Chapter seven. In the ENITE project, six teacher training institutions in Austria co-ordinated to design, implement, and evaluate “innovative strategies” in environmental education teacher education. In the Netherlands, another initiative looked at ways to involve teacher educators, training teachers, and primary schools in the implementation of environmental education into the curriculum of primary schools (Schuurmans, 1999). This project is described further in the Netherland country profile in Chapter seven.

Phase Four (1998–ongoing): Moving Environmental Education from the Pilot Project to the Mainstream

Major focuses during phase four of ENSI have been:

- understanding and assessing the impact/integration of *Agenda 21* on environmental education practice and policy at a national level in ENSI member countries;
- focusing on innovative and interdisciplinary approaches to teacher education in environmental education; and
- seeking to identify ways to bring good environmental education practice into the “mainstream” of school education.

Two major international ENSI workshops were held in 1999 to exchange ideas and experiences and to address these issues. Thirty teacher educators from six European countries attended an “Innovations in Teacher Education through Environmental Education” workshop (OECD/CERI, 1999) in Austria. Later that year, forty-eight teachers, researchers, and policy-makers from 12 European countries and the United States attended a workshop entitled “From the Pilot to the Mainstream” (Ministry of Education Research and Church Affairs (Norway), 1999). At each conference, participants reported on various activities and initiatives in their countries, and working groups were convened to identify and explore key issues around teacher education and mainstreaming of good practice in environmental education. Further information about environmental education practices and initiatives from some of these ENSI countries will be given in the next chapter.
Summary of ENSI

To summarise, some of the key characteristics of ENSI which have evolved over its 16 year history are:

- a commitment to international co-operation and sharing of ideas and strategies between researchers, practitioners, and policy-makers;
- an early focus on the development of school-based initiatives;
- a recognition of the kinds of support needed for teachers to engage in action-research on their own environmental education practice;
- the use of teacher action-research reports as a primary knowledge base for developing environmental education policies, and for developing initiatives for teacher education and support in environmental education;
- a focus on identifying supportive or unsupportive policy environments for environmental education;
- the development of innovative in-service and pre-service teacher education pilot projects;
- in some countries, an increase in centralised support for environmental education from ministries of education;
- ongoing sharing between ENSI participants and reflection of lessons learned over time, and a recent focus on developing strategies for “mainstreaming” environmental education.

New Zealand is not an ENSI member country, and has had only minimal involvement with this particular network. However, for a number of years New Zealand has participated in similar cross-national environmental education networks based in the Asia-Pacific region. These will be discussed in the next section.

Environmental Education in Asia-Pacific

Several significant initiatives in environmental education have also originated in the Asia-Pacific region. Fien (2000) suggests that in most countries in the Asia-Pacific region, environmental education initiatives have tended to favour nature conservation and therefore have tended to come from ministries of environments or agriculture, rather than ministries of education. Fien also states that movement towards sustainability is only rarely being pursued as a whole-of-government commitment, that a general lack of interest by ministries of education has tended to marginalise environmental education from mainstream educational policy, and that environmental education is often not perceived as curriculum priority for many teachers, students, and parents.

This section will outline some of the major developments in environmental education across various Asia-Pacific nations (including New Zealand). Two particularly significant environmental education initiatives across the Asia-Pacific region during the last decade have been:

16 Although it is affiliated as a “partner” country.
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- an initiative focused on strengthening teacher environmental education; and
- a research project investigating young people’s views of the environment and environmental issues.

These two initiatives are described below.

**Strengthening Teacher Environmental Education in Asia-Pacific**

In 1993, Japan hosted a regional seminar on environmental education and teacher education in the Asia-Pacific. Thirteen countries, including New Zealand, were represented at the seminar (Table 5).

**Table 5**

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The objectives of the seminar were to review the state of environmental education and the state of teacher education in the participating countries, and identify problems and issues in developing competencies for teaching environmental education. The major outcome of the seminar was a recommendation that UNESCO-ACEID undertake an action plan to improve teacher education and environmental education in Asia and the Pacific. Subsequently, the *Learning for a Sustainable Environment: Innovations in Teacher Education* project began in 1994 as a joint initiative of UNESCO-ACEID and Griffith University in Australia (Fien and Tilbury, 1996). The focus of the project was to develop the competencies of teacher educators to provide pre-service and in-service environmental education for teachers. The strategy was for a network of teacher educators in the Asia-Pacific region to share in the writing of researched and evaluated, culturally adaptable teacher workshop modules for use in pre-service and in-service teacher education programmes. The project comprised three phases:

**Phase One: Planning and Development of Prototype Teacher Education Materials (1994)**

In the planning and development phase, a network of teacher educators from seven countries (Fiji, Philippines, South Africa, Hong Kong, Papua New Guinea, New Zealand, and Australia) developed modules for pre-service or in-service teacher education. The modules were to align with a set of guiding principles established at an international project planning meeting in New South Wales (Law and Baker, 1994). Among the guiding principles was the view that local environmental questions, issues, and problems should provide a focus for the development of environmental education projects, and that the project’s emphasis should be on personal and professional development of teacher educators rather than on the production of resources. The underpinning rationale was that innovation in environmental education requires not only teaching innovation or a curriculum innovation, “but a more holistic and ecological interpretation of
educational change which links professional development with curriculum development and resource development” (Tilbury, 2001b). Therefore, the modules were not to be seen as a finished product, but as a “dynamic resource that is constantly changing as it is analysed, adapted, trialled and evaluated” (Fien, 2001, p. 80).

Phase Two: a Pilot Project to Trial and Revise the Materials (1995)

During phase two, the phase one modules were the subjects of small-scale action-research studies by teacher educators in 12 Asia-Pacific countries. The teacher educators were invited to analyse a stage one module, adapt it and translate it for local use, monitor and evaluate its usefulness for workshop participants, and write an action research report on the usefulness of this process as a strategy for personal professional development.

In New Zealand, three modules were trialled on three occasions. The first trial, at Palmerston North College of Education in July 1995, involved 18 primary and secondary teachers. Following modification of the modules, the second trial was held at the Christchurch College of Education in December of that year. The second trial included participants from all education sector groups, including formal, community, and local government education groups. The third trial was held at a Canterbury school and involved 16 local teachers. Finally, the materials were presented at a UNESCO workshop at Craigieburn Forest Park. This workshop was designed to introduce the modules to New Zealand teacher educators who were responsible for pre-service and in-service primary and secondary teacher education at five colleges of education (Law, 1996).

The first two phases of the Learning for a Sustainable Environment: Innovations in Teacher Education project in each participating country were evaluated through a meta-analysis of action-research reports, and discussion between network members at a second NIER conference in Tokyo in 1996.

Phase Three: Region-Wide Implementation (1996)

In the third phase, the goal was to develop national networks for supporting environmental education in teacher education, for example:

- by seeking to have the Learning for a Sustainable Environment project recognised by ministries and departments of education;
- through the establishment and/or support of national action programs for the professional development of teacher educators, teachers and leaders in environmental education (Fien, 2001).

The project also resulted in a number of publications and course developments in various countries (see Fien, 2001). For example, 10 workshop modules were published as a manual and on the Internet (http://www.ens.gu.edu.au/ciree/LSE/index.html). An adapted version of the modules was later published by UNESCO as an electronic resource, available on the Internet and issued as a CD ROM (UNESCO, 2001).

Two recent UNESCO-APEID regional seminars on environmental education have focused on identifying current issues for Asia-Pacific environmental education networks. In 2000, delegates from APEID member states met in Tokyo to discuss issues and concerns that hindered networking
opportunities (McClelland, 2000a, 2000b). In 2001, delegates met to discuss the current status of support systems in environmental education in the region and to share country reports on current networking and support for environmental education in their countries (Mardon, 2001a, 2001b). Problems and issues identified in the New Zealand country reports included:

- an underrepresentation of Māori, Pacific, and Asian representatives in most New Zealand environmental education networks;
- people potentially being missed out of networks;
- “communication fatigue” for those who are frequently requested to engage in communication and networking opportunities;
- a potential overemphasis on knowledge and information dissemination through networking and underemphasis on action or skill development of participants;
- the lack of a national advisory group to set a strategic, long-term direction for environmental education;
- a need for stronger regional support structures for schools and communities for environmental education; and
- an overemphasis on the production of environmental education materials and resource kits and an underemphasis on training and employing skilled environmental education facilitators.

Investigating Young People’s Views of the Environment

A second major cross-national initiative in environmental education in the Asia-Pacific region is a research project to investigate young people’s attitudes to the environment, nature, and ecological sustainability in different Asia-Pacific nations (Yencken, Fien, and Sykes, 2000). Twelve nations were involved in the project: Australia, Brunei, Fiji, India, Indonesia, Japan, New Zealand, Papua New Guinea, the Philippines, Singapore, South China, and Thailand. Yencken’s (2000) analysis of the national contexts for environmental education in the 12 project countries identifies a number of commonalities, for example:

- Although each country has their own particular environmental issues and concerns, environmental degradation is endemic across countries.
- All countries have been strongly influenced by international environment debates, agreements, and actions (for example, as signatories to the 1992 Rio Earth Summit).
- National and state governments have introduced legislation and established environmental authorities for environmental protection and monitoring.
- Environmental NGOs (international or national/local) are influential in all countries.

However, each country also has distinct cultural influences, political, social, and economic traditions that shape attitudes towards nature, the environment, and ecological sustainability.

In each participating country, a survey was administered to a sample of several hundred senior secondary students. The survey data was complemented by focus group interviews with some of the students. The research was conducted by researchers in their own countries, with some
adjustments in the research instruments to suit local contexts.\textsuperscript{17} A synthesis of student survey findings from across the countries (Yencken, 2000) indicated some significant differences in young people's views and knowledge about the environment on some issues. For example, students in different countries varied in their degree of concern about the environment, versus issues like social equity, population control, and threat of war. There were also national differences in the degree to which students reported discussing environmental issues within and outside of schools. However, Yencken reports that the most striking finding about the research was the degree to which there was general agreement in students' environmental beliefs, knowledge, and behaviour across the countries. Yencken (2000) concludes that in general, young people in the Asia-Pacific already believe that environmental problems are significant and increasing, and have some knowledge of underlying concepts important for the achievement of sustainability.

However, the survey findings suggested that young people's knowledge needs to be systematically increased to form a strong conceptual structure for understanding environmental problems. Yencken (2000) concludes that young people need to:

- explore how their own personal behaviour can be linked to and contribute to the solutions of the large environmental problems facing the world;
- learn about the way that environmental problems are embedded in the existing political, economic, and social systems;
- be able to relate their own lifestyles to these systems and to discuss and understand in what way personal lifestyles may embody unsustainable practices; and
- learn that there are pathways out of our current predicament and to recognise how prevailing norms and systems can be adapted.

**Summary of Environmental Education in Asia-Pacific**

To summarise, some of the features of environmental education across the Asia-Pacific region have been:

- building cross-cultural networks and approaches for developing environmental education;
- priority given to professional development for teacher educators, with a trickle-down effect for pre-service and in-service teacher education;
- an underpinning belief that teacher development, not simply resource development, is a critical influence in promoting students’ awareness, knowledge, understanding, skills, attitudes, values, and actions “for” the environment;
- the collaborative development, trialling and revising of resources for teacher education that have been designed to be adapted to meet national and local environmental education objectives;
- the exploration of young people’s perspectives on the environment and their views on sustainability.

