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

Volume 3: A critical stocktake of the characteristics of effective practice in environmental education in New Zealand schools and kura kaupapa Māori
ENVIRONMENTAL EDUCATION IN NEW ZEALAND SCHOOLS: RESEARCH INTO CURRENT PRACTICE AND FUTURE POSSIBILITIES

Volume 3:
A critical stocktake of the characteristics of effective practice in environmental education in New Zealand schools and kura kaupapa Māori

Bronwen Cowie, Chris Eames, Ann Harlow (University of Waikato) and Rachel Bolstad (New Zealand Council for Educational Research) with Miles Barker, Paul Keown, Richard Edwards, and Richard Coll
CHAPTER SEVEN: SUPPORT NEEDED TO TEACH A BETTER ENVIRONMENTAL EDUCATION PROGRAMME

SUPPORT NEEDED TO TEACH A BETTER ENVIRONMENTAL EDUCATION PROGRAMME .............................................
Provision of teaching and learning resources ........................................................................................................
Professional development ...........................................................................................................................................
Time for planning and action ....................................................................................................................................
Funding for projects .....................................................................................................................................................
Address overcrowding in the curriculum ...................................................................................................................
Integration .....................................................................................................................................................................
Whole school involvement ........................................................................................................................................
In-school leadership and support ............................................................................................................................... 
External support — experts and facilitators ................................................................................................................
Non-mandatory status of environmental education ..................................................................................................

CHAPTER EIGHT: USE OF THE GUIDELINES

USEFULNESS OF THE GUIDELINES FOR PROGRAMME PLANNING ................................................................

CHAPTER NINE: SUMMARY, CONCLUSION, AND IMPLICATIONS

CHARACTERISTICS OF SCHOOLS AND TEACHERS WHO RESPONDED TO THE SURVEY

SCHOOLS INVOLVED IN ENVIRONMENTAL EDUCATION.........................................................................................
Individuals involved in environmental education ....................................................................................................
Meanings and purposes attached to the term “environmental education” ................................................................

THE KEY CHARACTERISTICS OF ENVIRONMENTAL EDUCATION PRACTICE IN NEW ZEALAND SCHOOLS AND KURA KAUPAPA MĀORI

AT THE LEVEL OF SCHOOL SYSTEMS ......................................................................................................................
AT THE LEVEL OF CLASSROOM PRACTICE ................................................................................................................
LINKS, SUPPORT, AND RESOURCES ........................................................................................................................
Support needed for the provision of enhanced environmental education .................................................................
The role of the Guidelines for Environmental Education in New Zealand Schools ..................................................
## ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE</td>
<td>Environmental education</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental organisation</td>
</tr>
<tr>
<td>SOSG</td>
<td>The Sustainable Organic School Gardens initiative</td>
</tr>
<tr>
<td>GLOBE</td>
<td>Global Learning and Observations to Benefit the Environment</td>
</tr>
<tr>
<td>TKI</td>
<td>Te Kete Ipurangi</td>
</tr>
</tbody>
</table>
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 (see para 1, P9).

The Guidelines promote an integrated curriculum approach to environmental education, and are intended to assist teachers and schools to plan and provide education in, about, and for the environment. 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.

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 kura in their region to incorporate environmental education into the curriculum. The Christchurch College of Education was contracted to coordinate the programme.

PURPOSES OF THE RESEARCH

The Ministry of Education wanted to research the implementation and 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 carry out this 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 early drafts of the research. 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; and
• 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/kura in New Zealand at this time?

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 of these relationships for student learning?

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

¹ The rationale for adding this third purpose emerged from comments made by reviewers and the Ministry of Education on the first draft of the 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 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 philosophizing about key concepts and ideas etc. In particular there is a lack understanding of terms like [education] ‘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].”
SCAPE OF THE RESEARCH

The research was 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 stocktake 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/kura in New Zealand.

Component three: Eight case studies of environmental education in selected New Zealand schools/kura.

TIMEFRAME FOR THE RESEARCH

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

REPORTING OF THE RESEARCH

The research findings are reported in 4 volumes:

Volume 1: Summary of the research findings (Bolstad, Cowie, and Eames, 2004).


Volume 3: A critical stocktake of the characteristics of effective practice in environmental education in New Zealand schools and kura kaupapa Māori (Cowie et al., 2004).

Volume 4: Case studies of environmental education practice in 8 schools and kura kaupapa Māori (Bolstad, Eames, Cowie, Edwards, and Rogers, 2004).

This document (Volume 3) reports on the second component of the research, the critical stocktake.
Timeline for the research components

<table>
<thead>
<tr>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun</td>
<td>Jan</td>
</tr>
<tr>
<td>Jul</td>
<td>Feb</td>
</tr>
<tr>
<td>Aug</td>
<td>Mar</td>
</tr>
<tr>
<td>Sept</td>
<td>Apr</td>
</tr>
<tr>
<td>Oct</td>
<td>May</td>
</tr>
<tr>
<td>Nov</td>
<td>June</td>
</tr>
<tr>
<td>Dec</td>
<td></td>
</tr>
</tbody>
</table>

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

**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

**Overview report**
CRITICAL STOCKTAKE OBJECTIVES

This stocktake (component two of the research) has four main objectives:

1. To gain frequency information about the characteristics of the environmental education programmes offered by a purposive sample of schools/kura kaupapa Māori involved in environmental education in New Zealand at this time.

2. To determine the extent to which environmental education practice in schools/kura kaupapa Māori explicitly support the aims of environmental education as set out in the Guidelines.

3. To identify and gain frequency information about the services, including those provided by the Ministry of Education and other central government agencies, local government agencies, and non-governmental organisations, that are used by schools to support their environmental education programmes.

4. To identify factors that principals and teachers consider crucial to further the development of their environmental education programmes.

5. To provide a foundation for the case study component of the research and quantitative information on the extent to which key factors of environmental education identified within the literature review are reflected in current practice in New Zealand schools/kura kaupapa Māori.

The critical stocktake for mainstream New Zealand schools took the form of a national survey via a postal questionnaire administered to a non-random sample of 10 percent of schools. Kura kaupapa Māori were surveyed by way of interview.

OVERVIEW OF CRITICAL STOCKTAKE CHAPTERS

Chapter Two sets out the research design for the study. It outlines the approach used to develop the purposive sample of mainstream schools and then goes on to provide details of the database developed. It describes the methods used in the construction, distribution, and analysis of the questionnaire in mainstream schools. The methods used to generate data about environmental education in kura kaupapa Māori are also detailed.

Chapters Three, Four, Five, Six, Seven, and Eight report on the findings from the questionnaire. The nature of the respondent schools and group is set out in Chapter Three. Chapter Four outlines the key characteristics of environmental education in New Zealand schools at the levels of school programmes and systems and classroom practice. Chapter Five provides details of environmental education in a small sample of kura kaupapa Māori. The range of environmental education services and programmes identified by the respondents as contributing to their environmental education programmes is outlined in Chapter Six. Alongside this, factors considered by the respondents as hindering the development of links and relationships with external providers are detailed. Chapter Seven describes factors that, in the respondents’ view, would enable respondents to provide a more effective environmental education programme in the future. Chapter Eight reports on respondent awareness and use of the Guidelines.
Finally, Chapter Nine summarises the findings of the stocktake and comments on these in light of the aims of environmental education as set out in the *Guidelines* and the insights from the literature review (Bolstad, Baker *et al.*, 2004).
CHAPTER TWO: THE RESEARCH DESIGN

PURPOSE OF THE STOCKTAKE

As outlined in Chapter One, the “Environmental Education in New Zealand Schools” research is intended 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 critical stocktake seeks mainly to provide evidence for research questions 2, 3, 4, and 6 (see page 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?
- What are the key characteristics of environmental education practice in schools/kura kaupapa Māori in New Zealand at this time?
- 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?
- What kind of relationships exist between different environmental education services and programmes for schools?

The critical stocktake was conducted by way of a national survey of schools believed to be involved in environmental education. The survey took the form of a written questionnaire administered by post (except for kura kaupapa Māori where the survey was administered face-to-face, with responses given verbally).

To develop the survey questionnaire, the research team sought to build on current best knowledge of existing environmental education programmes and services in New Zealand schools. To this end, questionnaire development was informed by the literature review component of research and 2 focus group discussions. This chapter begins by providing an overview of these aspects and moves on to discuss the questionnaire distribution and analysis process. The methods used to develop the database of schools believed to be involved in environmental education and the processes used with kura kaupapa Māori are also outlined.

QUESTIONNAIRE CONSTRUCTION

Questionnaire construction was undertaken by the research team at the University of Waikato in liaison with the team at the New Zealand Council for Educational Research. Ethical approval was gained for the running of focus group sessions, the piloting and distribution of the questionnaire to schools from the Centre for Science and Technology Education Research Ethics Committee, University of Waikato.
Insights from research on environmental education

The literature review process indicated that there has been relatively little research into environmental education practice in New Zealand schools (Bolstad, Baker et al., 2004). As part of the process of developing the questionnaire we located and scrutinised all existing studies (see Bolstad, Baker et al., 2004, Chapter Four). One point to note about these studies 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.

The focus groups

Two focus group sessions were held to inform the development of the questionnaire. A focus group of environmental education programme and service providers was held at the New Zealand Council for Educational Research on 20 August 2002. The focus group included representatives from tertiary institutions involved in in-service and pre-service teacher education in environmental education, local and regional government agencies and NGOs involved in environmental education, and an NZEI representative. A second focus group was held at the University of Waikato on 24 August 2002. Participants included teachers from ten primary and secondary schools in the Waikato region.

The focus groups discussed how environmental education practice in New Zealand schools may be influenced by many factors, including:

- teachers’ personal backgrounds or the background of the school;
- teachers’ understandings of environmental education;
- teachers’ purposes for teaching environmental education;
- the teaching and learning approaches, topics, and contexts used;
- the nature of school policies, structures, and practices to support environmental education;
- the way that student outcomes or achievements in environmental education are assessed; and
- the nature and accessibility of effective support, resources, and links to agencies or people involved in environmental education.

The view of the focus groups was that teachers’ understanding of environmental education was a key influence on classroom practice and so the survey needed to elicit information on this. The consensus was that teachers be asked for their own definition of environmental education rather than reacting to a definition provided from the Guidelines. In the experience of the focus group members, environmental education was often motivated within a school by an enthusiastic teacher who may or may not have the active support of other teachers or the school administration. Therefore it was proposed that teachers’ backgrounds be explored with respect to the nature of pre-service and in-service training/professional development, teaching experience and current classes taught, and experience teaching environmental education.
The teacher focus group included teachers who had experienced whole school environmental education practice and individuals who had worked in isolation to develop their own classroom environmental education programmes. Both focus groups suggested that the extent of school-wide support for environmental education be explored in the survey. Suggested questions to include were if and how environmental education was incorporated both formally and informally into school policies and practices, and the nature and extent of support and involvement from the principal, staff, students, and wider community, with particular emphasis on teachers’ access to professional development.

A key aim of this research was to explicate current effective practice. The focus groups suggested that the questionnaire explore teachers’ sources of ideas, the extent of child initiation and direction of environmental education activities, and what contexts, approaches, and activities had been most successful in contributing to the aims of a teacher’s environmental programme. Additionally, they suggested exploring what had contributed to a teacher’s environmental education programme, and how (or if) the unit was linked to the New Zealand Curriculum Framework (Ministry of Education, 1993) and the Guidelines (Ministry of Education, 1999). The teacher focus group recommended that teachers be asked to provide a detailed account of one environmental education unit they had taught.

Both focus groups emphasised that “action for the environment” was a crucial outcome of environmental education. It was agreed, however, that determining the nature of student achievements was a complex issue and this aspect would need to be explicated within the case studies. Nevertheless, it was recommended that information on teacher practice and student actions “for the environment” be sought. To elicit such information, the focus groups suggested the survey ask teachers to describe achievements for their environmental education programmes on several levels, for example achievements for students, achievements for the class/school, achievements for the community and the environment.

Both groups were interested to know how teachers developed and maintained links with external organisations, and which links and resources they found most useful. A further recommendation was to ask teachers what they perceived as barriers to implementing environmental education and what would help them provide better programmes.

Both groups had experienced that teachers brought different meanings to the term “environmental education” and were concerned that teachers and schools might be providing environmental education but currently do not identify their practices as such. It was agreed that while this issue could not be resolved given the focus of the project teachers should be asked to describe the meaning they had for environmental education and to outline their environmental education programme purposes.

**Structure of the questionnaire**

As noted above, the content of the questionnaire was informed by the focus group discussions, and an analysis of existing studies of environmental education in New Zealand. Other considerations in constructing the questionnaire were:

- that there should be a mixture of tickbox and short response questions that provide frequency information about the particular characteristics of environmental education programmes and
services teachers are involved in, and open-ended questions that provided teachers with an opportunity to elaborate their views; and

- that the time to do the questionnaire should not exceed 25 minutes.

The questionnaire underwent a number of iterations in response to feedback from local advisers and the Ministry of Education. It was piloted with three secondary and three primary teachers who also took note of the completion time. Comments from the pilot teachers were considered and the questionnaire modified accordingly.

The questionnaire was structured into sections that focused on:

- the respondent’s teaching and school background and meaning for environmental education (Questions 1 to 9);
- Current practice for environmental education at the respondent’s school (Questions 10 to 14);
- the respondent’s own goals and classroom practice for environmental education (Questions 15 to 22);
- links, support, and resources used by the respondent and additional support required (Questions 23 to 28); and
- any further comments.

The final version of the questionnaire (see Appendix One), as approved by the Ministry of Education, was sent out to schools on 18 October 2002.

**THE DATABASE AND DATABASE DEVELOPMENT METHODS**

**The database development process**

The contract brief was to draw up a non-random national sample of approximately 10 percent of schools involved in environmental education so that information could be gained about particular characteristics of the environmental education programmes and services they were involved in.

Using available information, a list of New Zealand schools believed to be involved in environmental education was compiled. Sources included (but were not limited to):

- lists of schools that have participated in the Ministry of Education Environmental education professional development contract;
- lists of schools that have reported involvement in waterways work in a survey from the National Waterways project;
- lists of schools that have reported involvement in the Enviroschools project;
- lists of schools that have been involved in the GLOBE project;
- lists of schools that have been involved in a range of local government environmental education programmes and initiatives;
The database of 475 schools was finalised on 15 October 2002.

**The database**

This section sets out the composition of the database. Key criteria included school regional location, school type (that is, whether a school was classified as contributing, full primary, intermediate, secondary, composite/restricted composite or an area composite school, or if it was a special school), decile ranking, school status (that is, whether the school was a state school, a private or independent school, or a state/integrated school), school gender (co-educational, or single-sex school) and the geographical status (urban or rural). The database of 475 schools represented 17.5 percent of New Zealand schools.

**Table 1**

<table>
<thead>
<tr>
<th>School type</th>
<th>Frequency</th>
<th>Percentage by school type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributing primary</td>
<td>147/844</td>
<td>17.4%</td>
</tr>
<tr>
<td>Full primary</td>
<td>152/1241</td>
<td>12.2%</td>
</tr>
<tr>
<td>Intermediate</td>
<td>48/133</td>
<td>36.0%</td>
</tr>
<tr>
<td>Secondary (Years 7–15)</td>
<td>27/90</td>
<td>30.0%</td>
</tr>
<tr>
<td>Secondary (Years 9–15)</td>
<td>77/244</td>
<td>31.5%</td>
</tr>
<tr>
<td>Composite/restricted composite</td>
<td>18/112</td>
<td>16.0%</td>
</tr>
<tr>
<td>Special school</td>
<td>7/47</td>
<td>14.8%</td>
</tr>
</tbody>
</table>

The database included at least a 10 percent selection of schools from each of the school types.

Of the 475 schools in the database, 217 were known to have participated in the Ministry of Education environmental education professional development programme.

**QUESTIONNAIRE DISTRIBUTION FOR MAINSTREAM SCHOOLS**

The questionnaire was distributed to mainstream schools according to a procedure that had been effective in the National School Sampling Study (Mcgee et al., 2001). An explanatory letter, instructional notes, and 3 questionnaires were sent to the principal of each the 475 schools in the database on 18 October 2002. Each school was asked to nominate a contact person to facilitate in-school questionnaire distribution, collection, and return. The notes included for the contact person outlined that the questionnaire should be distributed one to each of:
• a person who is responsible for curriculum implementation such as the principal, deputy principal or curriculum co-ordinator;

• a person who is directly involved in co-ordinating and/or teaching environmental education; and

• a teacher who is teaching environmental education.

An envelope was attached to each questionnaire to ensure a confidential return to the school contact person who could then return the school’s questionnaires.

As a first step, schools were asked to indicate that they were prepared to take part in the project, through confirmation by fax or email. Forty-three schools replied by fax that they would not be taking part in the survey. The main reason given was that teachers were overworked in the fourth term.

In some cases, replies from schools declining the survey gave unintentional information about the status or sustainability of environmental education in that school. For example, 3 of the faxed responses stated that the teacher who had initiated environmental education had left the school and that environmental education was no longer being offered. A fax from one school known by the research team to be a school where an individual teacher was actively involved in environmental education stated: “We do not teach environmental education here.”

Five schools contacted the research team to explain that they were not involved in environmental education. Discussion with these schools indicated that students were involved in activities such as recycling and gardening but these were not identified as environmental education within the school curriculum.

These responses highlighted the importance and impact of individual environmental education enthusiasts and also suggested that the efforts of these individuals were not always recognised at the school level. They also highlighted a lack of consensus as to the meaning of the term “environmental education”.

**QUESTIONNAIRE ANALYSIS FOR MAINSTREAM SCHOOLS**

Each questionnaire was assigned a number and coded for school regional location, school type, decile ranking, school status, school gender, geographical status, and whether the school was on a list of schools that had taken part in the Ministry of Education environmental education professional development programme.

Quantitative data was entered into the statistical package SPSS. Coding for SPSS was developed in consultation with an experienced user of SPSS.

All qualitative data was transcribed. Responses were categorised, coded and collated, and frequencies and ratios calculated. Coding was cross-checked.

The responses for Questions 17 to 22 were transcribed as a set in order to maintain the integrity of respondent descriptions of effective topics and units. The units were categorised according to the main topic given for teaching environmental education.
THE RESEARCH APPROACH FOR KURA KAUPAPA MĀORI

The research approach taken in kura kaupapa Māori was more consonant with a kaupapa Maori research approach (Bishop, 1997) and built on the approach used in the National School Stocktake Sampling Study (McGee et al., 2001). Information was gathered through interviews rather than written questionnaires which are generally not welcomed in Maori-medium settings. An experienced researcher fluent in Maori and on study leave from a kura kaupapa Māori was appointed to undertake the kura kaupapa Māori interviews. The researcher familiarised himself with the Guidelines and attended the environmental education expert focus group session. (He was unavailable for the teacher focus group). He was involved in the refinement of the research approach and interview questions and negotiated access to the kura kaupapa Māori involved in the study.

It was decided, in discussion between the researcher and the project team, that the mail-out questions were relevant to kura kaupapa Māori and their use for the interviews would provide for some consistency across the two research sites. The translation of the questions was investigated but not possible in the timeframe available and so the researcher translated the questions during the interview. Responses were recorded on a written copy of the questionnaire and additional notes made in the language of the response. Responses in Maori were translated into English by the researcher after the interview.

Three kura kaupapa Māori in the Waikato region were approached and agreed to be involved in the stocktake. The interviews were conducted during October and November 2002. Difficulties in finding relief teachers meant that the interviews usually took place during the lunch hour or after school.
CHAPTER THREE: THE RESPONDENTS

This chapter sets out the characteristics of the respondent schools and the respondents themselves.

RESPONDENT SCHOOLS

Responses totalled 367 questionnaires from 193 schools. The following tables provide some background data on respondent schools. Overall, the school response rate to the questionnaire was 40 percent of the schools sampled, and 7 percent of the school population.

Table 2

<table>
<thead>
<tr>
<th>School type</th>
<th>Number of responses</th>
<th>Response rate</th>
<th>Percentage of all NZ schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing primary (Years 1–6)</td>
<td>71</td>
<td>48%</td>
<td>8%</td>
</tr>
<tr>
<td>Full primary (Years 1–8)</td>
<td>60</td>
<td>38%</td>
<td>5%</td>
</tr>
<tr>
<td>Intermediate (Years 7–8)</td>
<td>18</td>
<td>38%</td>
<td>14%</td>
</tr>
<tr>
<td>Secondary (Years 7–15)</td>
<td>8</td>
<td>30%</td>
<td>9%</td>
</tr>
<tr>
<td>Secondary (Years 9–15)</td>
<td>29</td>
<td>36%</td>
<td>11%</td>
</tr>
<tr>
<td>Composite/restricted composite</td>
<td>5</td>
<td>28%</td>
<td>4%</td>
</tr>
<tr>
<td>Special school</td>
<td>2</td>
<td>29%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Primary, composite, and special schools were under-represented in the sample (between 4 to 8 percent) with respect to the proportion of those school types in the school population as a whole.

Each school was sent 3 questionnaires, one for a person responsible for curriculum, one for a person responsible for co-ordinating environmental education in the school, and one for a classroom teacher of environmental education. It was expected that in some schools an individual might fulfil more than one of the criteria. The within-school response rate is set out in the following table.
Table 3

*Within-school response rate*

<table>
<thead>
<tr>
<th>School type</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>Contributing primary</td>
<td>25</td>
</tr>
<tr>
<td>Full primary</td>
<td>26</td>
</tr>
<tr>
<td>Intermediate</td>
<td>6</td>
</tr>
<tr>
<td>Secondary (Years 7–15)</td>
<td>3</td>
</tr>
<tr>
<td>Secondary (Years 9–15)</td>
<td>8</td>
</tr>
<tr>
<td>Composite/restricted composite</td>
<td>2</td>
</tr>
<tr>
<td>Special school</td>
<td>0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>70</strong></td>
</tr>
</tbody>
</table>

The respondent group

Of the 367 respondents, there were 243 respondents from primary schools, 35 from intermediate schools, 74 from secondary schools, 9 from composite/composite area schools (where some were teaching at the primary level and some at the secondary level), and 6 from special schools (see Table 4).

Table 4

*Respondent group according to school type*

<table>
<thead>
<tr>
<th>School type</th>
<th>% of respondents (n=367)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributing primary</td>
<td>37</td>
</tr>
<tr>
<td>Full primary</td>
<td>29</td>
</tr>
<tr>
<td>Intermediate</td>
<td>10</td>
</tr>
<tr>
<td>Secondary (Years 7–15)</td>
<td>4</td>
</tr>
<tr>
<td>Secondary (Years 9–15)</td>
<td>16</td>
</tr>
<tr>
<td>Composite/restricted composite</td>
<td>2</td>
</tr>
<tr>
<td>Special school</td>
<td>2</td>
</tr>
</tbody>
</table>

Over the whole sample, two-thirds of respondents (66 percent) held a position of responsibility within their school. A third (35 percent) held the position of principal, deputy, assistant, or associate principal. Slightly over a quarter (30 percent) held the curriculum leadership-related position of curriculum/syndicate leader or head of department/head of faculty. A third (34 percent) of the respondents were classroom or subject teachers.
Table 5

<table>
<thead>
<tr>
<th>Role in school</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal</td>
<td>18</td>
</tr>
<tr>
<td>Deputy/assist./assoc. principal</td>
<td>17</td>
</tr>
<tr>
<td>Curriculum/syndicate leader</td>
<td>19</td>
</tr>
<tr>
<td>HOD/head of faculty</td>
<td>11</td>
</tr>
<tr>
<td>Classroom/subject teacher</td>
<td>34</td>
</tr>
<tr>
<td>Teaching principal</td>
<td>1</td>
</tr>
</tbody>
</table>

Professional background

The largest group of respondents, slightly over a third (35 percent), taught children in Years 4–6. Nearly a quarter (24 percent) taught Years 1–3 and approximately a fifth taught each of the other year levels. Approximately two-fifths of those who taught a class taught more than one of the age groups listed on the questionnaire.

Forty-nine (13 percent) of the respondents did not teach a class. Of these, 71 percent were principals and 22 percent deputy, assistant, or associate principals.

Overall, the respondents were an experienced group with just under 60 percent (59 percent) having taught for more than 15 years. Only 5 percent had been teaching 2 or fewer years.

Table 6

<table>
<thead>
<tr>
<th>Years of teaching experience</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2 years</td>
<td>5%</td>
</tr>
<tr>
<td>2–5 years</td>
<td>11%</td>
</tr>
<tr>
<td>6–10 years</td>
<td>13%</td>
</tr>
<tr>
<td>11–15 years</td>
<td>12%</td>
</tr>
<tr>
<td>More than 15 years</td>
<td>59%</td>
</tr>
</tbody>
</table>

Of the 82 secondary school teachers who responded, slightly over half (52 percent) taught science, slightly more than a third (37 percent) taught social sciences, and less than 10 percent of the teachers taught each of the other curriculum strands.
Environmental education background

Environmental education training

Over half (52 percent) of the respondents had had training in environmental education. Of the respondents with training, most had received in-service training — 46 percent of the total respondent group. Few respondents reported having pre-service training for environmental education (8 percent).

Table 7

<table>
<thead>
<tr>
<th>Type of training</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>No training</td>
<td>48</td>
</tr>
<tr>
<td>In-service only</td>
<td>44</td>
</tr>
<tr>
<td>Pre-service only</td>
<td>6</td>
</tr>
<tr>
<td>In-service and pre-service</td>
<td>2</td>
</tr>
</tbody>
</table>

The majority of the respondents who reported having environmental education in-service training (89 percent) were from schools which participated in environmental education Guidelines training.

One hundred and sixty-nine respondents provided an additional comment to describe their training. In addition to those who described training provided by the Ministry of Education, 15 percent identified regional and city councils as having provided them with in-service training. The full range of providers is set out in the table below.

Table 8

<table>
<thead>
<tr>
<th>Type of in-service training reported</th>
<th>% of respondents who described their training</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOE PD contract</td>
<td>39</td>
</tr>
<tr>
<td>Regional and city councils</td>
<td>15</td>
</tr>
<tr>
<td>Enviroschools</td>
<td>9</td>
</tr>
<tr>
<td>Tertiary qualification in EE</td>
<td>7</td>
</tr>
<tr>
<td>Outdoor education programme</td>
<td>6</td>
</tr>
<tr>
<td>GLOBE</td>
<td>4</td>
</tr>
<tr>
<td>Botanic Gardens</td>
<td>4</td>
</tr>
<tr>
<td>SOSG</td>
<td>2</td>
</tr>
<tr>
<td>Other providers</td>
<td>18</td>
</tr>
</tbody>
</table>
The full range of providers is set out in Appendix Two.

Involvement in environmental education activities in schools

Slightly over two-thirds (68 percent) of respondents were involved in environmental education as classroom teachers. More than a third (36 percent) of respondents were involved in environmental education as leaders or co-ordinators.

Most of those who held a leadership role in environmental education in their school also held other leadership positions suggesting the active involvement in environmental education of senior or middle management in some schools. Twenty-nine percent of those with leadership roles in environmental education were principals, teaching principals, deputy/associate or assistant principals, and 38 percent were curriculum/department leaders.

Twenty percent of respondents reported they were involved in environmental education in other ways. For example, 5 percent of those who were involved in other ways were members of school environmental committees and 11 percent held a leadership position from which they supported environmental education:

- Team member of school environmental education committee, member of community gully group monitored by the school. [Contributing primary — teacher]

- In a management capacity by agreeing with its implementation, releasing staff for training and resourcing the programme. [Intermediate — principal]

Ten percent of respondents reported they were not directly involved in environmental education activities in their school. Of this 10 percent, 54 percent were principals, deputy/assistant, or associate principals.

School-based environmental education experience

Almost 75 percent of the respondents to this question (n=325) reported that they had been involved in environmental education for less than 5 years, that is for a time subsequent to the publication of the Guidelines. Forty-five percent had been involved in environmental education for less than 2 years.
Seventy-three percent of the respondents with more than 5 years’ teaching experience reported being involved in environmental education for less than 5 years.

Sixteen percent of the respondents who had been teaching for more than 5 years felt they had been teaching environmental education throughout their teaching career. For 11 percent of all respondents this was for more than 15 years.

**Respondents’ descriptions of environmental education**

The term “environmental education” is open to a number of interpretations and so respondents were asked to give a meaning for the term before any questions relating to the *Guidelines* were asked. Three hundred and forty-four teachers (94 percent of all respondents) outlined their view of what “environmental education” meant.

The aims, dimensions, and key concepts of environmental education as set out in the *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999), framed the analysis of responses. Nine response categories were developed, and each response was coded against these categories. Some responses were counted in 2 or more categories. The following table names and describes the analytical categories, and gives examples of responses which were classified into each category. The key aims, dimensions, and concepts from the *Guidelines* are shown in bold in Table 10.

---

**Table 9**

<table>
<thead>
<tr>
<th>Years of involvement in school-based environmental education</th>
<th>% of respondents (n=325)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2 years</td>
<td>45</td>
</tr>
<tr>
<td>2–5 years</td>
<td>30</td>
</tr>
<tr>
<td>6–10 years</td>
<td>8</td>
</tr>
<tr>
<td>11–15 years</td>
<td>4</td>
</tr>
<tr>
<td>More than 15 years</td>
<td>13</td>
</tr>
</tbody>
</table>

---
<table>
<thead>
<tr>
<th>Response category</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the environment</td>
<td>Learning experiences outdoors, outside the classroom.</td>
<td>Camps, school trips, activities in school grounds</td>
</tr>
<tr>
<td>About the environment</td>
<td>Learning about and developing awareness, knowledge, and/or understanding of the environment and environmental issues.</td>
<td>How the environment works. Topics relating to the eco-system and ecology and habitats and the sustainability of their use. Environmental issues such as GE, carbon credits, organics. Eco-systems. Issues arising from resource use/management and sustainability. Awareness and knowledge of the uniqueness of NZ flora and fauna. Nature of man made and natural impacts on the environment.</td>
</tr>
<tr>
<td>Attitudes and values towards the environment</td>
<td>A focus on the need for children to “care for”, “respect”, preserve, and protect the environment.</td>
<td>Awareness of and appreciation of the environment. Need to work in partnership with the environment. Need to value the environment. Fostering a sense of responsibility for the state of the environment — local and global. Recognition of interdependence, sustainability, biodiversity, and personal and social responsibility.</td>
</tr>
<tr>
<td>Strategies for the environment</td>
<td>The need for students to know “how” to protect or preserve the environment and/or to decide between actions. (i.e., skills involved in identifying, investigating, and problem solving associated with environmental issues).</td>
<td>How to care for the environment. What we can contribute to maintaining and improving the quality of the environment. What we can do to protect native species.</td>
</tr>
<tr>
<td>Action for the environment</td>
<td>Student and school actions. A sense of responsibility through participation and action as individuals or members of groups.</td>
<td>Student involvement in class or school wide recycling, waste minimisation.</td>
</tr>
<tr>
<td>Reiteration of Guidelines definition of environmental education</td>
<td>Environmental education as education in, for, and about the environment as per the Guidelines.</td>
<td></td>
</tr>
<tr>
<td>Environmental education integrated with other curriculum areas</td>
<td>Descriptions of how environmental education might be integrated with or contribute to other curriculum areas.</td>
<td></td>
</tr>
<tr>
<td>List of activities undertaken</td>
<td>A list of activities.</td>
<td></td>
</tr>
<tr>
<td>Other general comments</td>
<td>Uncertainty about nature of environmental education.</td>
<td></td>
</tr>
</tbody>
</table>
Responses were placed in the “In” category if mention was made of environmental education involving learning outside the classroom and in the outdoors in some form. Responses were placed in the “About” category if words such as awareness, knowledge, or understanding appeared in the response. Responses were placed in the “Attitudes and values” category if words such as care, respect, preserve, and protect were used to indicate an education for attitudinal or value development. Responses were placed in the “Strategies for” category if specific mention was made of development of skills that could be used in the future to help the environment, and in the “Action for” category if mention was made of what the students had actually done for the environment. Some responses appeared to directly mimic the Guidelines’ notion of education in, about, and for the environment, so these were placed in a category by themselves. The responses in each category are set out in Table 11.

Table 11

<table>
<thead>
<tr>
<th>Description</th>
<th>% of respondents (n=344)</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the environment</td>
<td>68</td>
</tr>
<tr>
<td>Attitudes and values towards the environment</td>
<td>34</td>
</tr>
<tr>
<td>Strategies for the environment</td>
<td>27</td>
</tr>
<tr>
<td>Action for the environment</td>
<td>18</td>
</tr>
<tr>
<td>In the environment</td>
<td>17</td>
</tr>
<tr>
<td>Reiteration of Guidelines’ definition of environmental education</td>
<td>12</td>
</tr>
<tr>
<td>Environmental education integrated with other curriculum areas</td>
<td>10</td>
</tr>
<tr>
<td>List of activities undertaken</td>
<td>2</td>
</tr>
<tr>
<td>Other general comments</td>
<td>5</td>
</tr>
</tbody>
</table>

“About” the environment

More than, two-thirds (68 percent) of the respondents described environmental education as including education “about” the environment. These responses mentioned developing student awareness, understanding, or knowledge about the environment. Some of the respondents (17 percent) mentioned the development of student understanding of the effects of human activity on the environment. Others discussed the interdependence between humans and the environment, locally and globally, both now and in the future. This category therefore reflects the Guidelines’ aims of “developing students’ awareness and sensitivity to the environment and related issues” and “knowledge and understanding of the environment and the impact of people on it” (Ministry of Education, 1999, p. 9).

Awareness of the need to work in harmony with our environment for mental benefit. Developing an awareness and knowledge why we must look after our environment. [Contributing primary — curriculum leader]
Making people aware of their environment and the things that can impact on it both in a positive and negative sense. How we can protect our environment both locally and more globally. [Contributing primary — principal]

Many of the responses in this category explicitly or implicitly addressed the concepts of interdependence or sustainability.

A range of aspects from interdependence at school level (Wormery, recycling, etc) to looking at greater issues world wide. Sustainability is covered on a small scale with our recycling and then discussions of how we help. [Full primary — curriculum leader]

These types of responses were also included in the next category regarding attitudes and values towards the environment.

**Attitudes and values towards the environment**

Responses that mentioned educating students about caring for, respecting, preserving, or protecting the environment indicated a concern to develop student attitudes and values towards the environment. About one-third of responses (34 percent) were placed in this category. The responses showed some differences according to ages of students being taught, with a trend suggesting teachers placed less emphasis on attitudinal and value development as the students got older. For example, 40 percent of the responses from contributing primary and 34 percent of responses from full primary respondents included a focus on teaching children to care for or respect the environment. Some examples were:

- Teaching children to respect and care for the environment: by not littering, caring for nature, looking into the effects of chemical wastes on the environment etc. [Contributing primary — curriculum leader]

- Educating children about what is in the environment — in order to encourage children to be guardians of the environment they live in. [Contributing primary — deputy principal]

- A holistic understanding of the need to care for the environment now and for the future — fostering an attitude in the children that will carry through to a life long commitment. [Full primary — teacher]

In contrast, 30 percent of respondents from intermediate schools and 16 percent from secondary schools reported that environmental education involved attitudinal and value development for students.

The focus of the “attitudes and values towards the environment” responses was on engendering a sense of responsibility and respect for the environment. Hence, these responses are generally consistent with the Guidelines’ aim of “developing attitudes and values that reflect a concern for the environment” (Ministry of Education, 1999, p. 9).
Strategies for the environment

Responses that were placed in this category indicated that environmental education involved educating students about ways in which they could act to help the environment but did not actually describe instances of students taking action. Just over a quarter of the respondents (27 percent) described environmental education as including students learning “how” to protect or preserve the environment, that is, strategies for the environment.

This category is consistent with the Guidelines’ aim of “developing skills to identify, investigate and problem solve in relation to environmental issues” (Ministry of Education, 1999, p. 9). Some comments were:

- Teaching the children the importance of protecting our environment and learning together how we can protect our environment through recycling, individual responsibility etc. [Contributing primary — teacher]

- Education about what is important to us as New Zealanders about the place in which we live. How we can sustain our clean green image in the future. [Contributing primary — curriculum leader]

- Teaching and modelling to students ways in which to care for the environment and ways in which to protect and rejuvenate past environmental destructions. [Special school — curriculum leader]

Action for the environment

Responses were only categorised as “action for the environment” if specific mention was made of student action for the environment. Across all school types, less than 20 percent of the respondents who provided a description of environmental education mentioned student action. No significant differences were identified between student age groups, although proportionally more primary school respondents reported that environmental education meant for them getting their students to take action for the environment.

This category is consistent with the fifth Guidelines aim of environmental education: “to develop a sense of responsibility through participation and action as individuals and members of groups, whānau, or iwi, in addressing environmental issues” (Ministry of Education, 1999, p. 9). Some responses were:

- Developing programmes for children that teach about responsibilities locally and globally. This is achieved through units planned and having school recycling and waste minimisation practices. [Contributing primary — principal]

---

2 It is possible that respondents who described environmental education as the development of student skills and strategies view student action as an aspect of environmental education but this inference was not made in this analysis.
Allowing students to see or participate in environment activities or studies that allow them to see the impact human activity has on the environment and how to reduce or channel those activities. [Full primary — teacher]

Interestingly, only 4 percent of responses mentioned student decision making or that students’ action should be based on informed choice. Some examples were:

The children gaining an awareness and a responsibility regarding their environment. Children involved in activities relating to improving their environment. Children making choices. [Contributing primary — curriculum leader]

Educating children to respect and care for the environment by making informed choices. [Contributing primary — principal]

“In” the environment

Responses were placed in this category if they mentioned that environmental education involved learning experiences conducted outside the classroom, in the environment. Overall, 17 percent of respondents described environmental education as involving students being outside the classroom, both in the school and in the wider community. This corresponds to the education “in” the environment described in the Guidelines (Ministry of Education, 1999, p. 14). No significant differences were found between student age groups.

In their descriptions of education “in” the environment, some respondents described student participation in school camps and/or field trips, while others construed the environment as context for learning. Some responses were:

Where the appreciation and understanding of our environment is an integral part of student learning i.e., I believe taking an art class to the local beach/environment aids this and leads to production of in depth work. I think camps are also encouraging in this, which is why I mentioned the cycling camp. [Secondary — deputy principal]

Learning about the world we live in, being physical outside the classroom, experiencing that environment and taking positive actions that impact on that environment. [Full primary — teacher]

Using the natural environment as a context for learning. [Full primary — deputy principal]

Reiteration of Guidelines definition of environmental education

Responses were placed in this category if they described the Guidelines’ dimensions of environmental education as “education in, for and about the environment” (Ministry of Education 1999, p. 14) with no further elaboration. Just under 12 percent of respondents gave this description. For example:

Page 7 guidelines for environmental education — to encourage environmentally responsible behaviour and informed participation in decision making by
promoting environmental education throughout the community. [Full primary — principal]

A cross-tabs analysis of these responses showed that 93 percent of the 40 respondents who gave this description considered themselves familiar or very familiar with the contents of the Guidelines.