\textsuperscript{17} The New Zealand component of the study (Keown, 2002) is described in Chapter four.
ENSI and the Asia-Pacific Environmental Education Networks: Relevance for New Zealand

The ENSI and Asia-Pacific networks suggest that the development of environmental education in schools is a demanding process that requires complex strategies for change, and many layers of research and evaluation. These networks suggest some strategies that seem to support this process. For example:

- **International co-operation and sharing of ideas and strategies**

  This is a key feature of ENSI, and is also evident in the Asia-Pacific teacher education initiative. New Zealand’s involvement in the Asia-Pacific network has been influential in promoting environmental education at a policy level in this country. For example, New Zealand’s participation in the first Asia-Pacific conference on environmental education and teacher education (NIER, 1993) provided the stimulus for developing the draft *Guidelines for Environmental Education in New Zealand Schools*. A number of New Zealand educators have also contributed to the development and implementation of the UNESCO teacher education modules.

- **A priority on linking environmental education resource development with teacher professional development**

  This has been a key platform of the ENSI and Asia-Pacific projects. This approach is also currently evident in New Zealand within the two Ministry-funded programmes: *Environmental Education Professional Development* (Christchurch College of Education) and *Professional Development for Sustainable School Organic Gardens* (Massey University and the Soil and Health Association of New Zealand). Both of these initiatives are based on in-service teacher education.\(^\text{18}\)

- **A transition of focus from individual school-based initiatives, towards more centralised support for environmental education**

  The ENSI initiative began with a clear focus on small-scale, school-based projects and over time in some ENSI countries there is evidence of more centralised support for environmental education. This trend is also evident in New Zealand, with some schools appearing to have developed their own environmental education programmes and subjects long before the development of a national strategy for environmental education (Ministry for the Environment, 1998) or the *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999a). Current Ministry of Education initiatives and research in environmental education reflect a growing commitment by government to this area.

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\(^{18}\) There appears to be a growing interest in pre-service environmental education courses at several New Zealand teacher education institutions. However, the decision for such provision lies with the respective providers of teacher education, not with any central agency.
• **A culture of action-research**

Both ENSI and the Asia-Pacific networks promote a culture of action-research alongside resource development and professional development. However, the most significant difference between the two is that ENSI began with teachers acting as action-researchers, and later moved towards greater professional development of teacher educators and “pedagogical support persons”. In contrast, the Asia-Pacific project began with a focus on action-research on the part of teacher educators, with an anticipated trickle-down effect through the enhancement of pre-service and in-service teacher environmental education by these providers.

While it is apparent from ENSI that the teacher action-research approach is not without its challenges, clearly this approach has potential for stimulating change by providing a mechanism for teachers to evaluate their practice and work towards development and improvement. There has been no centrally co-ordinated support for teacher action-research in New Zealand.19 The UNESCO-ACEID approach targets professional development initially towards teacher educators. In New Zealand, this approach has also been used to train a network of environmental education facilitators. It is not clear whether the current role of New Zealand’s environmental education facilitator is similar to that of the ENSI “pedagogical support person”, nor whether there is an explicit focus on action-research in the work that facilitators do with schools. However, facilitators in the Environmental Education Professional Development contract (Christchurch College of Education) are required to produce a structured “learning journal” documenting the processes and developments in their work with pilot schools. Documents such as these could provide useful starting points for formalised action-research projects, if an appropriate level of research support was available.

This chapter has reviewed two examples of international networks which have contributed to the development of environmental education in schools across a number of countries. The next chapter profiles some major characteristics of environmental education policy and practices in six individual countries.

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19 However, the Teaching and Learning Research Initiative may offer this sort of opportunity for New Zealand teachers.
CHAPTER SEVEN: PROFILES OF ENVIRONMENTAL EDUCATION PRACTICES IN SIX COUNTRIES

This chapter describes some examples of environmental education policy, practice(s), and research from six countries: the Netherlands, Norway, Austria, Australia, England, and the United States. These countries have been selected because of the amount and nature of research literature located for these countries during this review. In some cases, the research described is directly linked to one or more of the cross-national environmental education networks described in the previous chapter. For each country profiled in this chapter, an attempt has been made to describe environmental education practice at the national/systemic level (in particular, the role of central government and official environmental education policy); at the school organisation level, and where possible, at the pedagogical level.

The key themes explored in the country profiles link closely to the wider picture of environmental education development in schools outlined in Chapters four to six. In each of the profiled countries, environmental education has come in at the margins of existing schooling and education systems. The subsequent development of environmental education in each country has varied according to that country’s particular social, cultural, environmental, and educational history and priorities.

For each profiled country, this chapter will look at where the impetus and pressure for environmental education policy/curriculum/resource developments has come from (the drivers for environmental education development), and how government agencies in these countries have responded. The profiles will examine what kinds of policy/curriculum/resource developments have occurred, and what evidence there is of the impacts or effects of these developments. The profiles will also look at how (if at all) the environmental education development process has included teachers, students, pre-service and in-service training providers, environmental NGOs, and other environmental education stakeholders. Finally, the profiles will look at what evidence there is for effective environmental education practice in schools and classrooms in these countries, and what factors and mechanisms have been identified as effective for supporting environmental education uptake and implementation in schools in these countries. The final section in this chapter summarises the main features of environmental education policies and practices identified in each of the six countries.

It should be noted that there were many deficits in the quantity of information for each country that could be located and compiled for this review. It was often difficult to locate quality research literature at the pedagogical level of environmental education practice in schools and classrooms. Also, research evaluating the impacts and outcomes of environmental education for students was particularly rare.
Since 1986, there has been a co-ordination of environmental policies in the Netherlands across several government ministries, including the Ministries of Environment, Education, and Agriculture. During this time, the policy context for environmental education in the Netherlands has shifted from an “implementation model” to a “process model” of policy development (Elliot, 1999a). Three successive waves of initiatives have been launched by the ministries:

- 1986–1992: Development and national piloting of a cross-disciplinary core curriculum for environmental education, “Teaching for sustainable development”. National attainment targets and textbooks were re-written and school environmental education co-ordinators were trained.
- 1992–1995: A broad implementation campaign in which dozens of NGOs were paid to design and produce materials for schools. Evaluations of this activity found that most primary and 25 percent of secondary schools claimed to integrate environmental education into their daily practice. However, there was evidence that there were wide differences in perception of the meaning of “environmental education” as a concept, and what this meant in practice.
- 1996: An initiative which had three aims: 1) to improve the quality of environmental education activities, rather than focusing on sheer quantity of environmental education projects; 2) to broaden the scope of environmental education across society; and 3) to enhance the professionalism of environmental education organisations.

The most important aspect of the last initiative was a shift in the methodology that policy interventions employed to effect change. Rather than focusing on achieving pre-set quantifiable targets (for example, as in the first two waves of initiatives), the third wave of initiatives aimed to create structures to support development of quality processes, dialogue, and education. Elliot (1999a, p. 11) describes the Netherlands' experience as illustrating:

...a gradual recognition by government of the limitations of an objectives model of educational development when it comes to quality enhancement. Moreover it suggests that such recognition stems from the emergence of complex environmental issues as an important focus for co-ordinated policy development across government departments.

A Teacher Education Initiative in the Netherlands

One initiative in the Netherlands sought to involve teacher education institutions in the implementation of environmental education into primary schools (Schuurmans, 1999). The aim of the project was to explore ways to implement environmental education into primary schools by developing a process which would also be suitable for implementing other forms of education into primary schools (for example, development education or consumer education).

Five teacher educators from different establishments were selected to form a project group. The group developed an approach called “school profiling”. Essentially, the “profiling” process required schools to ask themselves a series of questions to help them make decisions about what it was they felt was important for students to learn, and then to make changes to curriculum and
structures within the school in order to achieve those priorities. Depending on their own priorities, a school could be an environmental school, or something like a sporting school, or a technical school. In each case the “profiling” questions were the same:

- What ideal image do we have of the pupil leaving school after 8 years?
- In what ways does the culture of the school promote the pupil’s education?
- How is the characterisation of the school recognisable from the layout of the school and its surroundings?
- What are the main points of the school curriculum which characterise the choice that has been made?
- Which out-of-school contacts do we need to realise the type of education we desire?
- Which particular qualities does the characterisation require from individual teachers?

In the Netherlands project, the teacher educators drafted school profiles, and enlisted student teachers and primary schools to design and implement a “learning landscape” within a school which would fit with the school’s “profile”. Shuurmans (1999) describes some positive outcomes for teacher educators and student teachers who participated in this initiative. Student teachers appeared to have become confident and competent designers of good education, often exceeding the expectations of their lecturers. The impact on the schools is less clear; however it should be noted that the purpose of the project seems to have been to develop the professional capability of teacher educators and student teachers, and to develop and trial the “school profiling” process itself. The next planned step in this initiative was to infuse the idea of school profiling into the education of school principals.

Norway: a Systemic Approach to Environmental Education

Benedict (1999) describes Norway’s environmental education strategy as underpinned by a strong systemic focus. Benedict questions whether efforts to introduce environmental education into schools are themselves sustainable, in the absence of systemic changes in education systems. For example, many countries have put resources into implementing highly visible environmental education projects in schools. However, there is little evidence that such a “lighthouse” approach actually does lead to changes in educational practice that are widespread or sustainable over time (Benedict, 1999). The Norwegian education ministry has taken a strong leadership role in the support and institutionalisation of environmental education into mainstream schooling, and hosted a 1999 ENSI conference on this issue (Ministry of Education Research and Church Affairs (Norway), 1999). Norway has also assumed a large role in the Nordic MUVIN project (Environmental Education in the Nordic Countries – see Appendix 3).

The impetus for environmental education in Norway began in 1972 with the UN conference on the Human Environment in Stockholm (Christensen and Kristensen, 1996). In 1974, the national primary curriculum included a compulsory topic called “Protection and conservation of the environment”. Several other projects in the 1970s and 1980s resulted in the production of teaching materials for environmental education. From the late 1970s, Norwegian educational authorities emphasised the development of strategies for environmental education (Christensen and Kristensen, 1996). In response to the Brundtland report (WCED, 1987), in 1989 the Norwegian
government produced a white paper giving national guidelines for the development of environmental education. The Ministry of Church, Education and Research (KUF) has overall responsibility for environmental education. Steps taken by the KUF during the 1990s included:

- A 1991 ministerial strategy for putting into practice the WCED report, and a planning guide for in-service teacher development in environmental education.
- From 1992, a requirement for all pre-service teachers to take a course introducing them to the principles of environmental education.
- In 1994 and 1997, revisions of the national curriculum strengthening the natural sciences, and stating that project methodology and local work with environmental issues were to be included in schools.
- In 1994, all primary and secondary teachers were required to participate in a 40-hour in-service development programme in environmental education.

Responsibility for implementing the KUF programme for developing teacher proficiency in environmental education was delegated to regional offices, who were to work together with municipalities to involve all educational staff within their region (Christensen and Kristensen, 1996).