Descriptions falling in multiple categories

The Guidelines state that a balanced course of study needs to include all 3 of the dimensions of environmental education (Ministry of Education, 1999, p. 14). A cross-tabs analysis indicated 111 respondents had outlined a meaning for environmental education that included learning about and developing attitudes and values towards the environment, (Aims 1, 2, and 3). Of these 111 responses, 34 percent mentioned student learning about the environment, developing values and attitudes towards the environment, and developing skills or strategies for investigating or problem-solving associated with environmental issues (Aims 1, 2, 3, and 4). Twenty percent stated that students need to learn about the environment develop values and attitudes towards the environment and take actions for environment (Aims 1, 2, 3, and 5). Therefore, overall, 18 percent of responses described environmental education in terms of Aims 1, 2, 3, and either 4 or 5. Less than 3 percent of responses included all 5 aims.

Other descriptions of environmental education

Responses (17 percent) that fell outside the “about, in, and for the environment” categories were placed in 2 remaining categories.

Environmental education is within specific curriculum areas

Slightly under 10 percent of the responses described environmental education as occurring within specific curriculum areas or as an interdisciplinary study. Science and social studies were the curriculum learning areas most often mentioned. Some responses were:

Teaching good science so they are aware of the balance of nature. [Contributing primary — curriculum leader]

Within social studies some areas of environmental education are covered. [Secondary — head of department]

A holistic interdisciplinary approach to studies of the natural environment and our role as people within it. [Secondary — deputy principal]

Other comments

Those responses (7 percent) that didn’t easily fit within the main categories were placed here. Interestingly, only 2 respondents gave critical descriptions of environmental education:

A politically motivated form of conditioning to facilitate the impositions of restrictions on disadvantaged sections of a population with little objection in
order to maintain strategic environment resources that will only be accessible to the affluent. [Contributing primary/decile 3 — EE-trained deputy principal]

An unhelpful propaganda term. [Contributing primary/decile 5 — EE-trained teacher]

Descriptions of interdependence, sustainability, biodiversity, and personal and social responsibility

Respondents’ descriptions of environmental education were also analysed for evidence of a focus on the key concepts of environmental education: interdependence, sustainability, biodiversity, and personal and social responsibility. Table 12 shows the number of responses that could be considered to include these concepts.

Table 12

<table>
<thead>
<tr>
<th>Key concept</th>
<th>% of respondents (n=344)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interdependence &amp; personal and social responsibility</td>
<td>34</td>
</tr>
<tr>
<td>Sustainability</td>
<td>21</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>1</td>
</tr>
</tbody>
</table>


Just over a third (34 percent) of the descriptions of environmental education could be interpreted as indicating that environmental education involved students learning about interdependence, and personal and social responsibility. Just over a fifth (21 percent) of responses included specific mention of sustainability and/or a concern with action for the future. For example:

Letting kids be aware of our environment — our effects, other effects on it, and thinking how we can keep it healthy and continue to use it in a sustainable manner. [Full primary — teacher]

Guardianship concept. Being able to do something sustainable in our own backyard. [Secondary — teacher]

Only 1 percent of responses included direct mention of all 4 key concepts of environmental education. An example was:

Improving the environment — biodiversity. Sustainability — recycling — Interdependence — personal and social responsibility in for, and about the environment. [Full primary — deputy principal]
**Awareness of the Guidelines for Environmental Education in New Zealand Schools**

Almost half of the respondents were “familiar” or “very familiar” with the contents of the *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999). Figure 2 shows an even split between those respondents who were and were not familiar with the *Guidelines*.

**Figure 1**

*Awareness of the Guidelines for Environmental Education in New Zealand Schools*

Familiarity with the *Guidelines* was related strongly with both environmental education leadership in the school, and with environmental education in-service training. Just over three-quarters (78 percent) of the respondents who were environmental leaders or co-ordinators considered they were familiar or very familiar with the *Guidelines*. All but one of the respondents who indicated they had had in-service training reported they were aware of or familiar with the *Guidelines* to some extent, a majority (78 percent) that they were familiar or very familiar. Of those who indicated they had not undertaken environmental education training, 23 percent considered they were familiar or very familiar with the *Guidelines*.

Over half of the respondents from schools that had participated in *Guidelines* training (52 percent) indicated they were not aware of or not familiar with the content of the *Guidelines*. 
SUMMARY

Characteristics of respondents

The majority of the 367 respondents to the survey were from primary schools. Two-thirds (68 percent) were involved in environmental education as classroom teachers and a third as leaders or co-ordinators of environmental education in their school. The largest group of respondents taught at the junior primary level, Years 4 to 6. Of the 82 secondary teachers, one half taught in the science area and a third taught social science subjects.

Most of the respondents were experienced teachers who had been involved in environmental education for less than 5 years, although 16 percent considered they had been teaching environmental education for as long as they had been teaching (for 11 percent this was for more than 15 years).

Just over half of the respondents had undergone environmental education training, mainly in-service training. The majority of teachers who had received in-service training were from schools which had participated in environmental education Guidelines training. Other sources of training were local authorities, environmental sector groups, and tertiary institutions who were providing qualifications in environmental education.

Half of the respondents indicated a familiarity with the Guidelines for Environmental Education in New Zealand Schools (Ministry of Education, 1999). Respondents who held an environmental education leadership position in the school, or who had participated in environmental education in-service training, were more familiar with the Guidelines than other respondents.

Respondents’ meanings for environmental education

The majority (68 percent) of those who described what “environmental education” meant to them (n=344) included education “about” the environment in their description. Other significant views included the development of student attitudes and values towards the environment (34 percent) and students learning how to take actions that are environment-friendly (21 percent).

The Guidelines indicate that all 3 dimensions of in, for, and about the environment and all 5 aims need to be addressed in a balanced environmental education programme. Thirty percent described environmental education as students developing knowledge and values and attitudes towards the environment. However, only about a fifth of those who outlined their view of environmental education (n=344) described environmental education in terms of 4 or more aims outlined in the Guidelines.

Other key findings are:

- Many respondents seem to be familiar with the dimensions of environmental education laid out in the Guidelines (that is, education “in”, “for”, and “about” the environment), and some mentioned this without further elaboration.
• A reasonable number of respondents described environmental education in terms of learners developing strategies to take action “for” the environment, but fewer actually described real actions undertaken by students. Only a very small number of responses indicated that students’ actions should be based on informed choice or that student decision making was an important facet of environmental education.

• Fewer respondents mentioned the 4 key concepts (interdependence, sustainability, biodiversity, and responsibility) than mentioned the 3 dimensions (“in”, “about”, and “for” the environment).

• Of the 4 key concepts, the concepts of interdependence and personal and social responsibility were most commonly mentioned (34 percent). Sustainability and/or a focus on the future were included in 20 percent of responses. Biodiversity was mentioned explicitly by only very few respondents (1 percent).
CHAPTER FOUR: KEY CHARACTERISTICS OF ENVIRONMENTAL EDUCATION IN NEW ZEALAND SCHOOLS

The Ministry of Education in New Zealand released the *Guidelines for Environmental Education in New Zealand Schools* to schools in 1999 (Ministry of Education, 1999). This publication was the culmination of at least a decade of pressure from the environmental education community for an official environmental education curriculum guideline/document. Development of the *Guidelines* marked a definitive attempt by the Ministry of Education to provide teachers with guidance in their planning for environmental education.

Environmental education is not mandatory in schools and is intended to integrate across essential curriculum learning areas. The *Guidelines* suggest a whole school approach to environmental education. They emphasise the value of Māori knowledge and values, outline an 8-step process for planning for environmental education, and provide details of units that integrate environmental education into the essential learning areas in the *New Zealand Curriculum Framework* (Ministry of Education, 1993).

This chapter sets out the survey findings regarding the characteristics of the environmental education programmes currently offered in New Zealand schools. The first section reports on the structure and status of environmental education in school policy and planning. The second section reports on the characteristics of classroom environmental education programmes and activities.

KEY CHARACTERISTICS OF SCHOOL SYSTEMS FOR ENVIRONMENTAL EDUCATION

This section reports on current practice of environmental education at the systems level.

Formal incorporation of environmental education into school systems

Table 13 shows respondents’ views of how, if at all, environmental education featured in various school documents.

<table>
<thead>
<tr>
<th>Type of documentation</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Not sure (%)</th>
<th>No response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>School charter</td>
<td>23</td>
<td>32</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>Board of Trustees policy</td>
<td>26</td>
<td>28</td>
<td>32</td>
<td>14</td>
</tr>
<tr>
<td>School strategic plan</td>
<td>36</td>
<td>24</td>
<td>28</td>
<td>12</td>
</tr>
<tr>
<td>Departmental plan</td>
<td>64</td>
<td>15</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>Teacher appraisal</td>
<td>17</td>
<td>54</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Student reporting</td>
<td>26</td>
<td>42</td>
<td>12</td>
<td>20</td>
</tr>
</tbody>
</table>
Environmental education was more likely to be incorporated into departmental plans than other levels of documentation. Around a quarter of respondents reported that environmental education was included in high-level policy at their schools (charters and Board of Trustees policy), although more than a third of respondents were unsure whether it was included in these documents or not. About a quarter of respondents claimed that environmental education was included in student reporting, however it is not clear whether this was as part of reporting about other curricula within which environmental education was taught. Less than a fifth of respondents (17 percent) reported that teaching of environmental education was evaluated in teacher appraisal.

Overall, environmental education was more likely to be incorporated formally into school curriculum policy and practice in primary and intermediate schools, with nearly a third of respondents from these schools indicating it was included in the school charter and Board of Trustees policy. By contrast, only 10 percent of secondary school respondents indicated this was the case.

The structure of environmental education in schools — programme organisation

The Guidelines for Environmental Education in New Zealand Schools promote a curriculum-integrated approach to environmental education. Respondents were asked if their environmental education programme was integrated across curriculum learning areas or subjects, or incorporated into a single curriculum learning area/subject. Many primary school respondents (83 percent) and secondary Year 9–15 respondents (79 percent) reported that environmental education was integrated across curriculum learning areas in their schools. In contrast, approximately 60 percent of intermediate and secondary Year 7–15 respondents reported environmental education was integrated across learning areas (although the number of respondents was low for these school types).

The structure of environmental education in schools — timetabling

Respondents were asked if the environmental education in their school was either formally timetabled, or taught when individual teachers chose to teach it, or structured into the timetable in some other way. More than half (57 percent) of the respondents reported that it was individual teacher choice that determined when environmental education was taught during the school week. Only 18 percent of respondents reported that environmental education was formally timetabled, and 25 percent indicated that it was structured in some other way. Over 60 percent of primary and approximately 50 percent of intermediate and secondary respondents reported that teachers decided when environmental education was timetabled into the school/classroom schedule, i.e., when environmental education teaching and learning occurred.

The 18 percent of respondents who indicated that environmental education was timetabled may have been considering it as integrated within a curriculum learning area which is timetabled. This was certainly the case in the comments of those who provided additional commentary.
Shows as technology on our timetable. It is the core of our technology programme. In the tech programme currently reflects our involvement. [Intermediate — principal]

The other ways respondents noted that they incorporated environmental education into their teaching included having a school-wide focus (2 percent), spreading it over a whole year (2 percent), and using lunchtime groups and extracurricular study (1 percent). The following comments illustrate 2 approaches to a school-wide focus:

- It is part of ‘our place’ — whole school topic. [Contributing primary — principal]
- Enviro group — one child from each class meet to discuss school environmental issues. [Contributing primary — curriculum leader]

The structure of environmental education in schools — curriculum delivery structure

Respondents were asked whether their environmental education was taught throughout the whole year, in blocks, or in other ways. Fifty-eight percent of respondents from all school types reported that environmental education was taught throughout the year, just over a quarter (26 percent) taught it in blocks, and 16 percent taught it in other ways. There was little variation in delivery structure by school type. These findings suggest that environmental education in many schools may be taught across the whole year within and/or between subjects, and that in some schools it is taught as a block with a specific focus on environmental education.

Integration of environmental education within particular learning areas

Across all school types, most (80 percent) respondents reported that environmental education was integrated into science, and nearly two-thirds (62 percent) that it was integrated into social science subjects. At the primary level, over half of the respondents reported environmental education as integrated with all learning areas except mathematics. At intermediate level, environmental education was most likely to be integrated with science or technology, and at secondary level with science or social science. Across all school types, environmental education was least likely to be integrated into mathematics.

Support for environmental education at a systems level

This section reviews what support the survey respondents felt environmental education received within their school. Via a tick-box, three-quarters (76 percent) claimed support from the classroom and subject teachers and nearly two-thirds (64 percent) claimed support from their students. However, the support from principals and students was more evident in primary and intermediate schools than in secondary schools.

As environmental education is not a mandatory curriculum learning area, it is likely that strong leadership may be required to support its development. Approximately 80 percent of primary and
intermediate respondents reported the principal supported environmental education. The proportion dropped to 66 percent for special school respondents and to under 50 percent for secondary and composite/restricted composite schools, although the numbers were small. Principals’ perceptions of their support for environmental education was higher (92 percent) than they were credited by their staff (74 percent). Similarly, deputy/assistant/associate principals saw themselves as more supportive (80 percent) than other staff did (55 percent).

Half of the respondents said parents, Boards of Trustees, deputy/assistant/associate principals, curriculum leaders, and caretakers/grounds staff were supportive of environmental education at the school level. Again, this support was much more evident in primary and intermediate schools than in secondary schools. Respondents from secondary Year 9–15 schools reported significant support from school-based environmental interest groups (62 percent). A third of primary respondents reported support from school-based environmental interest groups.

When asked about support from outside the school, a third of the respondents (34 percent) mentioned support from the wider community and nearly half (45 percent) from environmental organisations. A variety of organisations were listed as supporting schools in their environmental education, as shown in Table 14.
### Table 14

*Organisations supporting environmental education in schools*

<table>
<thead>
<tr>
<th>Organisations</th>
<th>% of respondents (n=160)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional councils</td>
<td>31</td>
</tr>
<tr>
<td>City councils</td>
<td>23</td>
</tr>
<tr>
<td>Department of Conservation</td>
<td>21</td>
</tr>
<tr>
<td>District councils</td>
<td>10</td>
</tr>
<tr>
<td>Waste management organisations</td>
<td>8</td>
</tr>
<tr>
<td>Local trusts</td>
<td>8</td>
</tr>
<tr>
<td>Trees for Survival</td>
<td>7</td>
</tr>
<tr>
<td>Local iwi</td>
<td>6</td>
</tr>
<tr>
<td>Wai Care</td>
<td>6</td>
</tr>
<tr>
<td>Royal Forest and Bird</td>
<td>6</td>
</tr>
<tr>
<td>Lions/Rotary Club</td>
<td>6</td>
</tr>
<tr>
<td>World Wild Life Fund</td>
<td>6</td>
</tr>
<tr>
<td>Kaipatiki Ecological Restoration Project</td>
<td>5</td>
</tr>
<tr>
<td>GLOBE</td>
<td>5</td>
</tr>
<tr>
<td>Fish and Game</td>
<td>5</td>
</tr>
<tr>
<td>NZ Association for Environmental Education</td>
<td>5</td>
</tr>
<tr>
<td>Garden centres</td>
<td>3</td>
</tr>
<tr>
<td>Enviroschools programme</td>
<td>3</td>
</tr>
<tr>
<td>Land care</td>
<td>2</td>
</tr>
<tr>
<td>Local newspaper</td>
<td>2</td>
</tr>
</tbody>
</table>

This table indicates that local authorities such as regional, district, and city councils are providing the most support for environmental education in schools. Additionally, other programmes listed in the table such as the Wai Care are supported by councils in the Auckland Region. Evidently the Department of Conservation also plays a significant role in supporting school-based environmental education. A large number of community-based voluntary organisations are also providing environmental education support and resources to schools. A full list of supporting organisations can be found in Appendix Three.

**KEY CHARACTERISTICS OF CLASSROOM PRACTICE FOR ENVIRONMENTAL EDUCATION**

As discussed in Chapter Two, a major methodological challenge for the design of the survey was whether or not to define what constituted “environmental education”. The decision was made to ask respondents to provide a meaning for the term (see Chapter Three), to outline their purposes...
for teaching environmental education and to describe the key features of units respondents considered effective for meeting these purposes. By seeking information in this way, we hoped to elicit a coherent picture of environmental education practice (and the views which underpin it) in the respondents’ classrooms and/or schools.

**Purposes for environmental education programme**

Respondents were asked to detail what they were trying to achieve with their own environmental education programme. Their responses were categorised using the framework used to analyse the respondents’ definitions for environmental education (Chapter Three).
### Table 15

**Respondents’ purposes for their environmental education programmes**

<table>
<thead>
<tr>
<th>Response category</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the environment</td>
<td>Students to participate in activities within their school, local environment.</td>
<td>Understand the concepts of sustainability, biodiversity, climate change. Develop scientific knowledge about the environment. Have a broadened knowledge of the environment. Become more aware of the impact of humans on the environment. Become aware of the impact of industry and management practices that minimise impacts. Become aware of the issues surrounding the sustainability of the environment. Become aware of ecology and ecosystems. Become aware of pollution, litter, recycling. Become aware of the need to care for the environment.</td>
</tr>
<tr>
<td>About the environment</td>
<td>A focus on students gaining an increased awareness of, increased understanding of, or knowledge about the environment and/or local environment.</td>
<td>Students will show increased responsibility for caring for the environment. Consideration of the future care of the environment. Recognition of their role as caretakers of our planet. Support for global environmental education programmes. Improved attitudes towards the environment.</td>
</tr>
<tr>
<td>Attitudes and values towards the environment</td>
<td>A focus on students developing a heightened sense of responsibility and respect towards the environment through a change in attitude.</td>
<td></td>
</tr>
<tr>
<td>Strategies for the environment</td>
<td>Students will “learn how to” care for the environment.</td>
<td></td>
</tr>
<tr>
<td>Action for the environment</td>
<td>Descriptions of the actions students will take.</td>
<td>Actions including gardening, recycling in the school and local community.</td>
</tr>
<tr>
<td>Environmental education as integrated with other curriculum areas</td>
<td>Descriptions of how environmental education will be integrated with and contribute to other curriculum areas.</td>
<td></td>
</tr>
<tr>
<td>Reiteration of Guidelines definition of environmental education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other comments</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 16

Frequencies of respondents’ descriptions of their environmental education programme purposes

<table>
<thead>
<tr>
<th>Description</th>
<th>% of respondents</th>
<th>(n=261)</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the environment</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Attitudes and values towards the environment</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Action for the environment</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Strategies for the environment</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>In the environment</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Environmental education integrated with other curriculum areas</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Reiteration of Guidelines definition of environment education</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other general comments</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

“About” the environment

Over two-thirds (70 percent) of respondents reported that a purpose of their environmental education programme was to increase student knowledge about and awareness of the environment and the issues that surround this in today’s world and in the future. This kind of response was far more common that any other category.

An awareness of issues, a positive attitude towards the environment, a personal commitment towards action (and personal responsibility for this). A filtering of these attitudes into life outside of school. [Full primary — teacher]

Develop knowledge of the issues, attitudes and values reflecting care, skills to enable them to be pro-active in solving issues that relate to them. [Intermediate — curriculum leader]

Thirteen percent of responses indicated that sustainability was a focus of teaching.

To make students aware of the concepts of sustainability and the consequences to human life of not being aware of the implications of our actions concerning our environment. [Secondary — head of department]

Attitudes and values towards the environment

Over a third of those who described their environmental education programme purposes (38 percent) were concerned about students gaining a sense of responsibility towards and respect for the environment. Two percent described this as the sole aim of their programme. For example:

To make learning about the environment active. We know the content — what do we do about it! Changing attitudes and values. [Full primary — teacher]
Student action for the environment

Nearly a third of the respondents included student action as a purpose for their environmental education. These descriptions tended to be very specific and focused on the school and/or local environment. Seven percent of respondents reported student action as the sole aim of their programmes. Two examples follow:

Improving a section of our school into an organic garden. Get children into gardening. 0 percent Waste. [Full primary — teacher]

Clean up of local car park, planting native shrubs/plants. [Intermediate — teacher]

Other responses included in this category:

Recycle waste into the appropriate areas where it does not become waste. Help children to see how we impact upon the earth/environment with our waste. [Full primary — teacher]

Teach about care of environment, understanding implications of actions, understand need for sustainability of resources, use practical things like worm farm and recycling. [Full primary — deputy principal]

Eight percent of responses described a whole school focus.

Teaching children about sustainability through the edible gardens project and whole school recycling. Awareness of the issues involved. [Full primary — teacher]

Seven percent of responses had student decision-making as a purpose. An example is:

Awareness of the world around us and their place in it. Getting students to explore issues and to develop the ability to make responsible decisions regarding conservation of our environment. [Contributing primary — teacher]

Strategies for the environment

Eight percent of respondents described strategies for investigating or problem-solving associated with environmental issues as a purpose of their environmental education programme. For example:

Teach children for environment, how to safely interact with the environment, what they can learn from the environment. [Full primary — teacher]

In the environment

When respondents wrote about students being in the environment — that is, outside the classroom - their responses were categorised as “in the environment” unless there was mention of specific action being undertaken by the students “for” the environment, in which case the response was
categorised as action for the environment. Six percent of responses mentioned education in the environment.

To give children a hands on experience to reinforce the achievement objectives in whatever curriculum area is involved. To take them out of the 4 walls and try new things — challenge themselves. [Contributing primary — deputy principal]

Purposes falling in multiple categories

Just under a quarter of those who outlined their environmental education programme purposes described the development of student knowledge, attitudes, and values. Thirteen percent of responses mentioned the development of student knowledge, attitudes, values, and action for the environment. Table 17 summarises these combinations.

Table 17

| Description                                                                 | % of respondents (n=261) |
|                                                                            |                           |
| Knowledge about and attitudes and values towards the environment           | 24                         |
| Knowledge of, attitudes and values towards, and action for the environment | 13                         |
| Knowledge of and action for the environment                               | 13                         |
| Attitudes and values towards, and strategies or action for the environment | 6                          |
| Knowledge about and strategies for the environment                        | 2                          |

Other responses

Four percent of responses described the integration of environmental education with other curriculum learning areas, most often science.

Student awareness. Students who enter college and university who are prepared to take responsibility for their global environment. Students who inspire others to take responsibility also. I want my students to be interested in science and follow this interest when making career choices. [Contributing primary — curriculum leader]

Student learning opportunities in environmental education

Questions 17 to 22 prompted respondents to describe an example of an environmental education topic that had worked well to meet the purposes of their environmental education programme.
Two hundred and forty-five respondents, approximately two-thirds of the respondents to the survey, provided descriptions of topics that had worked well for them. These descriptions included an outline of the unit topic, its duration and the level at which it was taught; the learning activities, links, resources, and supports used; actions taken “for” the environment; and student, teacher, school, and community achievements.

Topics and activities

Respondents’ descriptions were categorised into 4 topic areas, with a number of sub-topics, on the basis of unit titles and the focus of learning activities. These areas were:

- waste management and minimisation, mentioned by nearly 30 percent (29 percent) of all respondents who described units, and with sub-topic categories of litter management, recycling, and worm farming/composting;
- water studies, identified by nearly a quarter (24 percent) of respondents, and with sub-topic categories of fresh water and marine studies;
- planting and gardening (16 percent); and
- units with a broader focus (30 percent). Sub-topics for this category were: school environment, resource management, native flora and fauna, global issues, water, art and culture, weather.

Table 18 shows the number of responses for each topic area.
Table 18

*Topic areas for effective environmental education units*

<table>
<thead>
<tr>
<th>Topic</th>
<th>% of responses (n=245)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td><strong>Waste management &amp; minimisation</strong></td>
<td>30</td>
</tr>
<tr>
<td>Recycling</td>
<td>16</td>
</tr>
<tr>
<td>Worm farming/composting</td>
<td>9</td>
</tr>
<tr>
<td>Litter management</td>
<td>5</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>24</td>
</tr>
<tr>
<td>Fresh water</td>
<td>18</td>
</tr>
<tr>
<td>Marine studies</td>
<td>6</td>
</tr>
<tr>
<td><strong>Planting and gardening</strong></td>
<td>16</td>
</tr>
<tr>
<td>Planting</td>
<td>8</td>
</tr>
<tr>
<td>Gardening</td>
<td>8</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>30</td>
</tr>
<tr>
<td>Native flora and fauna</td>
<td>9</td>
</tr>
<tr>
<td>Resource management</td>
<td>9</td>
</tr>
<tr>
<td>Global issues</td>
<td>4</td>
</tr>
<tr>
<td>Art and culture</td>
<td>4</td>
</tr>
<tr>
<td>School environment</td>
<td>3</td>
</tr>
<tr>
<td>Weather</td>
<td>1</td>
</tr>
</tbody>
</table>

**Recycling**

Units with the topic “Recycling” had a theme of “reduce, reuse, recycle”. They were distinct from the units on litter management and minimisation because the focus tended to be recycling rather than only on reducing waste. The activities described included waste classification, trips to local refuse and recycling centres, the setting up of “green bins”, and letter writing. A typical set of activities for the topic “Recycling” follows.

Visit to landfill and sorting depot, science, biodegradability, lake edge clean up — Maths data collection. Participation in World Enviro Day. Roadside banners 'give earth a chance', created and produced a class CD 'Enviroschools Song'.

Created a recycling school environment physical and attitudes — worm farms, produced booklets, sleepovers, sent PowerPoint to Dept of Education etc with Environmental activities. [Level 3 unit of 10 weeks’ duration — contributing primary — curriculum leader]

The following description is from a secondary school head of department:

Field trip to Ferrymead, taken back in time to establish what happened re rubbish creation and disposal. Field trip to CC compost plant and recycling centre and local bush and McDonalds — focus how society decisions affect the way rubbish is viewed and how pro-active decisions have provided for future
generations. Big question — what can we do? (Year 9 unit of 3 weeks’ duration — secondary Year 9–15 — head of department — social science)

**Litter management**

Units categorised as having the topic “Litter Management” included such activities as: waste audits and actions to reduce the waste/litter generated by individual children, the class, and/or the school. To this end, 2 respondents stated that their Year 1 and 2 children conducted a waste audit of their lunch box and then acted to minimise the waste produced. Others investigated biodegradable packaging and/or ways of minimising packaging. Students also cleared rubbish from local roadsides, stream banks, and the beach. The following example is typical of the activities reported for the topic “Litter”.

Clean up the school — collect litter in the school grounds. Pick up litter in local community. Pick up litter in outlying community. Collate info: How can we keep NZ Green? Recycling: visit from local recycling firm. Speech making: Topic Keep NZ Clean & Green. Monitor local waterways. [Year 3 unit of 3 weeks’ duration — full primary — teacher]

**Worm farming and/or composting**

Units with the topic “Worm Farming” and/or “Composting” focused on the study of worms, the production of compost, and setting up worm farms. Activities were associated with these tasks but also included waste audits, the collection of food scraps, producing “worm juice”, visits to local worm farms, and input from visiting speakers.

Established classroom worm bin and learned all about vermiculture, talk given by Kaipatiki ecological restoration project (KERP) ‘expert’ on composting/vermiculture, surveys completed regarding needs of school/community regarding waste management and composting. [Level 3 unit of 4 weeks’ duration — full primary — teacher]

**Water**

“Water”- related units included seashore, estuary, stream, lake, storm water, water pollution, water usage, and conservation studies. The activities reported for these units were water quality testing, plant and animal sampling, planting along water margins, litter collection, art, and literature.

Stream testing — local park. Raised public awareness by holding a clean-up festival. Activities prior included a radio ad, t-shirts/bandannas, badges/signs/bins all printed with slogans a doggy bag dispenser sign was also popular in the park. [Level 3 unit with an initial focus of 6 weeks but continued whole term — contributing primary — curriculum leader]
Planting

The units classified as “Planting” had as an end goal the planting of trees and shrubs in the school or local environment. They included activities such as tree planting (sometimes in conjunction with Arbour Day), restoration projects, Trees for Survival units, planting a sunshine/shade area in the school grounds, the propagation of native plants, and planting of local walkways. The following 3 units illustrate the nature of the activities used for this topic at a range of levels. The activities are somewhat similar but presumably learning outcomes are not.

Identify areas of school where issue arises. Identify plants not surviving in areas. Identify plants which are doing well. Approach Board of Trustees with issue & suggest solution. With caretakers’ and parents’ help — remove roses & flowers. Break up existing grass, bring in local limestone, rocks and grasses. Observe plants and continue developments. [Year 1 unit that was ongoing but with a 1 month focused introduction — full primary — deputy principal]

Seed collection and growing (native), propagation and growing on/transplanting from cuttings and division to planting out. Mapping school grounds, identifying areas of need, working with other classes on projects, building and constructing projects, surveying and letter writing. [Year 3/4, ongoing — contributing primary — curriculum leader]

Planning a revegetation project, surveying an area for revegetation, growing plants and planting through the Trees For Survival programme. [Year 12 unit of 4 weeks’ duration — secondary Years 9–15 — deputy principal — arts/health and physical well being]

Gardening

“Gardening” units were those with a focus on the development of an edible, organic, or sustainable garden, growing flowers and/or the germination of seeds and plant propagation. The following are descriptions of activities from units categorised as “Gardening”.

Students are involved in providing fresh nutritious and safe food for the Food Tech. Programme. They make compost and organic sprays, grow the vegetables and make use of companion planting. They are doing the physical work in the environment, learning about the interaction with nature and the environment, and positively acting ‘for’ the environment by using natural systems to grow useful food. [Level 3/4, ongoing, intermediate — curriculum leader]

Investigate birds in area, their feed needs. Investigate which plants will grow in our climate (a challenge). Plan a garden area for native birds. Provide landscape plan, costings and a persuasive argument to the BOT. Organise working bees. Maintain budget sheet, plant and maintain. [Level 2–4 unit, ongoing — contributing primary — deputy principal]

Native flora and fauna

“Native Flora and Fauna” units focused on developing student understanding of, and action for, native plants and animals in the local environment, often out of the school grounds. Typical
activities were bush studies (often in conjunction with camps), tree planting and weeding, and discussion with visiting speakers.

Survey classifying local bird life, distinguishing between indigenous and introduced — looking at adaptive features of birds (local) and designing and building bird feeder to encourage native birds into school — plantings, visiting Tiritirimatangi Island and looking at how it is being restored to provide habitats for local birds. [Year 5/6, integrated throughout the term — contributing primary — curriculum leader]

**Resource management**

Focused more broadly, “Resource Management” units were concerned with the use of renewable resources and addressed a range of issues to do with local and renewable resource management, and the study of local parks and open spaces. Unit activities included local site visits, litter collection, discussion with visiting speakers, and literature or Web-based research.

Field study assignment concurrent with worksheets on National/local management strategies, e.g., Waikato — source of water for region, forestry concerns of West Coasters, possum control in local areas, e.g., Waitakeres, local stream water quality and replanting/restoration programme. [Year 12, 3 weeks — composite/restricted composite — curriculum leader]

**Global issues**

The “Global Issues” units were focused around yet wider issues such as global warming, rainforest destruction, the greenhouse effect, nuclear testing in the Pacific, and acid rain. These units tended to have a strong focus on values development and were approached from a social studies/geography perspective.

Used climate change kit and other recent resources — causes of climate change, New Zealand greenhouse gas emissions, current political thinking and Kyoto. Students completed individual responses to NZCC program feedback, questionnaire and received certificates from Minister. [Year 10, 2 weeks — secondary Years 9—15 — head of department]

Surveying local businesses to find out which woods are sold/used most and why. Made summaries/alternative suggestions. Studied global warming/rainforests. Developed models and diagrams. [Years 7/8, 10 weeks — full primary — curriculum leader]

**Art and culture**

The “Art and Culture” units involved students in planning and painting a mural, studying Maori legends and heritage buildings, studying overseas culture, and flax art work.

Posters about NZ conservation, discussion of how nature important part of NZ — NZ artists reflect it, research on endangered species, use organic garden,
introduce sustainable resources, keep NZ going. [A level 2 unit of 5 weeks’ duration, integrated across all learning areas — contributing primary — teacher]

The school environment

Units with the topic of “School Environment” differed from those described above in that the focus was on issues in the whole school environment. Activities listed by respondents included mapping the school environment, the analysis of school waste, and designing a school recycling scheme.


Whole school approaches to environmental education

Thirty respondents indicated the units they described involved the “wholeschool” as recommended by the Guidelines. Twelve of these units had a topic of “Gardening”. Other topics, each reported by fewer than 4 respondents, were “Recycling”, “Worm Farming/Composting”, “Litter Management”, “Planting”, and “Water Studies”.

Variation of topics according to school type

A school type analysis of the topics indicated there was some variation in the environmental education topics taught across the school types. Table 19 summarises this.
### Table 19

**Environmental education topics according to school type**

<table>
<thead>
<tr>
<th>Topic area</th>
<th>Cont primary (Yr 1–6)</th>
<th>Full primary (Yr 1–8)</th>
<th>Intermed (Yr 7–8)</th>
<th>Secondary (Yr 7–15)</th>
<th>Secondary (Yr 9–15)</th>
<th>Comp/resc comp.</th>
<th>Special school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh water</td>
<td>17</td>
<td>7</td>
<td>9</td>
<td>1</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling</td>
<td>19</td>
<td>11</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Native flora and fauna</td>
<td>10</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worm farming</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Resource management</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gardening</td>
<td>6</td>
<td>10</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planting</td>
<td>8</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marine studies</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Litter management</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global issues</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art and culture</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School environment</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weather</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>79</strong></td>
<td><strong>23</strong></td>
<td><strong>11</strong></td>
<td><strong>34</strong></td>
<td><strong>6</strong></td>
<td><strong>4</strong></td>
</tr>
</tbody>
</table>

Respondents from all school types identified water-related, resource management, and planting topics as effective in meeting the purposes of their environmental education programme. Over a quarter (n=10/36) of the secondary school Year 9 –15 respondents reported they found fresh water studies as effective. In contrast, only primary and intermediate school respondents identified gardening and worm farming as effective environmental education topics. Recycling and native flora and fauna were mentioned mainly by primary and intermediate school respondents. Nearly a fifth of respondents from primary schools identified recycling as an effective topic. Overall, few respondents described environmental education topics drawn from “Art and Culture” or “Global Issues”. Where these were named, “Art and Culture” topics were more common at primary level, and “Global Issues” topics were slightly more common at secondary level.

**Activities “in”, “about”, and “for” the environment**

**“In” the environment**

Ninety-two percent of the units described by respondents as effective involved students in some activities outside the classroom. For litter management, recycling, worm farming/composting, gardening, planting, and school environment these activities were usually within the school
grounds. In 12 percent of the units one of the purposes for travelling outside the school was to visit environmental sector businesses such as recycling plants, Zero-waste facilities, landfills, gardening, and organic gardening centres.

All the water units, and the native flora and fauna units, as well as some of the resource management and planting units - 90 units in all - included activities that engaged students in the environment outside the school grounds. Responses indicated that students undertook action for the environment, often with assistance or input from environmental “experts”, as the following example illustrates:

> Visited local pipi beds (our school is 99 percent Māori), collected and measured pipi with fishery officers to realise size restrictions is important for perpetuating pipi for future. We also involved Kaumatua to talk about significance of area to importance of conserving Kai moana. [Full primary — teacher]

“About” the environment

All units could be considered to include activities in support of enhanced student knowledge and understanding. Along with the activities outlined above, students undertook research projects using written and Internet resources. Students also investigated the nature and extent of the “root” causes of some issues, for example the volume and types of litter generated by their own lunch and within the school grounds, and water quality along with plant and animal monitoring. Education in this dimension also utilised links with local environmental professionals and included in-class or school talks from, and discussions with, representatives from the Department of Conservation, groups like Forest and Bird, garden centres and organic gardeners, and waste management/recycling businesses.

“For” the environment

In response to a direct question on what the unit they described achieved “for” the environment (Question 20), 233 respondents reported student actions. Most of the reported actions were consistent with the topic themes and involved activities such as recycling, planting, and cleaning up litter. A few respondents reported on a change in student attitude towards the environment (4 percent) and learning (2 percent) as student action “for” the environment. Eleven percent described students communicating their ideas and findings to others, most notably to their families and the community, as action “for” the environment. Just under 10 percent of respondents reported that students identified and planned for a course of action, with no indication that they actually took the planned action.
Table 20

*Student action “for” the environment*

<table>
<thead>
<tr>
<th>Practical action:</th>
<th>Number of responses (n=233)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling</td>
<td>25</td>
</tr>
<tr>
<td>Worm farming</td>
<td>12</td>
</tr>
<tr>
<td>Gardening</td>
<td>12</td>
</tr>
<tr>
<td>Composting</td>
<td>9</td>
</tr>
<tr>
<td>Reducing waste</td>
<td>8</td>
</tr>
<tr>
<td>Planting natives</td>
<td>7</td>
</tr>
<tr>
<td>Collecting data</td>
<td>7</td>
</tr>
<tr>
<td>Planting trees</td>
<td>6</td>
</tr>
<tr>
<td>Weeding</td>
<td>5</td>
</tr>
<tr>
<td>Removing litter</td>
<td>3</td>
</tr>
<tr>
<td>Pest control</td>
<td>2</td>
</tr>
<tr>
<td>Waste audit</td>
<td>1</td>
</tr>
<tr>
<td>Students identified &amp; planned “for” action</td>
<td>9</td>
</tr>
<tr>
<td>action (but did not take action)</td>
<td></td>
</tr>
<tr>
<td>Advocated in home/community</td>
<td>9</td>
</tr>
<tr>
<td>Awareness of environmental issues</td>
<td>8</td>
</tr>
<tr>
<td>Changed attitude towards environment</td>
<td>4</td>
</tr>
<tr>
<td>Action with family</td>
<td>3</td>
</tr>
<tr>
<td>Changed attitude towards learning</td>
<td>2</td>
</tr>
<tr>
<td>Communication — whole school</td>
<td>2</td>
</tr>
</tbody>
</table>

Recycling was the most common action taken “for” the environment, reported by a quarter of respondents. Approximately 10 percent of respondents described worm farming, gardening, and composting as student actions “for” the environment.


Set up a system of recycling in school that can be used by the community. [Full primary topic — teacher — ‘Recycling’]

Reduce school waste to landfill. Turn supposed waste into a beneficial product (compost) for our gardens and trees. [Level 2 topic — special school — curriculum leader — ‘Composting/worm farming’]
Grow healthy food for themselves by working with natural systems, e.g.,
making and using compost, and organic sprays, companion planting.
Maintaining a healthy, productive environment. [Level 3/4 — intermediate —
curriculum leader — ‘Organic Gardens’].

Advocacy activities involving action “for” the environment included student letter writing to
businesses and manufacturers, newsletters to home, discussions with local interest groups, school
open days to promote recycling, and the placing of anti-littering signs within the community.