**Evaluation of Environmental Education in Norway**

As was the case for most European environmental education initiatives, by the early 1990s, there was still little in the way of evaluative research on the processes and qualities of environmental education in Norwegian schools. In 1992, Norwegian researchers associated with the MUVIN project embarked on a longitudinal study that aimed to give “a realistic description of environmental education” in the primary schools of two regions in Norway (Christensen and Kristensen, 1996, p. 6). The study was intended to assist with the evaluation of the national in-service teacher education programme, which would be implemented from 1994 onwards, by providing some baseline information with which to compare any subsequent changes stemming from the national programme. The research strategies for the evaluation included:

- studies of plans and documents implemented by local municipalities or schools as a result of the work of advisers and teachers involved in in-service professional development;
- surveys of headmasters, teachers, and pupils at over 300 schools; and
- in-depth case studies of two schools.

Results of baseline 1992–1994 research are reported in Christensen and Kristensen (1996).²⁰ Among the areas of interest to the researchers were:

- teachers’ proficiency in environmental education;
- topics covered in schools’ environmental teaching;
- the degree of co-operation with outside parties and local groups;

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²⁰ The final report for the study, which includes longitudinal aspects, was published in 1999 but is currently only available in Norwegian.
- school organisation and working methods in environmental education; and
- the degree of coverage of “political” topics.

In 1993/1994, questionnaires answered by 324 headmasters, 1563 teachers, and 508 6th and 9th grade students suggested that many teachers lacked proficiency in environmental education. For example, only about 10 percent of those surveyed had attended 40-hour courses. Topics most often covered in environmental education included “appreciation of nature”, “pollution”, and “ethics and values”. Low priority was given to topics such as regional planning, environmental legislation, the cultural environment, environmental conflicts, and economics. Schools also reported infrequent co-operation with outside groups or agencies. Co-operation most often occurred with municipal educational offices and other branches of local government, and least often with secondary schools, research institutes, or universities. Schools tended to put emphasis on practical work in environmental education. However, two-thirds of teachers reported seldom or never using project work in their general teaching, and several schools had project-based teaching that did not contain elements such as pupil governance and problem orientation.

In phase 2 of MUVIN (1995–1996), 34 schools were to undertake at least one project related to the theme of “conflicting interests in the use of natural resources” (Endresen, 1996). The process of project-oriented education was thought to be a new phenomenon for many Norwegian schools. In recognition of this, an external consultant was attached to each school to help them plan and carry out the projects according to their intentions:

An important element of the MUVIN projects is that they should not simply be a one-off event in the life of a school. The idea is that the experiences gained through MUVIN should lead to a changed educational practice throughout the school. The school administration is a central part of the effort. It must make sure that time is set aside for discussions with personnel, that the project is evaluated and that any new practices are published in the school's planning documents (Endresen, 1996).

Unfortunately, follow-up evaluations of the phase 2 MUVIN initiatives are currently only published in Norwegian and were not accessible for this review (Terje Kristensen, personal communication, October 2002).

**Austria: the Ecologisation of Schools**

The underpinning view of environmental education in Austria, as it is manifested through official Austrian governmental policies and programmes to support and promote environmental education, is one of “socio-ecological environmental education” (Rauch, 2002). That is, rather than seeking to indoctrinate students to perform environmentally sound behaviour, learners should be able to develop an understanding that environmental issues are structurally anchored in society, and therefore have to be understood as community issues with conflicting interests at several levels: individual, social, and structural.
Austria has been notable in its support and involvement in ENSI, and the Austrian “ecologisation of schools” (ECOLOG) project is one of the most written-about ENSI projects. The pilot phase of the project began in 1996 (phase 3 of ENSI) with 22 Austrian schools. The ECOLOG project is a good illustration of the Austrian approach to environmental education. The “ecologisation” movement also sits within the context of a wider trend in the 1990s towards decentralisation/de-bureaucratisation of schooling structures in central Europe (Elliot, 1999b; Rauch, 2002), and thus it has an implicit connection to a general European school reform agenda.

The principle behind the ecologisation of schools is that it requires three levels of change:

- At the pedagogical level, schools aim at creating stimulating and meaningful learning experiences and at involving pupils in ecological ways of thinking, acting and feeling in school, in their family and in the community.

- At the social/organisational level schools aim at building and cultivating a culture of communication and decision-making and at developing a social climate which is characterised by mutual recognition and respect.

- At the technical economic level schools aim at the ecologically sound and economic use of resources (Posch, 1999, p. 342).

These changes are considered to have three consequences for long-term educational policy development:

- At the level of the individual schools, it is the step from temporary individual initiatives to ecologically sustainable structures and to a combination of pedagogical, social and technical/economic initiatives.

- At the level of the educational system it is the step from pilot schools to an inherent feature of the system of education.

- At the level of competencies, it is the step from the competencies of a minority of teachers and head teachers, to an intrinsic professional feature of the teaching profession and of school management (Posch, 1999, p. 344).

To guide the development of the ECOLOG project, the Austrian Ministry of Education and Cultural Affairs initially commissioned a literature review of models and experience gained from existing school-based environmental projects in central Europe and England (Rauch, 1998, 2000). However, little research on whole-school environmental projects could be found in the published literature. Therefore, Rauch solicited unpublished data on school-based environmental education initiatives directly from schools, experts, and organisations, through the ENSI network. Texts

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21 In fact, the ENSI initiative was launched in response to a proposal put forward by the Austrian Minister of Education in 1984 that environmental education be a priority in future educational development (OECD/CERI 1995).

22 However, see Elliot (1999b) for a discussion of the essential differences between ENSI and mainstream school reform/school improvement movements.

23 This review also found it difficult to locate published material on the impacts and outcomes of whole-school approaches to environmental education.
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from nine countries were analysed, and also teachers, principals, students, school caretakers, and environmental education experts in schools and teacher institutions in Austria, Germany, Finland, and Scotland were interviewed. This information was synthesised to distil some key features purported to define and support the ecologisation of schools (Table 6).

Table 6

Features of the ecologisation of schools (from Rauch, 2000, p. 253)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecologisation is understood as a comprehensive project and is integrated in the material household management of the school, with goals and values, as part of teaching and learning at school.</td>
<td></td>
</tr>
<tr>
<td>Action-orientated and reflective forms of teaching are developed and applied, where pupils learn actively (e.g. by generating local knowledge) and take over responsibility for shaping things or processes.</td>
<td></td>
</tr>
<tr>
<td>Ecologisation is organisational development that is characterised by the following: communication, co-operation and teamwork (including a conflict management culture) of all players (head teacher, teachers, pupils, non-teaching staff, external persons), as well as joint assignment of decision-making powers and responsibilities. Schools see themselves as learning organisations.</td>
<td></td>
</tr>
<tr>
<td>The development process is subject to continuing on-site evaluation (quality development).</td>
<td></td>
</tr>
<tr>
<td>Initiatives are supported. The main elements of a supporting structure are material and non-material incentives, a supportive and encouraging head teacher and school administration, external experts, who may be consulted in case of need, internal counselling teachers or co-ordinators, and the chance to exchange experiences with teachers and schools at regional, national and international levels.</td>
<td></td>
</tr>
<tr>
<td>The development of a constructive relationship with the local community or neighbourhood (opening-up of the school to the outside world), with the school as a place of teaching and learning for the local community.</td>
<td></td>
</tr>
</tbody>
</table>

Evaluation of the Ecologisation of Schools

In Austria there was an explicit emphasis on teachers producing written action-research reports, so that these could be used to inform ongoing policy and practice in environmental education. Two primary teachers’ action-research case studies of their schools’ involvement in the ECOLOG project (Breidler, 1999; Eder, 1999) provide narrative accounts of the social/organisational level changes that occurred within their schools over two years. The focus of both narratives is on the social-organisational level of changes within the school. For example, Eder (1999) describes her school’s “ecologisation” in terms of increased teamwork between teachers, more positive relationships between pupils, teachers, and the school caretaker, and more constructive working relationships between the school community, parents, the local community, and the local mayor. At another school, Breidler (1999) describes how, over two years, teaching staff, caretakers, and parents were engaged in determining the nature and process for a school-wide ecological initiative.

A weakness of these two case studies is that there is no direct or critical evaluation of how the school’s “ecologisation” process translated into environmental education learning opportunities or outcomes for students. The Austrian eco-school model appears to be consistent with the original ENSI pedagogical agenda in theory, but from teachers’ case studies, it is difficult to know for
certain the extent to which it supports it in practice. For example, it is unclear to what degree students were engaged in decision-making processes in their school. Elliot (1999b, p. 337) cites an Austrian evaluation report which suggests that many of the school initiatives focused primarily on “ecological goals”, interpreted in a narrow sense as the cost-efficient use of physical resources, rather than broader “socio-ecological goals” of environmental education, related to the development of students’ critical thinking skills and willingness to take responsibility.

**Australia: National and State-Level Strategies for Environmental Education**

In 2000, Environment Australia published a national strategy for environmental education *Environmental education for a sustainable future* (Environment Australia, 2000). The purpose of the plan was to address the current needs of environmental education in Australia, to provide leadership to the many different sectors involved in environmental education activities and to promote better co-ordination of these activities, and to provide a starting point for enhancing Australia’s ecologically sustainable development. Two bodies were established to support the strategy: the National Environmental Education Council (NEEC), a non-statutory body to provide expert advice to the Minister for the Environment and Heritage and Environment Australia on the effectiveness and profile of environmental education activities; and the Australian Environmental Education Foundation (AEEF), an independent research and professional development foundation, to be hosted by a university or consortium of universities (Environment Australia, 2000).

Specific environmental education policies and practices vary from state to state in Australia. Information about three states – New South Wales, Queensland, and Victoria – is given below.

**New South Wales**

The state of New South Wales has been particularly active in developing environmental education policy. In 1998 the New South Wales Council on Environmental Education (NSW CEE) was established to advise the state government on strategic directions for environmental education. The council undertook the preparation of a three-year plan for environmental education in New South Wales (NSW Council on Environmental Education, 2001). Following a review of environmental education in New South Wales, the NSW CEE plan set out a strategic framework which aims to address the needs of both environmental education providers (including formal and non-formal education providers), and those who require access to environmental education. The plan aims:

> …to achieve effective and integrated environmental education which builds the capacity of the people of NSW to be informed and active participants in moving society towards sustainability (NSW Council on Environmental Education, 2001, p.iii).

New South Wales has several mandatory policies on environmental education for schools. In 1989, the New South Wales Department of Education and Training mandated *Environmental Education Curriculum Statement K-12*, making it mandatory for New South Wales government schools to programme for environmental education in their curriculum. In a policy mandated in
2001, all schools were required to develop a school environmental management plan (SEMP) describing their actions for addressing environmental education (NSW DET, 2001). Schools’ SEMP must cover three sections:

- Curriculum
- Management of resources
- Management of school grounds.

Currently, New South Wales is the only Australian state to have such a mandatory policy (Syd Smith, personal communication, 30 September 2002). A 164-page guide, Implementing the environmental education policy in your school (NSW DET, 2001), advises schools on how to develop and implement their SEMP.