The following comment illustrates the category of “changed attitudes towards the environment”:

Many are awakened to a different consciousness and feel ‘part’ of planet earth —
usually even more so after sensory activities explored. Positive attitudes are
obvious. [Composite/restricted composite — teacher — ‘Big bang theory/Māori
Legends/Creation’]

Actions with families included sharing ideas about and setting up recycling systems and gardens.
### Table 21

*Student action “for” the environment according to environmental education topic*

<table>
<thead>
<tr>
<th>Student practical action for the environment</th>
<th>Litter</th>
<th>Recycling</th>
<th>Worm farming</th>
<th>Gardening</th>
<th>Planting</th>
<th>School environment</th>
<th>Resource management</th>
<th>Native flora &amp; fauna</th>
<th>Global issues</th>
<th>Water</th>
<th>Art &amp; culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling</td>
<td>32</td>
<td>8</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worm farming</td>
<td>8</td>
<td>8</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gardening</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composting</td>
<td>7</td>
<td>4</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reducing waste</td>
<td>6</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planting natives</td>
<td>7</td>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collect data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planting trees</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weeding</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remove litter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Pest control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Waste audit</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student decision-making: students identified issues &amp; planned for action</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Advocated in home/community</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness of environmental issues</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changed attitude towards environment</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action with family</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changed attitude towards learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Communication — whole school</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Student decision-making was a feature of the activities included in the units of water, litter management, recycling, worm-farming, planting, and gardening. In contrast, units with the topics of school environment, resource management, native flora and fauna, and global issues tended to report students identifying and planning for action, but not necessarily taking action, as the outcome “for” the environment.
Two of the most comprehensive descriptions of student action “for” the environment were:

Developed a system of paper recycling in whole school. Whole school litter less lunch. Faxed other schools to tell them how to recycle paper. [Contributing primary — curriculum leader]

Changed our school culture. Students’ attitudes towards their role in recycling has been a big change. Students’ awareness of why they want to recycle has been enhanced. Students are now intrinsically motivated and less accepting of littering in our school and Papatūānuku. [Contributing primary — curriculum leader]

Integration of environmental education units with curriculum learning areas

Respondents were asked if their environmental education units were integrated with any of the 7 learning areas of the New Zealand National Curriculum Framework (Ministry of Education, 1993). Nearly 70 percent (69 percent) of respondents stated the unit they described integrated with science. Approximately a third of the respondents stated their unit satisfied social science (38 percent), technology (33 percent), and language (31 percent) curriculum objectives. Fewer than 20 percent of respondents reported their units integrated with mathematics, health and physical well-being, and the arts. A cross-tabs analysis found that 20 percent of the units integrated science, social science, and technology.

### Table 22

<table>
<thead>
<tr>
<th>Curriculum area</th>
<th>% of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=245)</td>
</tr>
<tr>
<td>Science</td>
<td>69</td>
</tr>
<tr>
<td>Social sciences</td>
<td>38</td>
</tr>
<tr>
<td>Technology</td>
<td>33</td>
</tr>
<tr>
<td>Language and languages</td>
<td>31</td>
</tr>
<tr>
<td>Mathematics</td>
<td>21</td>
</tr>
<tr>
<td>Health and physical well-being</td>
<td>18</td>
</tr>
<tr>
<td>The arts</td>
<td>15</td>
</tr>
</tbody>
</table>

Overall, very few respondents described activities with an obvious cross-curricular focus. Some respondents delivering an “Art and Culture” environmental education topic did report integration with several areas such as arts, languages, and social sciences. Other examples included the graphing of waste found around the school as a part of litter units (mathematics and health), letter writing to manufacturers about the packaging they used (language and technology), letter writing to local council and community groups (science and language), and art work (science and arts). An example from the topic gardening demonstrates the possibilities for integration:

Planting/harvesting etc was entered in local competition, art — drawing, language — writing; science — sequencing life cycles, observation, health —
food prep, goodness; maths — graphing, estimating, measuring reading plant books and instructions. [Contributing primary — teacher]

Inclusion of a Māori perspective

Only 5 percent of topic descriptions included mention of a Maori perspective. Of these, most involved the use of Māori legends, 2 indicated that local kaumātua spoke with students.

Walks to look at river change. Impact humans over time. Ecological changes and impact. Museum to look at history. Māori history — what was our area like?, what changed it?, how can we protect against inappropriate change? — planting in own grounds to re-establish bush. [Whole school unit — Term 4 — full primary — principal — ‘River walks and museum’]

Duration of effective topics

The duration of the reported units ranged from 45 minutes to 6 years, with the majority being 2 to 5 weeks. Ten percent of respondents described units with a duration of 1 to 2 terms, 19 percent reported on units with duration of a year or more. The majority of the units described as lasting for a year or more involved the whole school in the topics “Gardening” and “Planting”.

Two percent of respondents described units that had been sustained for 4 to 6 years. One respondent explained that his/her school had worked to restore an area of native bush for 4 to 5 years:

All students involved in some aspect of planning and organising the project. From researching through to accepting quotes. Students worked on: developing learning stations, worked with engineer examining hill for paths involved, surveying, soil samples, least disruptive etc, selecting appropriate trees, plants, moving mulch, cutting down trees, planting and caring for trees. [Contributing primary — curriculum leader]

Another respondent explained that re-vegetating a local walkway was an ongoing project that involved all the school’s Year 9 students:

For 6 years we have been re-vegetating the walkway in flax and other natives to enhance the environment for the native animals and the 100,000 people who walk the walkway each year. DOC personnel explain to students why their action is so important. [Secondary Year 9–15 — teacher]

School staff involvement in effective environmental education units

Respondents were asked to indicate by way of a tick-box which other staff in their school were involved in the environmental education unit they described.
Table 23

<table>
<thead>
<tr>
<th>School position</th>
<th>% of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom teacher/subject teacher</td>
<td>75</td>
</tr>
<tr>
<td>Curriculum leaders</td>
<td>60</td>
</tr>
<tr>
<td>Principal</td>
<td>35</td>
</tr>
<tr>
<td>Deputy/assistant/associate principal</td>
<td>25</td>
</tr>
<tr>
<td>School-based environmental interest groups</td>
<td>19</td>
</tr>
<tr>
<td>Caretaker/groundsman</td>
<td>30</td>
</tr>
</tbody>
</table>

This data indicates the likely involvement of more than one classroom teacher in environmental education units. It also points to a high level of leadership involvement and support for those units respondents deemed effective.

Further analysis indicated that 51 percent of the respondents from full primary schools who described an environmental education unit reported their principal had been involved in the unit. Thirty-five percent of respondents from contributing primary schools indicated this was the case.

Interestingly, of the respondents who indicated that school-based environmental interest groups participated in the unit they described as effective a third were from contributing primary, and 16 percent from full primary schools. Thirty percent of respondents reported caretaker involvement in the effective unit, the majority from primary schools. Nearly half of the respondents from contributing primary schools and a quarter of those from full primary schools reported the caretaker was involved in the unit they described.

Wider involvement in effective environmental education units

Respondents also reported that the Board of Trustees, parents, environmental organisations, and the wider community were involved in the unit they considered effective. Respondents from primary schools reported higher levels of involvement of both Board of Trustees and parents. Of the 43 respondents who reported Board of Trustees involvement, nearly a half were from full primary and just over a third from contributing primary schools. Ninety-three respondents reported parent involvement in the unit they outlined. Of these, 80 percent were from primary schools.

Forty-two percent of respondents indicated that outside environmental education agencies or individuals were involved in the units they described. Thirty percent reported wider community involvement. A list of those involved is included in Appendix 3.
Resources for effective environmental education units

Respondents were asked to list the resources and contacts they used within their effective environmental education unit (see Table 24). Regional, local, and district councils were identified as having contributed to their units by just under a third (32 percent) of the respondents who described an effective unit. Just over 10 percent identified the use of environmental and community groups; books, the Internet, and videos; environmental sector professionals; or the local community. Respondents who described water-based topics listed the waterways and Waicare projects as useful.

Table 24

<table>
<thead>
<tr>
<th>Resources used</th>
<th>% of respondents (n=245)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional, district, and local councils</td>
<td>32</td>
</tr>
<tr>
<td>Environmental and community groups</td>
<td>13</td>
</tr>
<tr>
<td>Books, the Internet, and videos</td>
<td>13</td>
</tr>
<tr>
<td>Environmental sector professionals</td>
<td>11</td>
</tr>
<tr>
<td>Local community</td>
<td>11</td>
</tr>
<tr>
<td>Ministry for the Environment</td>
<td>7</td>
</tr>
<tr>
<td>Enviroschools programme</td>
<td>2</td>
</tr>
<tr>
<td>Department of Conservation</td>
<td>1</td>
</tr>
</tbody>
</table>

The achievements of effective environmental education units for students, teachers, the school, and the community

Respondents were asked to outline the achievements of their environmental education unit for students, themselves as teachers, the school, and the community.

The students

Two hundred and thirty-five responses set out what students had achieved. The aims of environmental education, as set out in the Guidelines for Environmental Education in New Zealand Schools (Ministry of Education, 1999), framed the analysis of the responses. Thirteen response categories were developed, and each response was coded against these categories. Some responses were counted in 2 or more categories. Table 25 names the analytical categories, and gives numbers of responses that were classified into each category.
Table 25

Achievements of students in effective environmental education units

<table>
<thead>
<tr>
<th>Student achievements</th>
<th>% of respondents (n=235)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge and respect for the environment</td>
<td>42</td>
</tr>
<tr>
<td>Knowledge</td>
<td>17</td>
</tr>
<tr>
<td>Knowledge, respect for, and action in the environment</td>
<td>16</td>
</tr>
<tr>
<td>Awareness of environmental issues</td>
<td>16</td>
</tr>
<tr>
<td>Sense of satisfaction and/or empowerment</td>
<td>10</td>
</tr>
<tr>
<td>Skills in planting/gardening</td>
<td>10</td>
</tr>
<tr>
<td>Decision-making skills</td>
<td>7</td>
</tr>
<tr>
<td>Enjoyment in learning</td>
<td>6</td>
</tr>
<tr>
<td>Sharing ideas and concerns with the family and/or community</td>
<td>4</td>
</tr>
<tr>
<td>Awareness of own impact on the environment</td>
<td>3</td>
</tr>
<tr>
<td>Skills in data collection/research</td>
<td>3</td>
</tr>
<tr>
<td>Sense of community among students</td>
<td>1</td>
</tr>
<tr>
<td>Experience in the environment</td>
<td>1</td>
</tr>
</tbody>
</table>

When these findings are compared against the key aims of environmental education as described in the Guidelines, the following picture emerges:

- 91 percent of respondents to the question mentioned students achieved knowledge, understanding, and awareness about the environment (Aims 1 and 2).
- 61 percent of respondents reported students developed attitudes and values towards the environment (Aim 3).
- 29 percent of respondents reported students took action for the environment (Aim 5).
- 16 percent of respondents reported students achieved learning about the environment, learnt attitudes and values towards and took action for the environment, reflecting 2 of the Guidelines’ dimensions.

These proportions conform to the trend given by respondents’ descriptions of environmental education in Chapter Three, namely, a greater focus on knowledge, understanding, and awareness, than on student action-taking or decision-making.

A number of respondents (16 percent) mentioned that students achieved satisfaction, enjoyment, and a sense of their own abilities and responsibilities towards the environment. Skill development by students was reported by 10 percent of the respondents.
Seven percent of responses made explicit mention of student decision-making as an achievement in the topics of recycling, gardening, and planting. An example was:

   Recycling — ongoing, being careful not to erode dirt areas when playing, becoming aware that social decision making is part of their lives ie Action taken could impinge on their lives. [Level 1 — full primary — curriculum leader — ‘Recycling’]

Whereas all unit topics were reported as contributing to enhanced student knowledge about and respect for the environment, the recycling and water topics accounted for 32 percent and 51 percent respectively of the reports of students achievement as knowledge “about”, respect for, and action “in” the environment. Worm farming/composting, planting, and gardening units were reported as resulting in the development of planting and gardening skills.

Reports of student satisfaction and empowerment were associated with recycling, planting, and gardening units. This achievement was often associated with student decision-making.

   Development and completion of a vision. Learning about living landscapes. Decision making and empowerment. [Full primary — deputy principal — ‘Edible garden’]

   A raised awareness and sense of empowerment. Enjoyment and pride in their accomplishment. A deeper sense of caring. (full primary — teacher — ‘Recycling and rubbish prevention’)

   A social responsibility e.g. not bringing overseas pests or bugs into NZ, awareness of local ecosystems, empowering them so they can make a difference. (contributing primary — teacher — mainland island)

The following table provides full details of the kinds of student achievements reported for each of the unit topics.
Table 26

Achievements for students of environmental education units according to topic

<table>
<thead>
<tr>
<th>Environmental education topic</th>
<th>Litter</th>
<th>Recycling</th>
<th>Worm farming</th>
<th>Gardening</th>
<th>Planting</th>
<th>School environment</th>
<th>Resource management</th>
<th>Native flora and fauna</th>
<th>Global issues</th>
<th>Water</th>
<th>Art &amp; culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge, respect for environment</td>
<td>3</td>
<td>14</td>
<td>18</td>
<td>9</td>
<td>6</td>
<td>11</td>
<td>8</td>
<td>3</td>
<td>21</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>5</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td></td>
<td>6</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge, respect, action in environment</td>
<td>12</td>
<td></td>
<td>5</td>
<td></td>
<td>19</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness of environmental issue</td>
<td>1</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td></td>
<td>6</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sense of satisfaction/empowerment</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>10</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skills—planting/gardens</td>
<td>2</td>
<td>12</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoy learning</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness of own impact on environment</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share learning with family/community</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skills—data collection/research</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 5</td>
</tr>
<tr>
<td>Decision-making skills</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sense of community</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience “in” the environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

The teachers

Two hundred and eleven responses described teacher achievements. Just over a quarter (28 percent) of these mentioned that the respondent’s own knowledge and understanding had been enhanced during the unit. Examples given included further knowledge of the local environment and environmental issues, worm farming, sustainable gardening, and recycling. The next most common achievement was the development of further teaching strategies. Satisfaction at student adoption of environmentally friendly practices, and their own personal enjoyment and satisfaction in teaching the unit were each mentioned by 15 percent of respondents. Eight percent of responses
indicated satisfaction at seeing students enjoy learning. Other aspects of teacher achievement were enhanced links with the community, enhanced knowledge of and respect for the local environment, increased commitment to environmental education, a cleaner school environment, and experience of curriculum leadership.

Table 27

<table>
<thead>
<tr>
<th>Teacher achievements</th>
<th>% of respondents (n=211)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own knowledge &amp; understanding</td>
<td>28</td>
</tr>
<tr>
<td>Enhanced teaching strategies</td>
<td>21</td>
</tr>
<tr>
<td>Satisfaction at students adopting environmentally friendly practices</td>
<td>15</td>
</tr>
<tr>
<td>Satisfaction &amp; personal enjoyment</td>
<td>14</td>
</tr>
<tr>
<td>Satisfaction — students enjoy learning</td>
<td>8</td>
</tr>
<tr>
<td>Knowledge, respect, and action for the environment</td>
<td>7</td>
</tr>
<tr>
<td>Links with the community</td>
<td>5</td>
</tr>
<tr>
<td>Knowledge, respect for local environment</td>
<td>3</td>
</tr>
<tr>
<td>Increased commitment to environmental education</td>
<td>2</td>
</tr>
<tr>
<td>Cleaner school environment</td>
<td>2</td>
</tr>
<tr>
<td>Experience of leadership</td>
<td>1</td>
</tr>
</tbody>
</table>

The following comment is an example of how respondents viewed the changes in their teaching:

New way of teaching — more action focused so children more enthused — great for teaching. [Contributing primary — deputy principal]

Seven percent of responses suggested the respondent’s own knowledge, respect for, and awareness of the possibilities for action had been enhanced.

Knowledge of local resource — its history, its cycle, its place. Awareness of how we impact on that resource and what we can do to help it. [Composite/restricted composite — head of department]

The following quote illustrates the category of teacher satisfaction at students adopting environmentally friendly practices:

I feel like I’m helping to introduce another generation to concern for the environment. [Secondary Year 9–15 — teacher — ‘Monitoring of Edgar’s creek for Waicare’]

An example of increased commitment to environmental education was:
Feel more committed to the whole concept of reduction of waste. [Full primary — teacher — Global warming]

One respondent explained that his/her involvement in environmental education had led to other professional opportunities.

A greater commitment to recycling — I have also been given responsibility for other school-wide projects (not necessarily a benefit definitely more work over and above class teaching). [Intermediate — teacher — ‘Packaging and waste disposal’]

The following table sets out teacher achievements according to unit topic.

Table 28

Achievements for teachers of environmental education units according to topic

<table>
<thead>
<tr>
<th>Teacher achievement</th>
<th>Litter</th>
<th>Recycling</th>
<th>Worm farming</th>
<th>Planting</th>
<th>Gardening</th>
<th>School environment</th>
<th>Resource management</th>
<th>Native biodiversity</th>
<th>Global issues</th>
<th>Water</th>
<th>Art &amp; culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own knowledge and understanding</td>
<td>13</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>4</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhanced teaching strategies</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>10</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Satisfaction at students adopting EE practices</td>
<td>2</td>
<td>12</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction &amp; personal enjoyment</td>
<td>2</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction - students enjoy learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Knowledge, respect, action for environment</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Links with the community</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Knowledge, respect for local environment</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Increased commitment to EE</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaner school environment</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience of leadership</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

When these outcomes were examined across the different topics, almost all provided for enhanced teacher knowledge and teaching strategies. Water topics were reported to enhance teacher knowledge of, respect for, and actions for the environment more than any other topic. The 3 topics
in which teachers noted their satisfaction in seeing students enjoy learning all involved students in
hands-on activities for the environment. Units in recycling provided more teacher satisfaction at
seeing students adopt environmentally friendly practices than other topics. All those teachers who
identified that the unit had increased their commitment to environmental education had taught
recycling or worm farming/composting topics.

The school

One hundred and ninety-five responses outlined what the unit had achieved for the school. The
main achievement, reported by just under a quarter of respondents, was that of a cleaner school
environment. Another 10 percent of respondents commented that their school now had a garden,
worm farms, composting and/or recycling systems. Overall, nearly a third of respondents
indicated environmental education had led to a change in their school’s physical environment.
Three respondents who described the topic “Gardening” reported that because the students had
 contributed to the change, it was associated with a change in student attitude.

As the children have gained enthusiasm for the environment this has had a direct
impact on the school environment such as gardens that the children plant and
maintain. [Whole-school ongoing topic – contributing primary — teacher]

Stronger sense of responsibility, duty and power to care for things in our
grounds — no vandalism has been experienced in the millennium garden area.
[Full primary — principal]

Another significant achievement of the environmental education unit for the school was the
development of teamwork and community building within the school, indicating a move towards
a whole school approach to environmental education. This was reported by 20 percent of
respondents. For example:

Continued beautification of area, strengthening relationship between adults,
teachers and students. [Contributing primary — curriculum leader]

The development of a higher school profile and links with the community were noted by nearly 20
percent (18 percent) of respondents.

Beautification, proud community citizens who ‘own' the school. [Levels 1–4,
with a duration of 6 months — intermediate — teacher]

Five percent of respondents reported students adopting environmental education principles as a
school achievement suggesting they considered there had been a school-wide change in attitude.

Trees, shrubs in grounds. Beauty, awareness, pupils valuing the need to do
something for others and those not yet born. [Year 3–6 involved for at least an
hour per week for over half the year — full primary – teacher – ‘Propagation of
local plants and development of walkways’]
### Table 29

*Achievements for schools of effective environmental education units*

<table>
<thead>
<tr>
<th>School achievements</th>
<th>% of respondents (n=195)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved school environment</td>
<td>25</td>
</tr>
<tr>
<td>Teamwork and community building</td>
<td>21</td>
</tr>
<tr>
<td>Knowledge and understanding</td>
<td>15</td>
</tr>
<tr>
<td>Higher profile in community</td>
<td>11</td>
</tr>
<tr>
<td>Garden/worm farm/recycle/compost systems</td>
<td>10</td>
</tr>
<tr>
<td>Links with the community</td>
<td>7</td>
</tr>
<tr>
<td>Students adopting environmental education practices</td>
<td>5</td>
</tr>
<tr>
<td>Staff satisfaction</td>
<td>3</td>
</tr>
<tr>
<td>Increased staff involvement in environmental education</td>
<td>3</td>
</tr>
<tr>
<td>Students proud of achievements</td>
<td>2</td>
</tr>
</tbody>
</table>

Some topics lent themselves to certain achievements as can be seen in Table 30 below. In particular, an “improved school environment” was achieved mainly through planting and recycling topics, “teamwork and community building” were enhanced through gardening and water topics, and “community profile and links” were enhanced mainly through topics that concerned the environment outside the school such as water and planting.
### Table 30

*Achievements for schools of effective environmental education units according to topic*

<table>
<thead>
<tr>
<th>School achievement</th>
<th>Litter</th>
<th>Recycling</th>
<th>Worm farming</th>
<th>Planting</th>
<th>Gardening</th>
<th>School environment</th>
<th>Resource management</th>
<th>Native biodiversity</th>
<th>Global issues</th>
<th>Water</th>
<th>Art &amp; culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved school environment</td>
<td>5</td>
<td>12</td>
<td>10</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teamwork and community building</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge &amp; understanding</td>
<td>7</td>
<td></td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher profile in community</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garden/worm farm/ recycle/compost sys.</td>
<td>1</td>
<td>1</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Links with the community</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Students adopting EE practices</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff satisfaction</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased staff involvement in EE</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students proud of achievements</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The community*

One hundred and eighty-seven respondents commented on the contribution made to the community by the unit they described. The main contribution identified involved increased links with the school’s community. Nearly one-quarter of respondents (23 percent) reported the units they considered effective led to increased links with members of the community and a further 20 percent reported increased parent involvement with the school. The other main achievement for the community was an increased knowledge and understanding of environmental issues within the community, reported by 16 percent of respondents. In addition, 10 percent of responses included specific mention that the community benefited from learning about issues from the students.
### Table 31

**Contribution to community made by effective environmental education units**

<table>
<thead>
<tr>
<th>Community achievements</th>
<th>% of responses (n=187)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Links with members of community</td>
<td>23</td>
</tr>
<tr>
<td>Parent involvement with school</td>
<td>20</td>
</tr>
<tr>
<td>Improved community environment</td>
<td>19</td>
</tr>
<tr>
<td>Knowledge &amp; understanding within community</td>
<td>16</td>
</tr>
<tr>
<td>Students communicating environmental understandings</td>
<td>10</td>
</tr>
<tr>
<td>Improved school environment</td>
<td>5</td>
</tr>
<tr>
<td>Higher profile of children in community</td>
<td>4</td>
</tr>
</tbody>
</table>

All topics enabled enhanced links with the community, either through parental involvement or some other linkage. Worm-farming was particularly useful for increasing parental involvement in the school. Planting and water topics were most likely to lead to an enhanced community environment. Water topics were also reported to lead to enhanced knowledge and understanding within the community.

Some comments were:

- Parents who learned from the children — how to reduce landfill and buy groceries in a more economical way. [Ongoing unit — full primary — teacher]

- Began what I hope will be an ongoing partnership with them. [Full primary — principal — ‘Native bird garden’]

- Very supportive, has fostered links between school and community. [Levels 1–4, 3 weeks but now established and ongoing — full primary — teacher — ‘Setting up worm bin and composting’]
Table 32

Achievements in the community of environmental education units according to topic

<table>
<thead>
<tr>
<th>Community achievement</th>
<th>Litter</th>
<th>Recycling</th>
<th>Worm farming</th>
<th>Planting</th>
<th>Gardening</th>
<th>School environment</th>
<th>Resource management</th>
<th>Native flora and fauna</th>
<th>Global issues</th>
<th>Water</th>
<th>Art &amp; culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Links with members of community</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>11</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent involvement with school</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved community environment</td>
<td>3</td>
<td>12</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge &amp; understanding within community</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students communicating environmental understandings</td>
<td>2</td>
<td>8</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved school environment</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Higher profile or children in community</td>
<td>2</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SUMMARY OF KEY CHARACTERISTICS OF EFFECTIVE PRACTICE IN ENVIRONMENTAL EDUCATION IN NEW ZEALAND SCHOOLS

This section summarises the data related to the characteristics of effective environmental education in New Zealand schools at the levels of systems and classroom practice.

At the systems level

Environmental education is a relatively new subject in most schools, even in those schools identified as teaching environmental education. The majority of respondents (90 percent) indicated their school had taught environmental education for 5 years or less (Chapter Three). Where environmental education is included in school documents, this tends to be through school and departmental (curriculum) planning, but not in school charters or Board of Trustee policies. Environmental education did not feature significantly in either student reporting or teacher appraisal.

The most common means of provision of environmental education is through integration with other learning areas, notably science and social science subjects. Environmental education units were more likely to be integrated into the science curriculum, with some integration into social
Environmental education tends to be taught throughout the year with timetabling being largely left up to individual teacher choice.

Three-quarters of respondents claimed solid support for environmental education from teachers and principals. Approximately half of the respondents claimed support from parents, Boards of Trustees, deputy/assistant/associate principals, curriculum leaders, and caretakers/grounds staff. Within-school support was reported more in primary and intermediate schools than secondary schools. Local councils, particularly regional councils, were seen to be supporting many schools in their environmental education. The Department of Conservation and a wide range of community groups such as local trusts, iwi, and environmental interest groups were also significant supporters.

At the classroom practice level

A wide range of topics and activities was being offered in environmental education. Major categories of topics included waste management and minimisation, water studies, and planting and gardening and other more broadly focused topics such as the study of global issues, resource management, and native flora and fauna. Most topics were offered across all age groups, but gardening, worm-farming and recycling were predominantly at primary school levels. Only 30 respondents indicated that their unit was part of a whole-school approach to environmental education. These units typically involved planting or other environmental activities in the school grounds.

Most of the units described as effective involved students in learning “in” the environment. Units such as recycling, worm-farming, and gardening were conducted within the school, and units in water studies and native flora and fauna generally off-site. All of the units described included learning “about” the environment. Knowledge was gained from a variety of sources including books, the Internet, and visiting experts. A variety of student actions were reported “for” the environment across most topics. Actions included cleaning up and recycling litter, planting natives along waterways, and writing letters to businesses. Some topics such as resource management and global issues were less likely to afford reports of student actions, but contributed to students identifying and planning for action, and changing attitudes towards environmental issues.

Unit duration was wide-ranging, from 45 minutes to 6 years. Other classroom teachers were rated as highly likely to be involved in environmental education, and academic and administrative school leaders were also seen to be important. Resources used in delivering the units were reported as local authorities, environmental and community groups, and books, the Internet, and videos.

The main outcomes of school-based environmental education practice

The main achievements of environmental education units described by respondents were as follows:
• For students, an increased knowledge and respect for their environment. Other outcomes included a sense of satisfaction and enjoyment, and skill development. Some differences in outcomes were seen with different topics.

• For teachers, an increased knowledge and understanding of the environment, and enhanced teaching strategies were the main achievements, regardless of the topic. Other significant outcomes were teacher satisfaction in student learning and development of environmentally-friendly attitudes.

• For schools, an improved environment (less litter an/or gardens/worm farms). Respondents indicated these were usually an outcome of student action and so were viewed with pride by students. Improved teamwork and community building within the school was another significant outcome. These outcomes were achieved mainly through planting and recycling, and gardening and water topics respectively.

• For the community, the main contribution of effective environmental education units was the creation of school-community links, involving parents and the wider community. All topics were reported to have achieved this outcome.
CHAPTER FIVE: RESEARCH IN KURA KAUPAPA MĀORI

While a mail-out survey process was used for mainstream schools the research approach taken in kura kaupapa Māori (Maori language immersion schools) was that of face-to-face interview. The interviews were conducted during October and November 2002. Three kura kaupapa Māori in the Waikato region were approached and agreed to be involved in the stocktake.

THE RESPONDENTS

Professional background

Of the 8 teachers interviewed, 3 were principals, 2 with more than 15 years of experience. None of the principals taught a class. Four of the respondents were curriculum leaders with between 6 and 10 years’ teaching experience. Two respondents taught year levels 0 to 1, one taught year levels 4 to 6, and the other year levels 3 to 4. The eighth teacher was a classroom teacher of year levels 4 to 6 with less than 2 years’ teaching experience.

Environmental education background

Three of the respondents were involved in environmental education as classroom teachers. Two were involved as classroom teachers with a leadership role in environmental education. The principals indicated they saw their role as that of supporting their staff.

None of the respondents had had any formal training in environmental education. Their out-of-school involvement included being actively engaged in recycling, the use of vermiculture, participating in a community gardening project, and involvement in a project to revegetate a local mountain.

Five of the respondents reported they had been involved in environmental education in their school for as long as they had been teaching.

Respondents’ meanings for environmental education

In response to a question about the meaning they held for “environmental education” all 8 respondents first described their personal familial connection with Papatūānuku (the Earth Mother) and Ranginui (the Sky Father). Two explained that their cultural identity was interdependent with the local environment (Ministry of Education, 1999, p. 12). This attitude is reflected in the proverb:

*Whatungarongaro te tangata toitū te whenua.*

(“Human beings are transitory, but the land goes on forever.”)
Three respondents elaborated on the cultural significance for them of the local landforms, one describing them as “timeless monuments” and a legacy. Another explained how these served to orient Maori towards who they are. The general suggestion was that “if the environment was sick we are sick too”. One respondent pointed out that it was difficult to feel proud if the local river was polluted.

All 8 respondents expressed a desire for their students to develop a sense of personal relationship and kaitiakitanga (guardianship) towards the environment. That is, they emphasised the need for personal and social responsibility towards looking after Mother Earth. One explained that: “Everyone must look after the environment, from first year infants, to the teacher and families.” Another stated: “Tiakina te taiao” (look after the environment). Two respondents questioned who would look after the environment if they and their children did not. Another referred to the Maori concept of kaitiakitanga as outlined in the Guidelines (Ministry of Education, 1999, p. 13), stating that “the main resource is our people. People will look after the significant features (of the environment)”.

Children dropping litter was described by 2 respondents as an example of a lack of understanding of Mäori values such as kaitiakitanga. They noted that for them children dropping litter was a “significant issue” because it was an abuse of Mother Earth. In contrast, recycling was described as a means of caring for Papatūānuku. Two respondents made special mention of the use of flax within the school, explaining that it was important to return what was not used to the base of the plant.

Four respondents asserted it was important to them that children come to appreciate both their impact on the environment and the impact of the environment on them. Their comments here were consistent with environmental education as incorporating Te Ao, one of the underpinning concepts for kura kaupapa Māori kaupapa (Mataira, 1997, p.11), in that their focus was on the child “in the context of his world”. The consensus view was that by coming to care for and acting to protect and restore Mother Earth children would come to care more for themselves and each other.

By looking at the child, in the context of his world, so that the child will care for him or herself, care for his friends, the school environment.

One respondent proposed that students needed to look around and ask “Who are you looking after”? It was suggested that if children were able to look after themselves and others this care would extend to the environment. Here their view was that it was important to help children “transfer” values and beliefs to do with helping others to the environment by helping to “personalise” children’s relations with the Earth Mother and develop a sense of kaitiakitanga.

Four respondents emphasised the need to restore to the local environment the diversity of plants and animals that had existed in the time of their parents and grandparents, when it had been a rich source of food. Their goal was not only to prevent further damage but also to ensure that the riches of the past would be available for future generations. That is, as they explained, they were also concerned with sustainability.

The health and well-being of the environment and conservation. Let the people keep the water healthy. Let the Earth Mother be healthy. Let us all work to make the water life-giving for the coming generations.
We want all the riches of [name of area] to be returned to the mountain that were there when our grandparents were children. Let us destroy the things that are destroying/eroding/killing our mountain. …How can we get these things to return and care for the sacred places, the streams, the cemetery, the marae, (so that) the clan will prosper?

Overall, it appeared that the meaning held by the respondents for environmental education clustered around the concepts of interdependence, sustainability, biodiversity, and personal and social responsibility for action. The suggestion of 3 of the respondents was that this was because the foundation document for kura kaupapa Māori — Te Aho Matua (Mataira, 1997) underpinned their thinking.

**Views of the Guidelines**

Environmental education as set out in the Guidelines was considered to “affirm the intimate relationships Māori have with the environment” and to be consistent with goals outlined in Te Aho Matua (Mataira, 1997). One example given was that Te Aho Matua has a holistic focus and “the environment is part of this”. Another respondent commented:

I have seen environmental education as Te Aho Matua which has always been there. It is not new. It is an integral part of being Māori/Maoritanga/Te Ao Māori.

Another commented: “If you have a Māori specific kaupapa you can’t help but teach environmental education — Papatūānuku (“the Earth Mother”), Hauniatiketike (“the god that represents the fern root — edible plants”),Ruaumoko (“…the demon of earthquakes — what is happening inside the earth”). This respondent went on to explain that “Environmental education is not a subject, it is who you are”. This respondent was concerned at the potential for compartmentalisation if environmental education becomes a separate subject. He/she saw it as more relevant for schools that were not kura kaupapa Māori, stating:

We don’t need this tool in our school. We have the philosophical and traditional understandings already. We aim to ensure that tomorrow’s generation are aware of their responsibility and understand their responsibility to their environment.

**KEY CHARACTERISTICS OF KURA KAUPAPA MĀORI SCHOOL LEVEL SYSTEMS FOR ENVIRONMENTAL EDUCATION**

**The formal inclusion of environmental education in kura kaupapa Māori systems**

Two of the 3 principals reported environmental education was incorporated into the school charter. All 3 noted it was part of Board of Trustees policy documents and the school strategic plan. Principals also reported that environmental education was incorporated as part of their school property development. The aesthetic look of the school was seen as an important aspect of
concern for the local environment. Other respondents reported inclusion in the school strategic plan and school departmental/long-term plans.

**Structure and purposes for environmental education**

The respondents reported environmental education was “not a stand-alone topic” but integrated into other learning areas, typically science, technology, and health and physical well-being. All respondents stated it was taught subject to teacher choice both in blocks and through out the year.

Respondents listed purposes for their own environmental education programmes that were consistent with children learning “about” and learning to care for the environment and their developing the skills and strategies to do so. The knowledge and awareness sought included children understanding the customs of the area so they knew about “where he or she comes from”. Respondents further emphasised the need for *te tiaki i te taiao* (“students need to develop a sense of personal relationship and responsibility with the environment”). Three respondents stated they sought the development of student skills in gardening and experience with vermiculture.

**Topics in environmental education**

None of the respondents used the *Guidelines* to plan their teaching programme and none would have necessarily identified a unit they had taught as an “environmental education” topic. However, 7 outlined a unit they considered effective in meeting purposes to do with students’ relationships with and caring for the environment. The unit topics included a local river (fresh water study), the local seashore (a marine study), the ozone layer (global issues), the star constellation Pleiades, recycling, a waste analysis unit, and biodiversity on an off-shore island. A brief description is provided of each topic.

**A river study**

The river study unit involved the whole school for 5 weeks. Students visited the local river and collected water samples. They visited the local water waste treatment facility and went on to investigate what chemicals are introduced to the water to clear it. *Kaumatua* (“elders”) and parents shared what they had learned about the river as children. This included prayers and the idea that water and the river itself are sacred. Actions “for” the environment from this unit were students learning “water is not to be wasted and the need to look after yourself and the symbols (warnings such as the swiftness of a river) that are placed there to look after you”.

The unit was integrated with social studies but the students developed an understanding of the water cycle. Resources used were the regional environment council, kaumatua, and books about the local area.
The constellation Pleiades

This unit was part of a science-focused unit. (Pleiades marks the Maori New Year for planting cycles.) Students learned the historical stories associated with the constellation. In terms of science, they learned about the need to care for the land and let it lie fallow between crops of kumara. They produced a play as part of the unit. Resources used included books.

Seashore study

Taha tai (“marine study”) involved Year 3 children in the study of the rocky and sandy shore. As part of the unit they learned Maori lore relevant to the seashore, visited the seashore, and identified, compared, and described the sea life there and learned about the characteristics of the area from local kaumatua. Parents were actively involved in the unit with other support coming from another kura kaupapa Māori, the Maori Fisheries Division, and a Maori resource teacher.

The unit integrated Putaiao (“science”), te reo Māori (“Māori language”) and Hauora (“health and physical well-being”). Achievements for the students were a deeper understanding of how sea animals might be affected by rubbish, a raised awareness of how to look after the seashore, and how to keep themselves safe. Achievement for the school was whakawhanaungatanga (“to work as a family”).

Visit to Kapiti Island

No details of this unit were provided.

A waste analysis

The waste analysis unit involved the whole school for 5 weeks. It was motivated in part by a local council clean-up day. One outcome of the unit was that students wrote a letter to the Board of Trustees suggesting that the school implement a recycling system. The unit was taught within the context of technology. Student achievement included “greater awareness of waste, the issues surrounding its generation, and recycling”.

A recycling unit

The recycling unit led to the introduction of worm bins. The children studied worm anatomy and nutritional requirements and they took responsibility for looking after the worms (science focus). The te reo Māori focus involved them in describing and writing about their feelings to do with worms. Support for the unit came from a science adviser.

Student achievement for the unit included children developing “a more positive attitude towards worms and a changed attitude to waste”. The teacher reported a sense of personal fulfilment in having introduced a new topic to the children and involving them in the use of worm casts to make fertiliser. The next step is to test the impact of this on plant growth rates. The school as a whole had developed a sense of responsibility for the environment through the use of the bins.
Ozone layer

The unit on the “ozone layer” involved students in simulating the Greenhouse effect and taking their concerns about ozone depletion to the media. The principle underpinning the study was that “if you look after the Earth Mother, the Sky Father will be all right”. Student achievements for this unit were that they became aware that “there is a world outside the Maori world” and “the need for the world to get back to things Maori”. Resources for the unit came from the school and the town library.

The respondents did not report any outcomes for the community but their intention is that there be some in the future.

Resourcing and support

The respondents were asked to identify factors that hindered the development of links with outside organisations and what would help them teach a better environmental education programme.

The main hindrance to teachers forming links was the time needed to find out about, make contact with, and develop networks with outside organisations (n=4). Other hindrances were a lack of resources that incorporated a Maori perspective (n=2) and a lack of local knowledge (the respondent was new to the region).

Funding, professional development, and government policy support were reported as “inadequate” by 7 of the 8 respondents when rated on a 4 point scale from inadequate to adequate. The common perception was that access to information was somewhat inadequate. Respondents were split in their perception of the accessibility of resource material: 4 describing this as inadequate and 4 as somewhat adequate.

Resources in Maori (n=4) and professional development consistent with Te Ao Maori (“the Maori world view”) (n=4) were the main requirements to respondents being able to teach a better environmental education programme in their school.

Individual respondents considered that funding for resources such as worm bins, taking children on trips, more time in the curriculum to teach environmental education, and the school becoming part of an organised environmental education programme would assist their teaching. One respondent expressed a desire for a more consistent school-wide approach.

Need someone to push it, know about it and able to support the staff — a school-wide vision to be implemented consistently.