Another recent initiative of the NSW DET is to support the development of “learnscapes” in selected New South Wales schools. Learnscapes are school grounds features, for example, an edible garden, or a wildlife corridor, where a learning programme has been designed to permit users to interact with the environment. In 1998, The School Learnscapes Trust was established in New South Wales to promote and develop the concept of learnscapes and implement pilot projects. The trust, in association with the Environmental Education Unit of the NSW DET, provided support to 20 schools identified by the department to receive support during 1998 and 1999 (School Learnscapes Trust, 2000). The Learnscapes project is also linked to ENSI. In 2001, teachers, senior educationalists, and landscape architects from 13 countries from Asia Pacific, Europe, and North/Central America met in Austria for an international “Learnscapes Across the Globe” workshop. The workshop was organised by ENSI in co-operation with the OECD Programme on Educational Buildings (PEB) and New South Wales Department of Education and Training, to share experiences from pilot “learnscape” projects in Australia, Finland, and Austria (ENSI, 2002).

Learnscapes are intended to be more than just features of the school grounds. Rather, the perceived value of the learnscape lies in the planning, development and maintenance process. In principle, the learnscape:

…is a means of implementing environmental education across the curriculum and a step to deeper co-operation between schools and their communities to fulfil the concepts of the regional ecological sustainable development (ENSI, 2002).

NSW DET curriculum and policy statements indicate that learnscapes are a way of strengthening environmental education in schools.

Evaluating Teachers’ Perceptions of the “Learnscape”

Skamp and Bergmann (2001) interviewed six teachers at a primary school and 20 teachers at a secondary school in New South Wales, to investigate teachers’ perceptions of the value and impact of learnscapes in their schools, and the extent to which teachers used the learnscapes. Both

24 Implemented in 2002.
schools were in the early stages of a learnscapes project. At the time of the study, learnscapes were not documented in either of the school’s KLA\textsuperscript{25} policies or programmes, and only three teachers referred to them in their written teaching plans. While the majority of teachers were strongly supportive of the learnscapes projects in their school, Skamp and Bergmann found considerable variation in teachers’ conceptions of them. In general, most teachers were not using the learnscapes regularly. Most secondary teachers believed that the learnscapes project had not directly influenced their teaching practice, although some had used the outdoors as an alternative classroom.

Although most teachers associated the learnscapes with student learning, during interviews they made only occasional and oblique references to environmental education in reference to the learnscapes. Among the student benefits from the learnscapes mentioned by teachers were that students would: enjoy their learning more; better understand content or skills through application; have a sense of ownership of their learning; and take pride in their contribution to their environment. However, only between 30–40 percent of teachers referred to the development of learnscapes in terms of a learning process for students. Student involvement in learnscapes development involved either membership in a small, school-wide learnscapes-planning group (for a few students), or participation in surveys seeking preferences for school ground changes (for most students). Teachers thought that involvement in the planning group had helped students learn co-operative skills, how to become unified as a group, use lateral thinking, and consider practicalities in planning. However, most teachers did not relate learnscapes process actions to the action strategies for environmental education as described in the state’s environmental education curriculum documents. That is, students’ “acting locally” in the development and use of the learnscapes was not consciously linked to “thinking globally” about larger environmental and sustainability issues (Skamp and Bergmann, 2001, p. 353).

In general, teachers in the two schools were not aware of the state-level or school-level environmental education documentation. Most teachers were not aware of the range of officially promoted environmental education learning outcomes (i.e., knowledge and understanding, skills, attitudes, and actions). When asked which of these they would have focused on with the learnscapes, four (of 26) agreed that all four types of outcome would be appropriate, and five specifically selected knowledge and understanding and/or skills.

Skamp and Bergmann identified a number of barriers to teachers’ use of the learnscapes. These included the view that some topics are not suited to learnscapes; that management of students outdoors is difficult; uncertainty about how to use/incorporate the learnscapes; a lack of appreciation of the relationship between environmental education outcomes and learnscapes; and a lack of priority given to environmental education within the overall school curriculum. Skamp and Bergmann question whether most teachers saw the learnscapes only as a “feature”, rather than as a “process”. Skamp and Bergmann conclude that this is a critical issue to be considered in future efforts to support schools embarking on learnscapes or other school ground projects. They suggest that it is important to explicitly relate the action strategies of the learnscapes process to the action strategies promoted in environmental education.

\textsuperscript{25} Key learning area.
Queensland

Griffith University’s strong programmes of graduate and post-graduate study in environmental education have produced a number of studies of environmental education practices in Queensland schools and classrooms. Most of the studies reviewed in this section were conducted through the Griffith programme. Together, these studies constitute a reasonably comprehensive picture of developments in environmental education policy and practice in Queensland during the last twelve years.

In 1989, the Queensland Department of Education produced a policy document *Environmental Education in Queensland Schools*. The following year, Spork (1990) surveyed 300 state primary teachers in the Brisbane North region of Queensland, to investigate current practices, professional preparation to teach environmental education, attitudes towards environmental education, concerns about implementing environmental education, and factors influencing teachers’ current environmental education practices. Survey responses indicated that most Queensland classroom programmes emphasised education *in* and *about* the environment (for example, including “information about the environment” and “positive attitudes to the environment” in their programmes) and de-emphasised aspects of education *for* the environment (for example, “taking environmental action”). The vast majority of teachers (86 percent) had had no training in the area of environmental education. Teachers made minimal use of an existing regional environmental education consultancy service, and few had seen or used the *Environmental Education in Queensland Schools* policy document. Nearly 80 percent reported that implementation of environmental education programmes was left up to individual teachers. School co-ordination of environmental education initiatives/programmes occurred only in a very limited number of cases.

By 1993, several key events had helped to open up the opportunities for the development of environmental education in Queensland schools (Heck, 1993). For example, the Department of Education’s *Corporate Plan 1993–1997* included an educational priority on Active and Informed Citizenship, and in 1993 an accompanying document called *Active and Informed Citizenship: information for teachers* was produced. In 1992, the department issued a guideline called *Teaching for Ecological Sustainable Development* to all geography and economics teachers in Queensland. Finally, the department produced a document in 1993, *P-12 environmental education curriculum guide*, which superseded the 1989 environmental education policy statement. However, a constraint on the effectiveness of this document was the small number of copies provided to each school, and a lack of associated in-service training or teacher support (Heck, 1993).

In 1996, Queensland’s Curriculum Council recommended that the state adopt a common curriculum for the compulsory years of schooling, comprising eight key learning areas: English, science, languages other than English, health and physical education, mathematics, technology, the arts, and studies of society and the environment (SOSE) (Queensland School Curriculum Council, 1997). The key learning area of SOSE:

…centres on human fascination with the way people interact with each other and with environments. Studies of Society and Environment involves investigations of controversial and challenging issues and promotes critical thinking in the development of optimistic future visions. This key learning area encourages young people to be active participants in their world. (Queensland School Curriculum Council, 2000, p. 1).
The key *values*, *processes*, and *concepts* for SOSE outlined in the Year 1–10 syllabus are shown in Table 7.

**Table 7**

*Values, processes, and concepts for SOSE in the Queensland Syllabus*

<table>
<thead>
<tr>
<th>The key values of Studies of Society and Environment are:</th>
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<tbody>
<tr>
<td>• democratic process;</td>
</tr>
<tr>
<td>• social justice;</td>
</tr>
<tr>
<td>• ecological and economic sustainability;</td>
</tr>
<tr>
<td>• peace.</td>
</tr>
</tbody>
</table>

The area also draws on social and environmental inquiry *processes*. These processes, derived from various disciplines and studies, are expressed as:

| • investigating;                                        |
| • creating;                                             |
| • participating;                                        |
| • communicating;                                        |
| • reflecting.                                           |

The *concepts* that underpin this key learning area are drawn from various disciplines and studies and provide knowledge about people and their environments that is important for students to understand. These concepts are associated with the values and processes named above. For example:

**Investigating**: evidence, the centrality of environments, the uniqueness of human events, introspection, empathy and field study.

**Creating**: visualisation, lateral thought, enterprise and initiative.

**Participating**: negotiation, tolerance, respect, equality and advocacy.

**Communicating**: clarification, interpretation, audience and argument.

**Reflecting**: introspection, metacognition and visioning.

**Democratic process**: democracy, constitutional government and human rights.

**Social justice**: equity, diversity and social sustainability.

**Ecological and economic sustainability**: interdependence, productivity, ethics and stewardship.

**Peace**: belonging, hope, optimism, reconciliation and co-operation.

**Research on Environmental Education in Queensland Secondary Schools**

Heck (1993) and Hart (1998) both carried out action-research studies on environmental education in the secondary classrooms in which they taught. Both studies occurred prior to the release of the SOSE syllabus.

Heck (1993) explored the relationship between environmental education and active and informed citizenship opportunities in an action-research case study involving her own secondary school geography class. In one unit, Year 12 students used environmental enquiry processes to
investigate the impact of a planned lakeside residential development in their local area. In the first half of the 12-lesson unit, students drafted an environmental impact statement report and an oral presentation. In the second part of the unit, students role-played a public inquiry into the lakeside development. The objectives of the unit were for students to take on the role of community members, and (in role-play) vote as a member of the local council for or against the proposal. The unit was also intended to help students develop an empathy for the attitudes, values, knowledge, and participation of the group they were representing, to evaluate the participation strategies of community groups, and to consider their own attitudes and values towards the issue. In the unit evaluation, Heck’s students felt that the unit had developed them in their role as active environmental citizens. For example, through the discussion and role-play activities they had the opportunity for their own views and attitudes to be challenged. Students felt the unit had helped them to understand other people’s points of view, how decision-making processes work, and how to participate and engage in discussion on an environmental issue. In a second unit, students prepared an environmental lifestyle report to study the environmental impact of their personal or family lifestyle. Students were asked to identify an aspect of their lifestyle that had links with global and national environmental issues, to research possible strategies/alternative solutions, and then develop personal and social action plans to address the problem within their home and community. Students were also required to identify ways in which they would evaluate and monitor their plans. In an evaluation of the unit, Heck found that the majority of students felt the unit had developed them in their role as an active citizen, and that it had helped them to understand the importance of expressing an opinion. They also described increased awareness of environmental issues and felt it was important that the subject matter of the unit had involved them personally. However, not all students carried out their personal action plans, citing “irresponsibility, laziness, lack of awareness, lack of money and lack of motivation” as reasons (Heck, 1993, p. 155). Only one student showed evidence of carrying out a social action, in this case, writing letters to a manufacturer to request a reduction of unnecessary packaging.

Hart (1998) sought to investigate the extent to which a pedagogical approach involving “envisioning the future”, might contribute to changes in the environmental values and actions of Year 10 social studies students in a small rural community in Queensland. Hart studied his own Year 10 class while experimenting with a “future studies” teaching approach to environmental education. A futures approach aims to help people clarify their hopes and fears about the future, in order to move beyond passive forecasting to the generation of preferred futures as a basis for planning and action. During the five-week teaching unit, students were first introduced to concepts of sustainability, and considered some examples of global environmental sustainability issues. The teaching encouraged students to envision various possible scenarios for the future: for themselves, for the environment, and for society. A series of lessons was designed to develop students’ knowledge base of particular issues such as Australia’s historical testing of nuclear weapons, and patterns of energy production and consumption. Students also engaged in activities such as representing the perspective of a non-human species at a “Council of All Beings”, and corresponding with a Japanese teacher and his class about the after-effects of the atomic bomb. In the final week of the teaching unit, students were asked to develop an individual and a collective vision of a preferable 2030. Students then had to brainstorm actions which they could take now, and in the future:

After a large list, students decided that they really wanted to 'speak out' about their concerns for the future, but they felt that they needed to research specific topics, such as a logging [and] uranium mining and would produce letters to
Hart collected data during the unit through students’ “futures journals”, participant observations, and focus group interviews with students. Overall, Hart found exercises requiring students to envision a preferable/desirable future had varying success. While many students seemed to learn a great deal and were concerned and wanted to take action towards a preferable future, other students struggled to develop concrete images of the future and some resisted the study. About a third of students were unable or unwilling to visualise a preferable future. Some students showed evidence of a shift in attitude during the course of the unit, from initial cynicism, to a desire to take positive environmental actions. However, several students who wrote to politicians expressing their concerns were somewhat deflated by the responses to their letters. Hart also found that:

…knowledge-based lessons, such as those on global population and nuclear weapons, left students deflated when the lessons offered no agency or futures tools to see beyond their own fears (Hart, 1998, p. 106).