The provision of resources (n=5) and professional development (n=4) in Maori consistent with kura kaupapa Māori philosophy was the main suggestion for ways the Ministry of Education could help teachers provide a better programme.

Professional development — for a kura kaupapa Maori. Relating the 4 main concepts of environmental education to Maori in a lot more depth.
Other suggestions were that the Ministry make a commitment to environmental education “so that I might become passionate about it from Te Ao Māori” and that what schools were doing already, for instance developing gardens, be recognised.

Respondents from 2 kura kaupapa Māori indicated they were aware of programmes such as the environmental education professional development programme, GLOBE, and TKI. Five respondents were aware of the TKI Website and 4 of the LEOTC programme. No respondents were aware of the Ministry of Education environmental education professional development programme.

SUMMARY

The respondents were of the view that the 4 concepts of environmental education — interdependence, sustainability, biodiversity, and social and personal responsibility — were consistent with the Te Ao Māori (“the Māori world view”) and the aims underpinning Te Aho Matua (the foundation document for kura kaupapa Māori) For this reason, while most had not considered they were teaching environmental education and none had seen the Guidelines for Environmental Education in New Zealand Schools (Ministry of Education, 1999), they were able to provide an example of how these concepts were inherent in what they taught.

There was a feeling that cultural identity was closely aligned to the environment and that responsibility for the care of the environment was an integral part of Māori culture:

My right to exist, my legacy, is not mine to own — it is mine to care for and pass on to my children.

The units outlined covered a range of topics similar to those described by respondents from mainstream schools but with the added dimension that the units explicitly drew on Māori concepts and traditions, usually through the direct involvement of kuamtua (“elders”) and/or families.

Respondents considered their programmes would benefit from teachers having the time and opportunity to network with outside organisations. Alongside this, one respondent suggested that the provision of resources and professional development in Māori and consonant with the Māori world view — not just translations — was perceived as the key to the provision of better environmental education programmes.

I believe that environmental education is important but the difficulty is the practicalities of the implementation — the teacher knowledge, the resources in te reo Māori and funding, the money to do things like water testing, recycling, other ways of packaging kai (food) so there is not so much rubbish in the kura.
CHAPTER SIX: RELATIONSHIPS BETWEEN ENVIRONMENTAL SERVICES AND PROGRAMMES FOR SCHOOLS

Step 4 of the Guidelines’ planning process suggests that schools identify and develop links with programmes and services initiatives provided by regional and local councils and by community agencies (Ministry of Education, 1999, p. 16). This chapter details the links, resources, and support used by respondents and their perceptions of what hinders their making such links.

RESPONDENTS’ USE OF SPECIFIED PROGRAMMES AND SERVICES

Many organisations are active in the environmental area and provide either advice or resources to support environmental education programmes. Respondents were asked to indicate if they used the following programmes and services in their school programmes:

- **EEPDP**  Environmental Education Professional Development Programme;
- **SOSG**  Sustainable School Organic Gardens;
- **GLOBE**  Global Learning and Observations;
- **RSNZ**  NWP National Waterways Programme;
- **LEOTC**  Other Learning Experiences Outside the Classroom;
- **TKI**  Te Kete Ipurangi; or
- **TKI EE**  Te Kete Ipurangi Environmental Education Kete.

Just over 30 percent (31 percent) of the respondents used LEOTC in their environmental education programmes. This was the most popular resource for both intermediate (37 percent) and composite/restricted composite (56 percent) teachers.

The TKI Website had been accessed by almost 30 percent (29 percent) of respondents and was the most popular resource for full primary teachers (41 percent).

Both EEPDP and NWP were the next most frequently used resources, with just over a quarter (26 percent) of respondents having used them. The NWP was the most popular resource for secondary school respondents (31 percent).

Less than 20 percent of the respondents used the other resources listed (TKI EE, GLOBE, and SOSG).
Table 33

Respondents’ use of specified programmes and services

<table>
<thead>
<tr>
<th>Environmental education services &amp; programmes</th>
<th>% of respondents (n=367)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEOTC</td>
<td>31</td>
</tr>
<tr>
<td>TKI</td>
<td>29</td>
</tr>
<tr>
<td>EEPDP</td>
<td>26</td>
</tr>
<tr>
<td>NWP</td>
<td>26</td>
</tr>
<tr>
<td>TKI (Environmental education)</td>
<td>18</td>
</tr>
<tr>
<td>GLOBE</td>
<td>10</td>
</tr>
<tr>
<td>SOSG</td>
<td>9</td>
</tr>
</tbody>
</table>

OTHER ORGANISATIONAL LINKS USED BY SCHOOLS

When asked which organisational links they had found to be most useful for the environmental education programme at their school, over half (55 percent) of the respondents reported that their links with city and district councils were among the most useful. The next most useful links, reported by slightly under a half of the respondents, were links with regional councils (45 percent). These links were seen as most useful by respondents from all school types. Training sessions held by Auckland, Northland, Waikato, and other regional councils had been attended by respondents and a few respondents mentioned courses held by city councils.

Nearly 40 percent of respondents found the Ministry of Education - funded environmental education professional development useful. In-service training provided by other organisations such as Enviro-schools, local botanic gardens, Environment Waikato and Environment Otago, Wai-care, and the Department of Conservation was also mentioned.

Less than 20 percent of respondents said they had found teacher subject associations, School Support Services, and local iwi useful for their environmental education programme.

ADEQUACY OF CURRENT SUPPORT FOR ENVIRONMENTAL EDUCATION PROGRAMMES IN SCHOOLS

In the light of the availability of support for environmental education from outside the school system, respondents’ perceptions of the adequacy of funding, access to information, resource materials, and professional development were elicited on a 4 point scale from inadequate to adequate.

Two hundred and ninety-three respondents commented on funding. Of these, 45 percent judged it to be inadequate and a further 25 percent judged it as somewhat inadequate to meet the needs of their environmental education programme. Further analysis indicated that approximately half of
the respondents from each school type, with the exception of those from composite/redistricted composite schools, judged current funding as inadequate.

Table 34

<table>
<thead>
<tr>
<th>School type</th>
<th>Adequate</th>
<th>Reasonably adequate</th>
<th>Somewhat inadequate</th>
<th>Inadequate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing Primary (Year 1-6)</td>
<td>8</td>
<td>22</td>
<td>23</td>
<td>47</td>
</tr>
<tr>
<td>Full Primary (Year 1-8)</td>
<td>10</td>
<td>19</td>
<td>27</td>
<td>44</td>
</tr>
<tr>
<td>Intermediate (Years 7-8)</td>
<td>0</td>
<td>30</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Secondary (Year 7-15)</td>
<td>9</td>
<td>27</td>
<td>18</td>
<td>46</td>
</tr>
<tr>
<td>Secondary (Years 9-15)</td>
<td>13</td>
<td>13</td>
<td>28</td>
<td>46</td>
</tr>
<tr>
<td>Composite/Restricted Composite</td>
<td>0</td>
<td>22</td>
<td>56</td>
<td>22</td>
</tr>
<tr>
<td>Special school</td>
<td>0</td>
<td>67</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>21</strong></td>
<td><strong>26</strong></td>
<td><strong>45</strong></td>
</tr>
</tbody>
</table>

Of the three hundred and six assessments of the adequacy of access to information, just over 60 percent assessed the adequacy of access to information to be adequate or reasonably adequate. A further 28 percent judged it as somewhat inadequate. A high assessment of adequacy might have been anticipated for this question given the nature of the sample.

Table 35

<table>
<thead>
<tr>
<th>School type</th>
<th>Adequate</th>
<th>Reasonably adequate</th>
<th>Somewhat inadequate</th>
<th>Inadequate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing Primary (Year 1-6)</td>
<td>18</td>
<td>46</td>
<td>27</td>
<td>9</td>
</tr>
<tr>
<td>Full Primary (Year 1-8)</td>
<td>22</td>
<td>35</td>
<td>31</td>
<td>12</td>
</tr>
<tr>
<td>Intermediate (Years 7-8)</td>
<td>14</td>
<td>59</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td>Secondary (Year 7-15)</td>
<td>10</td>
<td>60</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>Secondary (Years 9-15)</td>
<td>20</td>
<td>37</td>
<td>30</td>
<td>13</td>
</tr>
<tr>
<td>Composite/Restricted Composite</td>
<td>33</td>
<td>22</td>
<td>33</td>
<td>11</td>
</tr>
<tr>
<td>Special school</td>
<td>0</td>
<td>67</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19</strong></td>
<td><strong>43</strong></td>
<td><strong>28</strong></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

Over fifty-five percent of the respondents (58 percent) said that their access to resource materials was adequate or reasonably adequate to meet the needs of their environmental education programme.
Table 36

Adequacy of access to resource materials for meeting the needs of respondents’ environmental education programmes

<table>
<thead>
<tr>
<th>School type</th>
<th>Adequate</th>
<th>Reasonably adequate</th>
<th>Somewhat inadequate</th>
<th>Inadequate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing Primary (Year 1-6)</td>
<td>20</td>
<td>47</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>Full Primary (Year 1-8)</td>
<td>19</td>
<td>33</td>
<td>34</td>
<td>14</td>
</tr>
<tr>
<td>Intermediate (Years 7-8)</td>
<td>4</td>
<td>48</td>
<td>30</td>
<td>19</td>
</tr>
<tr>
<td>Secondary (Year 7-15)</td>
<td>25</td>
<td>42</td>
<td>25</td>
<td>8</td>
</tr>
<tr>
<td>Secondary (Years 9-15)</td>
<td>18</td>
<td>25</td>
<td>43</td>
<td>14</td>
</tr>
<tr>
<td>Composite/Restricted Composite</td>
<td>11</td>
<td>44</td>
<td>45</td>
<td>0</td>
</tr>
<tr>
<td>Special school</td>
<td>0</td>
<td>75</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
<td><strong>40</strong></td>
<td><strong>30</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

The distribution of responses about access to professional development was more uniform in terms of perceptions of adequacy, with just over 15 percent of the respondents to the question (16 percent) reporting their access as adequate, nearly 30 percent (29 percent) as reasonably adequate, and just over 30 percent (33 percent) as somewhat inadequate. Slightly over 20 percent (22 percent) reported their access to professional development was inadequate.

Table 37

Adequacy of access to professional development for meeting the needs of respondents’ environmental education programmes

<table>
<thead>
<tr>
<th>School type</th>
<th>Adequate</th>
<th>Reasonably adequate</th>
<th>Somewhat inadequate</th>
<th>Inadequate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuing Primary (Year 1-6)</td>
<td>17</td>
<td>32</td>
<td>35</td>
<td>17</td>
</tr>
<tr>
<td>Full Primary (Year 1-8)</td>
<td>12</td>
<td>24</td>
<td>31</td>
<td>33</td>
</tr>
<tr>
<td>Intermediate (Years 7-8)</td>
<td>20</td>
<td>23</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>Secondary (Year 7-15)</td>
<td>42</td>
<td>17</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>Secondary (Years 9-15)</td>
<td>11</td>
<td>37</td>
<td>35</td>
<td>17</td>
</tr>
<tr>
<td>Composite/Restricted Composite</td>
<td>11</td>
<td>22</td>
<td>56</td>
<td>11</td>
</tr>
<tr>
<td>Special school</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>29</strong></td>
<td><strong>33</strong></td>
<td><strong>22</strong></td>
</tr>
</tbody>
</table>

Respondents were also asked about their perceptions of the adequacy of support provided through government policy. Of the 229 responses on the adequacy of government policy, nearly 60 percent (59.9 percent, or 138/229) described it as either somewhat inadequate or inadequate.
BARRIERS TO THE FORMING OF LINKS WITH SUPPORTING ORGANISATIONS

Given the recommendation that teachers identify possible links between school programmes and initiatives undertaken by regional and local councils and by community agencies (Ministry of Education, 1999, p. 17) respondents’ perceptions of barriers to the formation of links were sought. Almost two-thirds (n=226) commented upon these. Their responses were categorised into 6 broad categories each with a number of sub-categories. The 6 broad categories were:

- Time was mentioned by just over 50 percent of respondents to this question (52 percent). Some provided reasons why time was an issue. These included: the need for time to identify and maintain links; the time involved in link formation due to communication difficulties; and the time constraints imposed by other professional commitments.

- School-based hindrances was mentioned by nearly 40 percent of respondents (39 percent) and with sub-categories of curriculum overcrowding, own and staff knowledge, programme structures and planning, lack of leadership for environmental education, school location and lack of staff, transport and administrative support for visits.

- Funding was mentioned in just over 10 percent of responses (12 percent).

- Different goals and aims of outside agencies was mentioned by nearly 4 percent of respondents.

- Weather was mentioned by 3 respondents.

- No constraints was mentioned by nearly 10 percent of respondents.

The following table summarises the barriers to the formation of links identified by the respondents to this question.
Table 38

Barriers to the formation of links with outside programmes and services

<table>
<thead>
<tr>
<th>Barriers to formation of links with outside organisations</th>
<th>% of respondents (n=226)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td></td>
</tr>
<tr>
<td>Lack of time</td>
<td>40</td>
</tr>
<tr>
<td>Time to identify and maintain links</td>
<td>13</td>
</tr>
<tr>
<td>Time involved due to communication difficulties</td>
<td>4</td>
</tr>
<tr>
<td>Other professional commitments</td>
<td>13</td>
</tr>
<tr>
<td><strong>School-based hindrances</strong></td>
<td></td>
</tr>
<tr>
<td>Curriculum overcrowding</td>
<td>13</td>
</tr>
<tr>
<td>Own and staff knowledge</td>
<td>8</td>
</tr>
<tr>
<td>Programme structures and planning</td>
<td>5</td>
</tr>
<tr>
<td>Lack of leadership for environmental education</td>
<td>5</td>
</tr>
<tr>
<td>School location</td>
<td>5</td>
</tr>
<tr>
<td>Lack of support for visits (staff/transport/admin)</td>
<td>4</td>
</tr>
<tr>
<td>Funding</td>
<td>12</td>
</tr>
<tr>
<td>Different goals and aims (organisation/school)</td>
<td>4</td>
</tr>
<tr>
<td>Weather</td>
<td>1</td>
</tr>
<tr>
<td>No concerns</td>
<td>9</td>
</tr>
</tbody>
</table>

**Time**

Over half (52 percent) of the respondents to this question identified time as a hindrance to their forming links with outside organisations. Of these, 40 percent simply noted that “time”, “lack of time” or “time constraints” was a key hindrance to forming links. Respondents also elaborated on why time served as a hindrance.

Thirteen percent of respondents commented that time served as a hindrance because of the time required to find out about, and establish and maintain links with individuals and organisations outside the school:

Knowing names within and names of organisations willing and able to help.
Time to make contacts, etc. [Contributing primary — deputy principal]

Time and knowledge of what outside organisations are available and what they can do. [Secondary — teacher]
Four percent of respondents pointed out that the issue of lack of time was compounded by communication difficulties. For example, teachers can often only contact organisations after 3pm, and organisations fail to respond to calls:

- City Council never returned phone calls and followed up with information. [Contributing primary — teacher]

- Time constraints, leaving messages on answer machines over and over and no replies, funding. [Contributing primary — teacher]

Time was also a hindrance because of the demands on teacher time from other professional commitments such as extra-curricular activities and responsibilities (13 percent). One teacher commented: “Teachers are too busy.” (Special school — teacher)

- I haven’t got time to be involved in outside organisations. I have a heavy workload as a teaching principal and cannot commit time to be involved in organisations. [Contributing primary — teaching principal]

- Time involved — large amount of time required which is difficult to balance with being in the classroom. [Contributing primary — curriculum leader]

Five respondents made specific mention of the demands on their time of NCEA implementation:

- Time! I am a HOD involved with NCEA & I have also been involved as manager for the college 1 netball team — doesn’t leave much time for myself & family. [Secondary — head of department]

One respondent commented on the time required to process incoming information:

- Vast numbers and amounts of incoming info, competitions etc. making it difficult to choose quality programmes or support agencies. Time involved — large amount of time required which is difficult to balance with being in a classroom. [Contributing primary — curriculum leader]

**School-based hindrances**

Forty percent of responses describing hindrances to respondents forming links mentioned a school-based hindrance. The key hindrance, reported by just over 10 percent (13 percent) of the respondents was that of an “over-crowded curriculum”. Eighty-six percent of these respondents were from primary schools. The suggestion was that environmental education was yet another area to be covered and they often achieved this only superficially, which was a source of dissatisfaction. Some comments were:

- Time constraints — we have so much to do and so many areas to cover. [Contributing primary — teacher]

- We are really pressured — wide-ranging curriculum documents. It is this pressure that prevents us doing things as well or as deeply as we would like so — we do our best and may not use all the available resources at times. [Full primary — deputy principal]
One primary school respondent, who taught Years 1 to 3, suggested that reading, writing, and mathematics need to take priority.

Time — so much curriculum and so little time to implement everything. At primary school, reading, writing and Maths need priority. [Contributing primary — curriculum leader]

Only 3 secondary teachers and 1 intermediate teacher identified curriculum over crowding as an issue, 1 describing it as “the issue”.

School programme and planning structures were reported as a hindrance by 5 percent of respondents – they made worthwhile activities difficult to undertake. For example:

School timetable restricts visits of any significance — had to do a real study in 1–1/2 hours. [Intermediate — curriculum leader]

One respondent pointed out that school structures did not always support a holistic approach:

Building networks, time factors and establishing infrastructure so we can be holistic rather than fragmented in our approach. [Contributing primary — curriculum leader]

Eight percent of respondents indicated that their own and their colleagues’ lack of knowledge of environmental education served as a hindrance.

A lack of senior management support for environmental education was reported by 5 percent of respondents as a hindrance to the formation of links with outside organisations. For example:

Support from hierarchy in school. [Contributing primary — teacher]

Two percent of respondents commented that the lack of a school co-ordinator or someone to promote environmental education served as a barrier to the formation of links.

No one person to co-ordinate and push it in planning etc. [Full primary — teacher]

There has been plenty of active support from outside the school. Issue more internal finding the time and staff with expertise to promote environmental education. [Intermediate — principal]

School location was reported as hindering the formation of links by 5 percent of respondents:

Time — fitting in with a structured programme, location — being away from administrative office of NIWA\(^3\) and EW\(^4\), lack of principal support. [Secondary — teacher]

---

\(^3\) National Institute for Water and Atmospheric Research

\(^4\) Environment Waikato
Four percent of respondents pointed out this was a particular issue for rural schools in relation to school visits.

**Funding**

Twelve percent of respondents identified lack of money as a hindrance, 3 noting that external organisations had recently begun to require payment:

Lack of funding — the organisations I've contacted are short of funds and are unable to support programs at our school. [Special school — teacher]

Often now we need to pay people, e.g., we used to have experts come and work with Y13's on an issue to do with the environment, now we have to pay so we haven't done that part of the unit for 2 years. Disorganisation in other organisations. Fitting in with other organisations who are always ‘too busy’. [Secondary — head of department]

Others pointed out they needed money to buy the equipment needed to undertake activities:

The barriers to the actual practice of ‘environmental’ - type activities we identified included simple equipment such as gloves, spades, shovels, gumboots, raincoats, hose, water tanks, fishnets, wheelbarrows, buckets, rakes. [Intermediate — curriculum leader]

All schools require storage sheds/space for environmental education. All schools need trained teaching staff to assist full time. [Contributing primary — teacher]

**Differences in goals and aims**

Four percent of respondents commented that the different knowledge, interests, aims, and goals of external organisations along with their lack of understanding of schools and school children compounded the issues of time and communication:

Lack of understanding of each other’s roles and timetables, e.g., DOC conservation week is announced within the term rather than before the next term so it can’t be planned for. We really need to know their focus at the beginning of the year. [Contributing primary — curriculum leader]

We relate, we get grants etc. It’s getting easier with email now common. But there is a major mismatch between education and political/physical action. Our objectives are different. E.g., educational activities are not those which yield good data or plant lots of trees. [Intermediate — curriculum leader]

**No concerns**

Nine percent of respondents reported there were no hindrances to their forming links:

We have been helped where help is needed. [Intermediate — principal]
Nothing — many organisations are willing to offer support. [Full primary — head of department]

No personal problems here — most people very willing to help and I have good contacts. [Contributing primary — teacher]

SUMMARY

Of the named services and programmes, LEOTC was said to be the most used by both intermediate (37 percent) and composite/restricted composite (56 percent) respondents. The TKI Website had been accessed by almost 30 percent (29 percent) of respondents and was the most popular resource for full primary teachers (41 percent). Both EEPDP and NWP were the next most frequently used resources, with 26 percent of respondents having used them. The NWP (RSNZ) was the most popular resource for secondary school respondents (31 percent indicated they used it).