Hart interpreted students’ comments and actions to indicate that the future studies teaching approach made them feel valued and more able to act for the future, and that students developed and demonstrated a new level of respect for the individual worth of each other. The futures study approach also appeared to prompt some students in the study to became critical of their current schooling:

Schools are falling behind the times, I reckon they don’t prepare us for the future, maybe a 1950’s future but not the 1990s we don’t learn enough about the environment and what we can do (Rory, student cited in Hart, 1998, p. 98).

Both Heck’s (1993) and Hart’s (1998) studies involved collection of data during and shortly after the teaching unit. Neither included further longitudinal evidence about subsequent effects or changes in students’ environmental behaviours or actions as a result of the unit. A larger study by Connell (1997) used focus group interviews to investigate 120 16- and 17-year-old students’ attitudes to the environment over a one-year period. However, unlike Heck’s and Hart’s studies, students’ views and attitudes in Connell’s research were not studied in the context of an environmental education teaching programme. The study involved students in high-performing schools in Brisbane and Melbourne, and was linked with the wider study of young people’s attitudes to the environment in Asia-Pacific, described in the first part of this chapter (Yencken et al., 2000). Connell found a number of patterns of similarity in the students’ views and attitudes. For example, in the absence of prompting, students’ concerns for the future centred on their own individual futures, rather than the future of society or the environment. The environmental problems that students were most concerned about were local pollution and urban development. Students thought environmental problems arose primarily from the attitudes and behaviours of people, and the tendency of governments and industry to put economic profitability ahead of environmental concerns. Students saw schools as a trustworthy source of environmental information, but most were dissatisfied with the lack of environmental education in the curriculum. Students believed that major changes in people’s attitudes and lifestyle were needed to care of the environment, and that governments and industries needed to manage the environment more responsibly. However, the young people generally failed to acknowledge how their own lifestyles might contribute to environmental problems, and few seemed aware of the
impacts of social or political structures in shaping people’s attitudes, values, and behaviours towards the environment. Connell also found that students seemed to suffer from a sense of “action paralysis” (Connell, 1997), believing that the only things they could do for the environment were small things such as recycling. Most students had never participated in public environmental actions and were cynical about the value and effectiveness of activities such as writing letters. They did not feel that they could currently influence the actions of other people, nor did they think they would have much more power to do so as adults.

Research on Environmental Education in Queensland Primary Schools

A study in the mid-1990s evaluated an ongoing participatory action-research project at a Brisbane primary school (Davis, 1994). The school was part of a “Healthy Schools” programme, and had been involved in the project for 18 months at the time of the research.26 The school had focused its Healthy Schools initiative on health and environment issues related to the school’s outdoor environment and the project was initially brought to the school by parents, rather than teachers. With the approval of the principal and parents’ association, two parents became facilitators of a grounds committee for the project. Teachers, students, and parents were engaged in visioning workshops to establish a plan and process for a re-development of the school grounds, which many perceived as sterile, and not effective in promoting pro-social behaviour amongst children. Davis’ research sought to determine factors that led teachers and parents to engage in change-making processes within their school, to determine hurdles/barriers that mitigated against participation and continuing involvement, and to explore the potential of shared decision-making both inside and outside the school context. Davis found that parents became involved primarily because of their perceptions about the shortcomings of the existing school grounds, but also due to an increased environmental awareness. Teachers became involved for similar reasons, but also because the project provided a way to put processes of schooling devolution into practice. Barriers to participation for parents included a sense that, within existing schooling structures, their role in school decision-making processes was marginal. Parents in the study saw opportunities for the project to widen the school curriculum to make the ideas and workings of participatory democracy more evident to children. However, while some teachers were highly involved and supportive of the project, others appeared disinterested or demonstrated opposition to the project. Davis categorised parents’ perceived barriers to participation to include:

- “teachers as experts”: where teachers were felt to oppose the involvement of “non-expert” parents in school matters;
- “teachers as fence-sitters”: where teachers were felt to be disengaged with the project; and
- “teachers as gatekeepers”: where some parents (and teachers) felt that there had been lost opportunities for re-orienting the classroom curriculum to engage with the school grounds development, and for greater involvement of children in decision-making processes.

26 The Healthy Schools approach is derived from the World Health Organisation (WHO) programme of Health Promoting Schools. Healthy Schools seek to review, create, and improve the physical and social environments of school communities through collaborative, community-based processes which link health, environmental, and educational concerns.
However, teachers did indicate that they saw ways of making greater connections between the curriculum and school grounds development in the future (Davis, 1994).

**Victoria**

In 1987 the Victorian government announced full support for the establishment of environmental education in Victorian schools (Gough, 1997). A state conservation strategy was produced stating that environmental education should be part of the school curriculum and that schools should develop their own policies for environmental education. During the 1990s the Victorian Ministry of Education launched a policy which encouraged schools to develop an environmental education curriculum that involved all students throughout their years of schooling, and the entire school community. The policy recognised that environmental education could be a separate subject or incorporated across a number of curriculum areas (Gough, 1997).

A strong force in the development of environmental education/education for sustainability in the state of Victoria is the Gould League, an NGO (Armstrong, 2001). One major Victorian programme was initiated following a 1996 study conducted by the Gould League (Gould League, 2002), which found that on average, schools were throwing away 33 tonnes of garbage per school per year, at an average cost of $1,200 per year. The study suggested that if all Victorian schools were to reduce their waste by half, there was the potential to save $1.4 million per year in waste disposal costs, and to prevent 39 000 tonnes of rubbish going to landfill per year. A programme called Waste Wise Schools was established in 1998:

…to help schools achieve a whole-school approach to waste and litter education, integrating curriculum and waste-conscious school operations (Gould League, 2002).

The Waste Wise programme is managed by the Gould League and funded by EcoRecycle Victoria, a government agency established in 1996 through amendments to the Victorian Environment Protection Act.²⁷ By June 2000, 516 teachers from 462 schools had participated in Waste Wise workshops, and 60 schools had been invited to become Waste Wise support schools, a form of “lighthouse” school (Armstrong, 2000). An evaluation of the project in 2002 focused on two questions: 1) to what extent do waste wise practices “naturally” occur in schools?; and 2) how successful has the programme been in developing Waste Wise programmes in schools? Reanalysis of survey data collected from schools during the 5 years of the programmes indicated that most schools were not involved in good waste management practices prior to attending a Waste Wise workshop. A survey of teachers who had attended the original waste wise workshops in 1998 found that a waste wise programme was still operating in 82 percent of teachers’ schools (Waste Wise Schools, 2002). The evaluation noted that the retention of waste wise programmes was most encouraging given that most teachers who participated in the workshop had left the school, or were no longer part of the waste wise programme. This was taken to indicate that the waste wise ethos had been incorporated into the culture of these schools.

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²⁷ EcoRecycle Victoria is responsible for minimising the creation of waste, promoting the sustainable use of resources, and better management of waste disposal in Victoria.
England\textsuperscript{28}: No Mandatory Policy for Environmental Education in Schools

Two major central government ministries have an interest in environmental education in schools in England; the ministries of Education (The Department of Education and Employment [DfEE]) and Environment (The Department of the Environment, Transport and the Regions [DETR]) (Gayford, 2000).\textsuperscript{29} Like New Zealand, environmental education is not a national curriculum subject in England. Rather, the policy is to teach it across the curriculum (especially in the subject areas of science and geography).

Environmental Education and the National Curriculum

When the National Curriculum was introduced in England and Wales in 1990, environmental education was identified as one of five cross-curricular themes. However, the sheer volume of change that schools underwent to implement the new National Curriculum quickly led to a marginalisation of all the non-statutory, cross-curricular themes, as schools prioritised their activities based on the new assessment and accountability requirements (Scott and Reid, 1998). Some of these demands were reduced when implementation of the National Curriculum was formally reviewed in 1994, leading to a reduction in the content and time-allocation requirements of the statutory curriculum on schools. The next few years saw a flurry of governmental policy activity relating to environmental education. In 1996, the Schools Curriculum and Assessment Authority (SCAA) published a government document for teaching environmental education within national curriculum subjects: \textit{Teaching Environmental Matters through the National Curriculum}.

In England and Wales there is no statutory policy for schools to develop an environmental education policy. However, in 1996 the Council for Environmental Education (CEE), an NGO, produced a document \textit{Our world – our responsibility: environmental education, a practical guide} (RSBP/CEE, 1996). This document was intended to give schools guidance on how to develop a whole-school environmental education policy, and was written with approval of DfEE to coincide with and complement \textit{Teaching Environmental Matters through the National Curriculum} (Gayford, 2000).

From Environmental Education to Education for Sustainable Development

As in many other countries, the language of environmental education in the UK has shifted towards terms like “education for sustainable development” or “education for sustainability”. In 1998, a Panel for Education for Sustainable Development (PESD) was established. In a report to

\textsuperscript{28} This country profile applies primarily to England, although some policies apply across the UK. Overall policy and funding for education in the UK is determined by four major government departments: the Department for Education and Employment (DfEE) in England, the Welsh Office Education Department (WOED) in Wales, the Scottish Executive Education Department (SEED) in Scotland, and in Northern Ireland the Department of Education for Northern Ireland (DENI). The education systems of England, Wales, and Northern Ireland are broadly similar. The education system in Scotland has, however, always been completely separate with its own laws and practices.

\textsuperscript{29} Reviewer comment: \textit{In particular co-ordination between different ministries...}
DfEE/QCA (Panel for Education for Sustainable Development, 1998), the panel noted that despite several mandates for education for sustainable development, environmental education had a marginal presence in UK schools. For example, a minority of schools have a written environmental education policy. The panel suggested three reasons for this:

1. Education for sustainable development tended to be practised by a minority who already understood or had enthusiasm for it.
2. Teacher education courses do very little to train people in this approach.
3. Education for sustainable development has no statutory status.

The panel’s report sought to make the meaning of education for sustainable development “sufficiently clear to enable closure of long-standing gap between official endorsement and practical educational policy in this area of education” (Panel for Education for Sustainable Development, 1998, p. 2). In May 1999, the UK Government launched its White Paper – *A strategy for sustainable development for the UK*. This paper announced that the British Government Panel would be subsumed, from the beginning of 2000, into a new Sustainable Development Commission (British Government Panel on Sustainable Development, 1999). The Commission published its first two-year work programme in April 2001. However, it is unclear whether this work programme includes activities linked to the education sector.

### The Role of NGOs in Environmental Education in England and Wales

Non-governmental organisations have been important in the support of environmental education in UK schools. However, as a varied group of organisations with a range of specific environmental issues, it can be difficult to co-ordinate the interactions of NGOs with schools (Gayford, 2000). In 1999, the DETR and DfEE initiated a project called Supporting Sustainable Development Through Educational Resources. The CEE was commissioned to develop a voluntary code of practice and quality for the producers of environmental education materials, and a companion publication *Sustainable Development; A Guide to Selecting Educational Resources*, was produced to assist teachers in the selection of resources for environmental education/education for sustainable development.

### Evaluation of the Impacts of Environmental Education Policy in England and Wales

Scott and Reid (1998) assert that attempts by central and local government, and other environmental organisations to stimulate and steer environmental education in English and Welsh schools for the past 25 years have achieved only isolated pockets of success. Even in cases where schools have adopted environmental education:

...there is rarely a whole-school, root and branch approach with two-way links to community activity and nowhere does any of this seem to have been done over so prolonged a time as to allow its effects to be seen in the changed awareness’ and dispositions of the broad populations leaving schools as environmentally educated young people (Scott and Reid, 1998, p. 214).
Scott and Reid argue that the policy shifts of the mid-1990s amount to an attempt at “revisioning” environmental education in schools, by seeking to redefine the relationship between environmental education and the national curriculum. They identify a marked government policy shift in *Teaching Environmental Matters through the National Curriculum* (SCAA, 1996), which indicates for the first time that it is schools’ own responsibility to decide whether, and how, to take environmental education in their school beyond the statued bare minimum.

The government stance is clear: environmental education is in the statutory National Curriculum and space has been cleared in the 1994 curriculum review for schools to pursue their own concerns and shape their own curricula: the agenda is in schools’ hands (Scott and Reid, 1998, p. 218).

Unfortunately, Scott and Reid suggest these policies are unlikely to be effective unless schools are provided with better advice and support. They argue that existing documents like *Teaching Environmental Matters through the National Curriculum* (SCAA, 1996) and *Our world, our responsibility* (RSBP/CEE, 1996) fail to help schools identify how environmental education policies might be established, developed, and achieved. In particular, they give inadequate guidance for schools in terms of: visioning – how do you (the school community) set about determining what your environmental education goals should be?; implementation – having established your goals, how might you set about achieving them?; and holism – so that you educate others in a way that increases your own understanding and wisdom. Unless these areas are addressed, Scott and Reid doubt that the government’s espoused environmental education policies can become policies in use by schools.

USA: Issues for State-Level Support of Environmental Education

It is hard to establish an overall picture of environmental education policy, curriculum, and practice in the United States due to the many layers of division (e.g., between states, school districts, etc.) across the United States' educational system. This country profile summarises some national studies that have looked at the state-level status of environmental education, and then describes environmental education policy, curriculum, and practice in one state, Wisconsin.

Environmental Education Across the States

Several large studies in the United States have focused on the state-level status of environmental education. In 1994, Ruskey and Wilke developed a model for a comprehensive state-level environmental education that recommended 16 programme, structure, and funding components. In 1995, a national survey was mailed to state environmental education “leaders” to establish baseline data about environmental education programme, structure, and funding in the 50 states. In 1998, Ruskey, Wilke, and Beasley (2001) surveyed to update the 1995 data. In the second survey, Ruskey et al. (2001) added seven new components to the model. Comparison of 1995 and 1998 data suggested that programme components were in a state of development/increase in many states. The components of Ruskey et al.’s model are shown in Table 8.

McKeown-Ice (2000) surveyed 446 teacher-training institutions across the United States. The survey found that about half the students in pre-service teacher education were exposed to environmental education, and that most institutions had not “institutionalised” their commitment
Environmental education in New Zealand schools

...to environmental education in the same way that they have done for other subjects such as reading, science, and special education. For example, the survey found that few institutions required students to complete a course in environmental education. It appeared that environmental education was driven by one person at many institutions.

Table 8

*Components of a model for state-level environmental education support* (Ruskey et al., 2001)

<table>
<thead>
<tr>
<th>Program Components</th>
<th>Original 1994 Components</th>
<th>Structure Components</th>
<th>New Components Added in 1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>State EE master plan</td>
<td>State EE board or advisory council</td>
<td>State EE office</td>
<td>Train-the-trainers of K-12 educators</td>
</tr>
<tr>
<td>K-12 EE instruction requirements</td>
<td>State-level EE centers/regional offices</td>
<td>State interagency committee</td>
<td>Train-the-trainers of nonformal educators</td>
</tr>
<tr>
<td>Co-ordinated teacher in-service</td>
<td>State EE association</td>
<td>Computerised networking system for EE materials &amp; services</td>
<td>Train-the-trainers of university faculty</td>
</tr>
<tr>
<td>Required EE training for teacher certification or licensing</td>
<td>EE learning objectives/outcomes</td>
<td>EE correlations to state standards</td>
<td>Annual EE conference</td>
</tr>
<tr>
<td>State EE curriculum guide</td>
<td>State supported EE grants program</td>
<td>EE model schools</td>
<td></td>
</tr>
<tr>
<td>EE learning objectives/outcomes</td>
<td>State assessment that includes EE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Environmental Education in Wisconsin

In 1998, Wisconsin had in place 20 of the 23 components judged by Ruskey et al. (2001) to be necessary to support environmental education (shown in Table 8) (http://www.uwsp.edu/cnr/neeap/statusofee/states98/WIresults.htm).

In 1985, the Wisconsin Department of Public Instruction mandated that all teachers preparing to teach in early childhood, primary education, agriculture, science, or social studies, must achieve “environmental education competencies” before they are certificated (Lane and Wilke, 1996). In 1990, the state also mandated that sequential environmental education curriculum plans be developed, implemented, and evaluated by each school district. However, until 1992, no formal assessment had been conducted of the extent to which these mandates have been effective (Lane and Wilke, 1996).

A survey by Lane and Wilke found that in spite of the 1985 mandate, a large number of teachers were still being certified in Wisconsin without environmental education training, and many school districts had not implemented environmental education curriculum plans despite the 1990 mandate. A quarter of Wisconsin teachers who reported teaching about the environment were...
certified in 1985 or after and thus would have been subject to the 1985 teacher education mandate. However, comparisons of their responses, compared with teachers certified prior to that time, showed no significant differences in teachers’ “competencies, attitudes and class time” for environmental education as measured by the survey instrument.

To explain this lack of effect, the authors suggested two possibilities: first, that teachers certificated prior to 1985 could have developed environmental education competencies through in-service courses and post-graduate environmental education, or second, that the post-1985 courses did not prepare teachers adequately to teach environmental education. More teachers trained after 1985 reported receiving pre-service environmental education (46 percent) than teachers trained pre-1985 (16.6 percent). Teachers who reported having pre-service environmental education had better perceptions of their competencies and amount of time spent on environmental education than those who hadn’t. However, it was concerning that more than half of the teachers trained after the 1985 mandate did not report receiving environmental education pre-service teacher education. Lane and Wilke suggest this could be because pre-service institutions infused environmental education concepts into other courses (therefore the environmental education was less noticeable to training teachers), or that training teachers forgot they had been in environmental education courses. Either way, it was not an encouraging sign.

Regarding the 1990 Curriculum mandate plan, Lane and Wilke found that:

- Only 30 percent of teachers reported their district has a curriculum plan.
- Almost 75 percent of teachers who taught about the environment reported not being involved in developing and implementing their environmental education curriculum plan.
- Sixty percent reported never referring to the plan.

However, having a plan was found to positively correlate with teachers’ positive perceptions, competencies, and attitudes to environmental education.

**Summary of the Six Country Profiles**

**Netherlands**

The Netherlands country profile suggests that quality enhancement of environmental education requires a co-ordinated approach across government and society. In the Netherlands, this is said to have led to a “process model” rather than an “implementation model” of environmental education development. The process-based approach, which focuses on enhancing the professionalism of those contributing to environmental education, appears to have produced some innovative approaches that could have positive spin-offs for schools, when schools are themselves involved in the “process”. For example, one innovative project, the “school profiling” approach, was developed as an exercise to enhance the professional development of teacher educators and pre-service teachers. However, this approach could provide a useful model for schools on how to review and reshape their current approaches to teaching and learning, development and management of school grounds, and the enacted culture of the school, in order to reflect the schools' self-determined educational and social goals and priorities.
Norway

The Norway country profile shows evidence of strong central leadership and a co-ordinated plan for environmental education development in schools. Steps taken to support this included the introduction of compulsory environmental education for pre-service teachers, revisions to the national curriculum, and a mandatory in-service development programme for teachers. Baseline data was collected on environmental education in primary schools in two regions prior to the introduction of the mandatory in-service teacher education programme. This was used for comparing more recent data to evaluate the programme.\(^{30}\)

Austria

The Austrian “ecologisation of schools” represents a whole-school environmental education approach associated with teacher action-research. At the beginning of the project, the Austrian government commissioned a literature review of models and experiences gained from other whole-school approaches to environmental education but could find little published information. Therefore, information about whole-school approaches was solicited directly from schools, teachers, experts, and other organisations in a variety of European countries. The “ecologisation of schools” is deemed to require both pedagogical changes and school organisation changes in order to achieve “sociological” as well as “ecological” outcomes. However, analyses of teachers’ action-research reports from this initiative suggest a need for further critical evaluation of the outcomes of this initiative, particularly to determine if the “sociological/pedagogical” as well as the “ecological” outcomes are actually being achieved in schools.

Australia

New South Wales

Environmental education in New South Wales features an interagency policy which explicitly co-ordinates the school-based and non-school-based components of environmental education. The state is unique in having a mandatory requirement for an integrated environmental education policy in schools, the School Environmental Management Policy (SEMP). The internationally-linked “learnscapes” project appears to have potential as a strategy to embed school-wide environmental education in schools. However, one early evaluation suggests that the success of the “learnscapes” initiative is contingent on teachers viewing learnscape development as a “process” which provides opportunities for student learning in environmental education, rather than simply a “feature” in the school grounds. It also implies a need for greater clarification in policy documents of the link between the learnscape development and maintenance process, and the wider goals and aims of environmental education.

Queensland

Environmental education features strongly in Queensland’s curriculum, particularly in the key learning area “Studies of Society and the Environment” (SOSE). Rather than environmental
education being a non-mandatory area to be integrated across other curriculum areas, SOSE positions environmental education as a mandatory learning area with key values, processes underpinned by concepts integrated and drawn from a range of other subject areas. Environmental education research in Queensland has included a growing focus on the “voices of students” and the impact for students of classroom environmental education programmes. Thus far, these studies have only documented short-term, rather than long-term, outcomes for students involved in environmental education in schools.

Victoria

Victorian environmental education policy recognises that environmental education can either be a separate subject, or can be integrated across other learning areas. An environmental focus on waste management appears to be strong across sectors in Victoria. One related initiative, funded by the government and managed by an NGO, centres on the issue of schools’ management of waste. This initiative, supported by extensive teacher workshops, resource kits, and a network of education officers, appears to provide a context for a successful whole-school approach to an environmental issue.

England

Although high-level government policy in England appears to be moving towards strategies for sustainable development, environmental education is not mandatory for schools in England and there appears to have been little uptake of environmental education practice in most English schools. The UK has also faced challenges co-ordinating the interactions of NGOs with schools. After environmental education was effectively marginalised during the implementation of the 1990 National Curriculum, space was cleared for schools to develop and shape their own curriculum, including by developing their own environmental education policies and practices. However, it has been argued that government and NGO documents do not provide enough guidance or support for schools on how they can create, implement, and achieve such policies.

USA

Surveys of the status of environmental education in all states led to the identification of “essential” features for state support of environmental education. In one state which had had a long history of progressive actions in environmental education (Wisconsin), many of these features appear to have been implemented. However, later research suggested that even with mandatory requirements for pre-service teacher education in environmental education, and a mandatory requirement for school districts to have environmental education plans, clearly measurable state-wide improvements to the status and teaching of environmental education in schools were slow to occur.

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30 The evaluation has been completed, however the findings are not yet available in English.
CHAPTER EIGHT: CONCLUSIONS AND IMPLICATIONS FOR ENVIRONMENTAL EDUCATION IN NEW ZEALAND SCHOOLS

This chapter draws together some of the insights from New Zealand and international literature reviewed in Chapters four to seven. Consistent with the modified “user review” approach described in Chapter one, the purpose of this chapter is to critically inform thinking about environmental education policy and practice in New Zealand, and to stimulate discussion and worthwhile educational action.31

The International Context for Environmental Education in Schools:

Key Points

Chapter four outlined how environmental education began to emerge from global environmental concerns in the 1960s and 1970s. A series of international summits and declarations, primarily driven by UNESCO from the mid–1970s, heralded changing international concerns about the environment, and a movement towards a more integrated philosophy of addressing economic and social development alongside environmental issues, in an effort to promote long-term environmental, economic, and social sustainability. The development of government policy and curricula in environmental education in most countries has been influenced by landmark events including the Tbilisi Declaration (1977), the Brundtland report (1987), and Agenda 21 of the Rio Earth Summit (1992). These and other reports provided key statements about the goals and characteristics of environmental education, and the role of the education system in supporting the goals of environmental education/education for sustainability.

In the 1990s, many governments responded to these international summits and declarations, often after pressure from the environmental education community of interest, by implementing some environmental and educational policy or curriculum changes. In some countries, the responsibility for environmental education was taken primarily by ministries of the environment, rather than ministries of education, and environmental education policy development focused on integrating environmental education across all community sectors (consistent with the principles of Agenda 21). Whichever branch(es) of government were the primary loci for environmental education policy development, changes to environmental education policy and curriculum in the 1980s and 1990s seemed to yield modest change, if any, to regular practices within mainstream education systems.

In many countries, environmental education languished at the margins of mainstream schooling, competing with other perceived priorities. Researchers and theorists in environmental education

31 Reviewer comment: I think your recommendations have targeted the issues rather well, but would make some closing points. In particular I do not think the recommendations can be handled in isolation.

Recommendation 2 is by itself likely to have little impact unless supported by recommendations 3 and 5 in particular. I personally see recommendation 4 as important but my research suggests that in the current climate, emphasising numeracy, literacy and I.C.T., this is unlikely. Recommendation 5 is also crucial.
began to examine the reasons why environmental education was not easily integrated into mainstream education, and how schools might deal with the inherent challenges that environmental education raised for conventional approaches to curriculum and pedagogy. Authors such as Fien (1994; Fien and Tilbury, 1996); Tilbury (1995; 2001a); Gough (1997); Jensen and Schnack (1997; Jensen, Schnack, and Simovska, 2000); Elliot (1994; 1995; 1999a; 1999b); (Gough and Scott, 2001; Scott et al., 1998; Scott and Reid, 1998), and others have contributed to a body of literature which clearly articulates the goals and characteristics of environmental education, and their implications for school-based practice. Concepts such as socially critical environmental education, and “action competence”, have become part of the accepted theoretical framework in contemporary environmental education literature. These concepts emphasise students and teachers involved in environmental education working in an authentic local context, engaging in a process of identifying an environmental problem, identifying the factors contributing to the problem, who is involved, what potential solutions might be, and then undertaking some form of action to change or reduce the existing problem.

A common theme in the contemporary environmental education literature is the notion that all those involved in environmental education should be empowered to participate in discussions, voice their opinions, and reflect on their roles throughout the environmental education process. The most recent trend in the environmental education literature is a call for broader recognition of pluralistic viewpoints of both the environment and education. Some researchers have investigated ways to develop resources or approaches which support learners to become capable of interacting with groups and individuals who think and act differently towards the environment (Lijmbach et al., 2002). A precondition for such approaches is for teachers to recognise pluralism as a necessary factor in environmental action and decision-making.

The New Zealand Context for Environmental Education in Schools: Key Points

Chapters four and five discussed the development of environmental education policy, curriculum, practice, and research in New Zealand. International summits and declarations, as well as New Zealand’s own environmental management policies and obligations to the Treaty of Waitangi, have influenced New Zealand’s environmental education policy developments. Grass-roots support for environmental education has also been strong. Prior to the introduction of the New Zealand Curriculum Framework, several initiatives and conferences, facilitated by environmental education communities of interest, aimed to promote environmental education in New Zealand schools. Environmental education continued to lack a formal place in the curriculum when the New Zealand Curriculum Framework was introduced in 1993. However, the Framework acknowledged that schools could adapt their curriculum to take account of local needs, priorities, and resources, and that the curriculum must help students to be adaptable and play their full part in a changing environment, with reference to environmental and other concerns.

The release of the Guidelines for Environmental Education in New Zealand Schools in 1999 gave direction for schools interested in integrating environmental education into their curriculum. The Guidelines reflect the influences on New Zealand’s environmental education policy development described above, with, for example:
- its focus on environmental education being “in” and “about” the environment, as well as “for” the environment;
- its specific emphasis on interdependence, sustainability, biodiversity, and personal and social responsible for action; and
- the significance given to Māori knowledge and the Treaty of Waitangi.


**New Zealand Research on Environmental Education in Schools:**

**Key Points**

Chapter five reviewed existing research on environmental education practice in New Zealand and found that current research in this area is scarce, although graduate and post-graduate studies are increasing. The existing field of New Zealand environmental education research includes studies of environmental education in schools, and studies that have focused on environmental education involving community agencies, local and regional government, and other groups working outside or alongside the school sector.

There are some notable gaps in the existing knowledge base about environmental education practice in New Zealand schools. Several surveys sought to identify characteristics of environmental education practice in New Zealand schools. However, none of these studies gives a clear overall picture of the current status of environmental education in New Zealand schools, nor details about specific environmental education practices or their subsequent impacts or effects for students. New Zealand studies relating to environmental education in schools have investigated themes such as: teachers’ views of environmental education; personal characteristics/attributes of teachers committed to environmental education; curriculum areas in which environmental education is taught; and identifying problems or barriers for the implementation of environmental education in New Zealand schools.

A few recent studies have begun to document environmental education teaching and learning practice (and the development of such practice) in New Zealand schools. However, New Zealand research on learners and learning in environmental education appears mainly to comprise studies of learners’ knowledge, awareness, or understanding about the environment or environmental issues, or students learning in the environment. There appears to be a lack of research that directly investigates the perceptions or learning outcomes of students engaged in education for the environment. Overall, the review found a lack of comprehensive research on the processes or outcomes of regular school-based environmental education practice(s) for students within New Zealand schools.
Chapter five highlighted several areas where little or no research was found. These included areas of “mainstream” environmental education practice, such as:

- the impact of teacher pre-service and in-service environmental education on teachers’ subsequent teaching practice, and on environmental education practice in the schools in which they teach;
- the impact or outcomes for students of participation in special environmental education programmes offered to New Zealand schools or to students outside the regular school programmes, and their relationship to regular school teaching programmes;
- the impact of the involvement of external agencies or people on New Zealand schools’ own environmental education programmes, and the actual outcomes or effects of this for teachers and students; and
- the long-term impact or effects of environmental education provision for New Zealand students within regular school programmes.

A large research gap was also found regarding environmental education in relation to Māori knowledge and values, and in relation to Māori students.

Characteristics of Environmental Education in New Zealand Schools Derived From the Literature

The concluding section of Chapter five (pp. 46–52) proposed six general characteristics of environmental education in New Zealand schools that seem to be supported by the available literature. These six characteristics are as follows:

Characteristic 1: An emphasis on creating and exploiting links between programmes in schools, and extra-school agencies (e.g., regional authorities, conservation and environment societies, and other interest groups).

Characteristic 2: The endorsement of “whole-school” approaches to environmental education.

Characteristic 3: The advocated inclusion of Māori knowledge and values in environmental education.

Characteristic 4: In practice, a tradition of education “in” the natural (and local) environment—e.g., through school camps, biology field trips, and learning experiences outside the classroom.

Characteristic 5: The frequent selection of certain areas of content “about” the environment in school environmental education programmes, and an abundance of resource materials to support these (for example, biodiversity, local flora/fauna, nature conservation, water, air, waste and recycling, tree-planting and bush studies, and various aspects of gardening).

Characteristic 6: A central focus on the relationship between environmental education development, and the content of curriculum statements in the seven learning areas of the curriculum framework.

Some caveats should be attached to these characteristics. Characteristics 1–3 are primarily features of environmental education policy, articulated in documents such as the Guidelines, and also through supporting documents and resources such as Enviroschools, the Eco-school, and the two Ministry-funded environmental education professional development programmes. However,
there is currently little research to indicate how these characteristics translate, if indeed they do, into curriculum and practice in New Zealand schools. By contrast, characteristics 4 and 5 are primarily features of environmental education practice in New Zealand schools, supported by existing research evidence. Characteristic 6 is primarily a feature of environmental education curriculum in New Zealand, which advocates its integration with the essential learning areas. Again, there is still not enough research on how this plays out in practice in New Zealand schools.

**Directions From the International Literature**

Chapters six and seven highlighted some examples of international practice(s) in environmental education, providing a context for comparing some of the major similarities and differences in environmental education policies, practices, and research in New Zealand identified in Chapter five. Chapter six described two major cross-national networks of activity involving environmental education in schools: the Environment and Schools Initiative (ENSI); and the Asia-Pacific networks anchored by UNESCO-ACEID and Griffith University. Both networks have generated a large amount of literature about environmental education policy, curriculum, and practice in a range of European and Asia-Pacific countries. A synthesis of this information indicates some of the factors which have helped and hindered the implementation of environmental education in schools, with a particular focus on strategies aimed at moving environmental education from the periphery of the school system and into mainstream practice.

The ENSI and Asia-Pacific networks suggested that the development of environmental education in schools is a demanding process that requires complex strategies for change, and many layers of research and evaluation. Strategies that seemed to support this process across these networks included:

- international co-operation and sharing of ideas and strategies;
- a priority on linking environmental education resource development with teacher professional development;
- a transition of focus from individual school-based initiatives, towards more centralised support for environmental education; and
- a culture of action-research.

Chapter seven described some examples of environmental education policy, practice(s), and research from six countries: the Netherlands, Norway, Austria, Australia, England, and the United States. Each country profile was assembled to describe environmental education practice at the national/systemic level (in particular, the role of central government and official environmental education policy); at the school organisation level; and, where possible, at the pedagogical level. In each of the profiled countries, environmental education came in at the margins of existing schooling and education systems. The subsequent development of environmental education in each country varied according to that country’s particular social, cultural, environmental, and educational history and priorities. For each profiled country, Chapter seven looked at where the impetus and pressure for environmental education policy/curriculum/resource developments came from (the drivers for environmental education development), and how government agencies in these countries responded. The final section in Chapter seven summarised the main features of environmental education policies and practices identified in each of the six countries.
The final section of this chapter outlines some messages/lessons from the New Zealand and international literature reviewed in this document, which are likely to be useful as New Zealand looks to prioritise future activity in environmental education policy, curriculum, and practice.

The Importance of Centralised Policy, Particularly Policy that is Co-ordinated Across the Sectors and Maximises the Efforts of Diverse Groups

The Guidelines provide New Zealand with a form of centralised policy in environmental education, policy that is supported by other government strategies such as those outlined by the Ministry for the Environment in Learning to care.

New Zealand has many environmental education “stakeholders”, including people from central and regional government, NGOs, schools, tertiary institutions, tangata whenua, and other groups with an interest in environmental issues. Recent reports on the effectiveness of networking in environmental education in New Zealand (Mardon, 2001a; McClelland, 2000a) suggest that it can be complex to establish and maintain links between these different stakeholders. In part the complexity has arisen because of stakeholders’ different motivations, interests, and activities in environmental education, particularly with many stakeholders working outside the formal school sector. However, international examples of successful environmental education suggest that efforts need to be made to co-ordinate across sectors/agencies, particularly when multiple agencies seek to engage with schools. For example, the Netherlands, the UK, and Australia have all established groups or initiatives to co-ordinate activities, material and resources across sectors.

Teacher Familiarity with Curriculum Guidelines for Environmental Education

The international country profiles suggest that a specified environmental education curriculum or guidelines of some form are necessary to give teachers and schools a framework for understanding the specific goals, aims, and characteristics of environmental education. In New Zealand, this takes the form of the Guidelines for Environmental Education in New Zealand Schools. However, there is no clear evidence from the international examples whether it matters if environmental education is a separate subject or integrated across existing subjects. Furthermore, several of the international studies showed that having such policies in place did not always guarantee that teachers were familiar with them or that they impacted on school practice. What seems to matter most in the international examples was that teachers were familiar with the documents, and had developed clear understandings about the special characteristics of environmental education.

If Environmental Education is Not Mandatory, Uptake is Likely to be Limited to Schools with an Inherent Commitment to Environmental Education

The school curriculum is under intense pressure as new demands are added to existing frameworks. In the recent curriculum stocktake national sampling study, the demands of written planning, administration, and assessment/reporting were regarded as major impacts by many teachers (McGee et al., 2002). Environmental education can be viewed as “just another demand” and so without an

32 Reviewer comment: In particular co-ordination between different ministries...
inherent commitment by the school community to environmental education, it seems unlikely that many schools will undertake a comprehensive environmental education programme. This appears to have been the case in the UK. Even in cases such as Wisconsin, where mandates for pre-service teacher education and district school plans for environmental education have been in place for over a decade, it seems that it takes some time for such mandates to become extensive and effective (if they ever do). On the other hand, Queensland has taken an alternative approach by revising their curriculum framework to make environmental education explicitly integral to, rather than additional to, the compulsory school curriculum (in the form of a learning area called “Studies of Society and the Environment”). The Guidelines for Environmental Education in New Zealand Schools also indicates that environmental education provides a useful and appropriate context for integrating the essential learning areas, and rather than being an additional demand, provides an underlying rationale for curriculum integration.

An Emphasis on Whole-School Approaches, Associated with Strategies to Enable the Approach to be Developed in Practice

In New Zealand, the Guidelines support the development of whole-school approaches, as does the curriculum learning area of Health and Physical Education. The whole-school approach is also coherent with kūra kaupapa Māori approaches. In the international literature, whole-school approaches are advocated as best supporting the implementation of environmental education in a way that reflects the goals, aims, and purposes of this area. In international examples these appear to have worked well when associated with strategies such as initial “school profiling” (the Netherlands), or through the development of “learnscapes” (New South Wales) or other schoolgrounds developments, or in association with a compelling context that is supported across sectors (e.g., waste management in Victoria). Whole-school approaches also appear to be most successful when they build on the existing culture, priorities, and values of schools and their communities.

Teacher Education is Fundamental to Achieving Environmental Education Goals

The international literature suggests that the provision of environmental education relies on teachers having an understanding of the area. This means that teachers must have knowledge and skills in environmental education, as well as values and attitudes that are consistent with those detailed in the Guidelines. The development of such understanding requires education that engages teachers with all aspects of environmental education through active learning experiences.

Reviewer comment: Whole school approach needs to be supported by a “whole-ministry” approach. Many schools find it difficult to reinforce an action based EE curriculum and because the management procedures and school property are seen as totally separate from the curriculum. Therefore creating aspects such as buildings, landscapes or management structures in schools that reinforce sustainability needs to be enabled by policy from all the departments within the Ministry of Education and then reinforced by associated Ministries.

Reviewer comment: While this is undoubtedly true, as teachers are still the people who are mainly in contact with students, there is a growing need for EE professional development for all agencies and people working with schools (not just teachers).

With the push for holistic approaches in schools that involve people and agencies from throughout the community there needs to be an understanding, by all participants, of what EE is. Creating links with community agencies still mainly relies on the school to translate or incorporate outside expertise into effective EE learning situations. Professional development for community agencies could assist them to work with schools in a way that promotes education for the environment and raises the level of education for all participants, not just students.
The evidence also suggests that this process can be enhanced through an action research approach that gives an authentic context for teachers to learn and reflect on their experiences. However, the ENSI experience suggests that an action research approach needs to be supported (for example, by a “pedagogical support person”, facilitator, or researcher), to ensure that the focus of teachers’ reflection includes all the dimensions and intended/desired outcomes for environmental education, and that robust strategies are devised for identifying key issues and collecting good baseline data that can be used to effectively evaluate the success of current practices and to develop and assess new approaches.

Professional Development for School-Based and Community-Based Environmental Educators Can Promote Effective Partnerships Between Schools and other Environmental Organisations/Community Agencies

With the push for holistic approaches in schools that involve people and agencies from across the community, there needs to be an understanding by all participants of what environmental education is and the roles that different partners can take in contributing to sustainable environmental education in schools. In New Zealand, creating links with community agencies still relies on the school’s ability to translate or incorporate outside expertise into effective environmental education learning situations. Interactive professional development between teachers and community agencies with a stake in environmental education could assist external people and agencies to work with schools in a way that promotes education for the environment and raises the level of education for all participants.

A Need for Ongoing Quality Research and Evaluation

The ENSI, Asia-Pacific, and country profiles in Chapters five and six suggest that effective development and practice of environmental education requires co-ordination, not only across all the sectors of interest, but also co-ordination in research and evaluation. As the ENSI examples show, this kind of co-ordination enables the collection of substantive data that can be used to further inform policy and practice. The critical stocktake and case study components of the current project are a beginning of this process, but there is considerable scope for more work. In particular, more research is needed on student outcomes (particularly long-term outcomes), from involvement in environmental education. A focus should be placed on outcomes that involve students taking informed action “for” the environment, which is the ultimate, but most challenging, dimension of environmental education.

Reviewer comment: Although this may be true we need to be clear about the purpose of research. Who needs it, what for and in what form is it most useful to them. The lack of formal (for want of a better term) research may in part point to a need for an informal system that allows all EE participants to contribute to the pool of knowledge (about EE and sustainable schools) and have access to it.

Although there is little recorded research on EE in NZ personal experience tells me that there is a huge wealth of knowledge contained in the experiences and stories of students, teachers, facilitators, government and non-government agencies. Conventional methods of evaluation or research seem to tend towards surveys and long written reports that are inaccessible to most participants and focus on gathering rather than disseminating information. There is a need for a process that is accessible and useful and enables a diversity of knowledge to be shared and built upon.
REFERENCES


Appendix I

Conceptual Diagram Circulated to Ministry of Education and Other Environmental Education Stakeholders
NZ national policies on:
- Environment
- Sustainable development
- Environment 2010 strategy etc.

NZ Environmental education policy

NZ national education policy

NZ bicultural context

Guidelines for Environmental Education in New Zealand

NZ Environmental education policy

Research Questions:
- What are key characteristics of effective practice in EE nationally and internationally that lead to students developing and demonstrating the skills, knowledge, attitudes, values and actions that support the aims of EE?
- What are some of the larger similarities and
Appendix II

Cover Letter Sent to Reviewers

Dear _______

I hope you have received my phone or e-mail message of 12 December.

Please find enclosed a draft copy of:

*An Evaluation of environmental education in New Zealand Schools: A literature review of national and international research literature on environmental education practices*

This review is the first product of a research project for the Ministry of Education. (Details about the project are attached). This draft has now been sent to the Ministry of Education for review.

The Ministry of Education has given approval for us to send the draft out for review and feedback from a selected group of people involved in environmental education in New Zealand. We would like to include you in this group.

We ask that you read the draft review and give us your comments/feedback on the following points:

- **Coverage of New Zealand literature:** to your knowledge, has the review omitted any relevant New Zealand research in environmental education?
- **Gaps:** Have we overlooked any research that would fill the areas that we have identified as “gaps” in New Zealand research base?
- **Characteristics of environmental education in NZ (pp 38-42):** What is your response to the “Characteristics of environmental education in New Zealand” listed in chapter four? Do these reflect your professional knowledge of environmental education practice in New Zealand?
- **Other comments:** do you have any other comments on the review?

We ask that you return your feedback to us by 7 February 2003.

Please remember that this document is still a draft and should not be copied, cited or circulated.

Yours sincerely,

Rachel Bolstad and Robyn Baker
Appendix III

Some Other Cross-National Initiatives in Environmental Education

- European project for environmental education, financed by the European Community DGXI. Over 30 months (1997-1999), researchers from five countries (Finland, Italy, Portugal, Spain and UK) produced and tested materials for a curriculum for environmental education for European schools (De Paz and Pilo, 1999).

- A European action research project, also funded by the European Commission DGXI, involving schools from five regions (Hertfordshire (UK), BALERS (Spain), Ringkobing (Denmark), County Clare (Ireland) and Gibraltar. The project aims to stimulate curriculum change in environmental education at the school level, and to find ways of sustaining change in this area (Tilbury, 1998).

- The Nordic project MUVIN (Environmental Education in the Nordic Countries), currently involving 206 schools from Denmark, Finland, Iceland, Norway and Sweden. The theme for the schools' work was "conflicts of interest in the use of natural resources." Schools were to conduct project-oriented education about a local theme that was associated with conflicts of interest. All countries established alliances with researchers who have followed the project. The first phase of MUVIN was implemented in the 1992-93 academic year. Phase two was carried out in Norway in the academic year 1995-96.

- A research project called “Emergent Environmentalism”, funded by the UK Economic and Social Research Council the European Commission and the British Council. This project involves researchers in 14 countries investigating the origins or emergence of environmental awareness, knowledge and concern in children and adults (Palmer, 1999).

- Sustainability Education in European Primary Schools (SEEPS). In 1996 a consortium of higher education institutions involved in environmental education pre-service teacher education in Scotland, secured funding from the EC and Scottish Natural Heritage, to develop a professional development program in sustainability education for European primary schools. SEEPS has a commitment to whole-school approaches to environmental education, and (Shallcross, O'Loan, and Hui, 2000) and involves representatives from 11 European countries.

References to Appendix Three