In response to a direct question with a 4 point response (inadequate to adequate) almost half of the respondents judged the adequacy of funding to be inadequate and a further quarter judged it as somewhat inadequate to meet the needs of their environmental education programmes. However, nearly two-thirds (62 percent) assessed the adequacy of teacher access to information to be adequate or reasonably adequate, and over half of the respondents (58 percent) said that their access to resource materials was adequate or reasonably adequate. In considering these responses, however, it needs to be remembered that the sample was of schools with some involvement in environmental education as identified by providers of environmental education programmes and services and so a high satisfaction rate might be anticipated.

Only 229 respondents commented on the adequacy of government policy with nearly two-thirds (60 percent) describing it as either somewhat inadequate or inadequate. Data reported in the following chapter suggests this inadequacy may relate to the non-mandatory status of environmental education and respondents’ perceptions of the implications that flow from this.

Regional, city, and district councils were reported as the most supportive and involved in school and classroom environmental education programmes on each of the occasions respondents were asked for this information. They provided training (16 percent), were said to be involved in those units respondents deemed most effective in meeting the purposes of their environmental education programmes (20 percent), and provided more general support (50 percent) (Survey questions 5, 13, 18, and 23).

Time constraints and school-based hindrances such as curriculum overcrowding, lack of leadership and support, and school location along with lack of funding were perceived to be the main barriers to forming links with other services and programmes in environmental education.
CHAPTER SEVEN: SUPPORT NEEDED TO TEACH A BETTER ENVIRONMENTAL EDUCATION PROGRAMME

This chapter sets out respondents’ views of the support they needed to teach a better environmental education programme. Respondents were also asked to specify what the Ministry of Education could do to help.

SUPPORT NEEDED TO TEACH A BETTER ENVIRONMENTAL EDUCATION PROGRAMME

Three hundred and twelve respondents identified the support needed for them to teach a better environmental education programme. Nine response categories were developed. Each response was coded against these with some being counted in 2 or more categories.

The main areas of support requested to help respondents teach a better environmental education programme were (see Table 39):

- the provision of teaching and learning resources (31 percent);
- professional development (27 percent);
- time for planning and action (24 percent); and
- funding or additional funding (21 percent). Responses were only categorised “funding” if this was suggested without elaboration. A request for money for professional development was coded as a request for professional development.

Other response categories were: the need to reduce curriculum overcrowding; whole school involvement; in-school leadership and support; external support; and help with integration of environmental education into the curriculum.
Table 39

Support requested for environmental education programmes

<table>
<thead>
<tr>
<th>Resources and support requested</th>
<th>% of responses (n=312)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of teaching and learning resources</td>
<td>31</td>
</tr>
<tr>
<td>Professional development</td>
<td>27</td>
</tr>
<tr>
<td>Time for planning and action</td>
<td>24</td>
</tr>
<tr>
<td>Funding/additional funding for projects</td>
<td>21</td>
</tr>
<tr>
<td>Address overcrowding in the curriculum</td>
<td>16</td>
</tr>
<tr>
<td>Integration</td>
<td>10</td>
</tr>
<tr>
<td>Whole school involvement</td>
<td>10</td>
</tr>
<tr>
<td>In-school leadership and support</td>
<td>10</td>
</tr>
<tr>
<td>External support — experts and facilitators</td>
<td>10</td>
</tr>
<tr>
<td>Non-mandatory status of environmental education</td>
<td>10</td>
</tr>
</tbody>
</table>

Comments on each of the response categories follow.

**Provision of teaching and learning resources**

Nearly a third (31 percent) of those who responded to this question indicated that more resources were needed to help them teach a better environmental education programme in their school. Respondents recommended that the Ministry of Education provide resources/additional resources similar to those available in other curriculum areas, these to be cross-curricula and adaptable to local issues. For example:

Support booklets as we have in science suggesting issues which might be explored and suggesting supporting activities and resources. [Full primary — deputy principal]

Kits, resources such as the water testing kit that we received earlier this year. Awareness of resources — maybe beginning with school-wide guidelines/ plans. [Contributing primary — curriculum leader]

One suggestion was that these be made available on TKI:

Provide some more cross-curricular and curricula-specific activities on TKI that can be easily adapted to local examples. [Secondary — teacher]

A central pool of ideas accessible through TKI. [Secondary — head of department]

Four percent of respondents suggested that a means for sharing ideas, such as a newsletter of best practice, be developed.
Develop further resources to facilitate teaching/learning. Newsletters of best practice. [Contributing primary — principal]

Other suggestions were that the resources be:

- pupil friendly;
- units that have been taught and known to be successful;
- designed to integrate with other curriculum areas;
- easily adaptable to local needs;
- suitable for primary students;
- suitable for secondary students; and
- available through Learning Media.

Some comments were:

Pupil friendly resources could be supplied as long as they are relevant to AOs. [Secondary — head of department]

Pre-planned units with scope for modifying to meet particular school situations and needs. [Full primary — curriculum leader]

Suggestions emphasised the need for resources that integrated curriculum areas:

A really good integrated unit designed for primary school students. [Contributing primary — curriculum leader]

Planning ideas that are not ‘over the top’ — ways of integrating and maintaining a stable programme. [Full primary — curriculum leader]

**Professional development**

More funding, time, and resources for professional development was requested by just over a quarter (27 percent) of the respondents, both for themselves and for their colleagues. For example:

Funding for resources and teacher development in environmental education. [Full primary — teacher]

Four percent of responses included explicit requests for help to integrate environmental education into other curriculum areas. For example:

Further professional development re Guidelines for whole staff department and how it can best be integrated into current practices/programmes. [Contributing primary — principal]

One percent of respondents provided additional comments that commended the facilitation, and programmes, they had been involved in and suggested these deserved ongoing support:
We have been fortunate to have a facilitator working with us to help establish a policy rationale. [Full primary — curriculum leader]

The Enviroschool programme and the environmental education facilitators of the Guidelines need continued support for their efforts with environmental education. [Secondary — head of department]

In contrast, 2 percent of respondents queried whether the facilitators they had worked with had the necessary background and experience. This seemed to be mainly in terms of secondary teachers working with primary teachers and vice versa.

There seemed to be some (3 percent) concern that the soon to be appointed (for 2003) regional facilitators of environmental education would add yet another “level” of people that respondents would need to contact and network with. The suggestion was that this could lead to more than “one vision” and that continuity of relationships with the providers for professional development was important. For example:

Put money into environmental education programmes that encompass the vision of environmental education i.e., the Enviroschools, and already established facilitators of the environmental education Guidelines rather than creating another level of people to contact — keep the relationships simple! [Full primary — teacher]

It is unfortunate to hear that money is being spent on another level of environmental education co-ordinators in NZ when initiatives already running have good networks in place. Creating one vision instead of several similar ones is a concept the Ministry of Education needs to look at. [Additional comment — secondary — head of department]

**Time for planning and action**

Nearly a quarter of respondents (24 percent) asserted that they needed more time to implement a better environmental education programme. Just under half of these indicated that teacher release time was needed to set up and maintain projects like worm farms and planting that are part of action for the environment, to support colleagues on field trips, and for planning and sharing ideas. For example:

We have a bush area and wormery. It can be difficult to find time to keep using and maintaining these. [Contributing primary — teacher]

Time to plan with colleagues was seen as a need by both primary and secondary respondents. For example:

Release time to plan and co-ordinate school activities to encourage more teachers to integrate more environmental education across the curriculum. [Contributing primary — curriculum leader]

Time to sit with colleagues in the social sciences to really nut out how best to develop and integrate better environmental education practice in our courses at senior levels. [Secondary — head of department]
It was suggested that teachers would benefit from teacher release to share what they were doing within and between schools:

- Time to reflect and plan next year’s campaign, opportunity to share experiences with other schools and listen. Central pool of ideas accessible through TKI. [Secondary — head of department)]

- We are doing the best we can possibly do with limited time trying to cover all curriculum areas. Our teachers pooled our resources and our contacts. [Contributing primary — curriculum leader]

Two percent of respondents pointed out they needed time to bring together staff and outside support people, to involve and support students taking initiatives, and to plan with parents and community groups. For example:

- Time to do professional development planning with other groups — parents, other adults, community leadership. [Secondary — curriculum leader]

- Promote better networking between schools and wider community. [Contributing primary — teacher]

The suggestion was that at the moment school environmental education programmes were often reliant on busy teachers doing extra work:

- Currently it is reliant on an already busy teacher doing extra work to lead the programme in our school. If it is to be sustainable, time needs to be given to development, and funding needs to reflect that!! [Full primary — principal]

Another respondent noted that teachers were willing and interested but just did not have time:

- Time — there is willingness and interest but we are all so very busy that it gets put off. [Secondary — head of department]

Respondents were looking to the Ministry of Education to fund schools to allow for time for planning and action in environmental education.

**Funding for projects**

While funding was mentioned as an issue in professional development and allocating time, it was also seen as a need for purchasing equipment and covering costs of off-campus trips. Just over 20 percent (21 percent) of respondents considered project funding would allow them to operate a better environmental education programme. They noted that school budgets for environmental education projects were often small ($100 was the sum mentioned by a contributing primary deputy principal) and resources were needed to develop gardens and worm farms, a point reiterated in 35 responses at the end of the questionnaire. For example:

- Money — for resources. For example, money to set up edible garden within the school — aim to feed families via a free kitchen in town. [Contributing primary — teacher]
The barriers to the actual practice of ‘environmental’ type activities we have identified include simple equipment such as gloves, spades, shovels, gumboots, raincoats, hose, water tanks, fish nets, wheelbarrows, buckets, rakes. [Additional comment — intermediate — curriculum leader]

Three percent of respondents highlighted the costs involved in taking students to visit out-of-school facilities and funding student projects. For example:

Funding for buses and equipment for more out-of-school trips to see what is around, e.g., sewerage plant, rubbish recycling, parks, etc. [Contributing primary — deputy principal]

Better access to funded projects was suggested as an alternative to direct funding. For example:

Access to other programmes such as ‘Take action for Water’ which was completely funded. [Contributing primary — deputy principal]

Respondents from both primary and secondary schools (2 percent) stated funding was needed for student projects. For example:

Funding — allocated to projects designed and created by our students. They have excellent ideas and we have no money to support them. [Contributing primary — curriculum leader]

More TKI support, provide funding for projects that students can apply to. [Secondary — head of department]

Three percent of respondents stated they would like to be less dependent on fundraising, although one noted that student involvement in this added to their sense of ownership. For example:

I think that at the moment we are doing well but money for projects would be nice as we tend to have to fundraise a lot — which is fine in some ways as children have more ownership. [Full primary — principal]

I am fed up with having to spend hours of time applying for funding to complete projects — most of the time you get nothing (a lotto?). For the want of a decent fence around schools (which we must pay for) certain projects cannot happen as vandalism will eliminate them, e.g., a wormery, an edible orchard — young trees snapped off... We refuse to give in but must be realistic. [Full primary — principal]

One principal explained the success of the school programme depended on the enthusiasm of staff. He/she expressed support for the benefits to children of environmental education while at the same time expressing concern at the time taken away from teaching to fundraise.

While I have keen lead teachers on my staff this will be a success. Unless it is funded accordingly by MOE this will not keep the momentum if staff changes. We have invested a lot as a school. Our children have benefited — IT IS GREAT — we cannot continue to spend time applying for grants, we should be working/teaching children. [Additional comment — full primary — principal]
Three percent of respondents strongly suggested that Ministry funding needed to “reflect the rhetoric” (Full primary — principal).

Co-ordinate community groups to assist in setting up initiatives, access to funding to support such programmes — one other issue is with overcrowded curriculum — always difficult to fit everything in — if Ministry wants all schools to have environmental focus it needs to make that evident through resourcing to reflect priority. [Contributing primary — principal]

Put their money where their mouth is! Get real about parent and iwi support. [Contributing primary — principal]

**Address overcrowding in the curriculum**

Curriculum overcrowding, meaning that environmental education was just another subject to fit into the school day, was an issue identified by just over 15 percent (16 percent) of the respondents. Environmental education was seen to have to compete with other initiatives by both secondary and primary respondents — primary respondents indicated they needed to balance the time needed for environmental education with the time required by the current numeracy and literacy initiatives, and secondary teachers commented that time had to be made to implement the technology and health curricula. For example:

> If the curriculum was shortened in other areas, so we have the time in the year to include more environmental education. Constant initiatives such as health, technology etc. that are introduced without the removal of other material simply create a very cramped teaching programme with little time to develop other new initiatives such as environmental education. [Secondary — head of department]

The assertion was that many teachers found it difficult to find time to include environmental education and that this would not become a priority while environmental education was non-mandatory. Five respondents made this point in their additional comment — one follows:

> Environmental education does not have any formal pathways or programmes in our school — it relies on those of us who have a passion or interest. [Secondary — head of department]

Some respondents recommended that rather than being an “add-on”, environmental education become mandatory and subject to the same accountability measures as other curriculum areas:

> Not to make it an add on — either it’s integrated or it’s a subject but not ‘more’ to be added into limited time. [Secondary — deputy principal]

> Ask schools for evidence that environmental education guidelines are being implemented, e.g., that environmental education is included in teacher appraisal; that schools develop a charter or policy that outlines their environmental education strategy. [Special school — teacher]
Integration

Other respondents (10 percent) saw integration as a solution to the problem of curriculum overcrowding. For example:

Some time allocation — it is very difficult to include as a separate subject because of the pressure of the timetable. I do not think it can be added to an already full curriculum, however, it could be integrated effectively across different subject areas. [Secondary — head of department]

One respondent stated that the benefits of integration were more meaningful learning for students and less stress for teachers:

All curricula are being worked together under the ‘umbrella’ of environmental education. Much more meaningful for the kids and then less stress for teachers who already have heaps of things to ‘fit in’. [Contributing primary — curriculum leader]

Respondents in this groups looked to the Ministry of Education for help with integrating environmental education:

Tag it — through funding, some in-service ideas on how to integrate it. [Secondary — head of department]

Whole school involvement

Ten percent of respondents asserted that their programmes would benefit from whole school involvement in and support of environmental education. Some respondents suggested whole school professional development was necessary so that more/all staff understood and supported the ‘basic principles’ of environmental education (Full primary — teacher):

More in-service for whole school staff so that we could all work together. [Contributing primary — deputy principal]

Whole staff development to embrace an environmental education philosophy across the curricula. [Intermediate — principal]

The majority of these respondents suggested that the Ministry of Education should take the lead in providing this professional development for whole schools, indicating that they saw whole school involvement as valuable.

In 6 instances, respondents indicated that for them whole school involvement included policy and programme support “from BOT down to whole school action” and/or community involvement. For example:

Whole school policy and programme from Board down to whole school action. Total involvement in aims, goals, and actions. [Secondary — head of department]
Whole school professional development (+ community involvement). Spend time planning with colleagues. Board of Trustees support. [Full primary — principal]

The non-mandatory status of environmental education was again seen as an issue in getting whole school involvement, and leadership in particular. One primary school respondent explained that because environmental education was not a curriculum requirement it was difficult to implement a school-wide unit without strong leadership:

This is on the fringe of curriculum. Trying to get a school-wide unit off the ground requires lots of work and commitment by all staff. Unless a strong leadership decision is made or there is a curriculum requirement, unity here is hard to attain. [Additional comment — contributing primary — teacher]

A secondary teacher reiterated this point:

Very frustrated, lots of opportunities for moving ahead with environmental education. There are a few staff who actively promote and teach environmental education, a dozen who have interests in environmental education, but nobody to lead the school-wide programme. [Additional comment — secondary — teacher]

Five percent of respondents saw benefit in the Ministry funding a school-based co-ordinator for environmental education.

**In-school leadership and support**

Ten percent of respondents commented on the need for in-school support from senior management and/or an environmental education co-ordinator. The suggestion was that principals and/or senior management understanding more about environmental education would benefit their programme:

If the principal understood what environmental education is — more than gardening, need a workshop for principals and BOT. [Secondary — teacher]

Some respondents, from both primary and secondary schools, suggested school environmental programmes would benefit from having someone with the time and responsibility to promote environmental education and to work with and support other teachers. For example:

I think we are quickly heading towards a subject called environmental education taught by someone with the passion and skills. We are very well resourced — we just need someone with the energy to put something together. [Secondary — curriculum leader]

A full time, trained, professional permanently appointed to school staff entitlement. [Full primary — teacher]
External support — experts and facilitators

Ten percent of respondents also considered that they and their students would benefit from better access to, and input from, outside experts. For example:

- Access to professional people within the field studied who can relate to children. [Full primary — principal]

- Better links with local business, council and community groups involved in maintenance of NZ ‘clean, green’ image in our particular community. [Special school — head of department]

These respondents suggested the Ministry could provide advisers or experts:

- Provide facilitators to come and take it — we really are too busy. It gets left now but if facilitators come in we would try to fit it in (we do this now with waste management). [Full primary — teacher]

- Outside agencies and facilitators taking class-based programmes. [Contributing primary — teacher]

Non-mandatory status of environmental education

A key issue underpinning many responses concerned the non-mandatory status of environmental education. Ten percent of respondents specifically referred to this issue as leading to difficulties with whole school support and development, and finding time to plan and teach environmental education. For example:

- It is not seen as part of the ‘compulsory’ curriculum to be covered and we feel ‘overloaded’, there is limited opportunity to incorporate it. [Full primary — teacher]

- Currently have taken support from senior management who agreed in principle to our goals but couldn’t/wouldn’t offer any real support i.e., formalised programs through BOT policy, strategic goals, time for meetings. PD, etc. [Secondary — teacher]

The feeling was that environmental education was yet another “add-on” introduced without the necessary support.

- To be blunt environmental education appears to me to be yet another add on to an already crowded curriculum. It has been added on without the level of staffing, training and resources needed. [Secondary — deputy principal]

One respondent pointed out that the status of environmental education was a particular challenge because of the competing demands of NCEA:

- We need to develop policies and apply them throughout the school community. Currently not a high priority because of NCEA implementation. [Secondary — teacher]
Ten respondents suggested that a change in government policy and more Ministry of Education support was required. For example:

A huge push of support from the Ministry of Education indicate to schools and teachers not currently motivated that environmental education is as important as numeracy and literacy. [Contributing primary — curriculum leader]

The suggestion from 5 of these 10 respondents was that integration be mandated. For example:

A mandate that allows us to integrate across the curriculum and not worry about ERO breathing down our neck regarding coverage. [Full primary — principal]

However, 6 expressed concern that environmental education might be made compulsory, one describing environmental education as “an ethos not an arrow” in that his/her preference was for staff to come to understand and support the principles of environmental education.

The following response illustrates the breadth of what was suggested as needed to help teachers to teach a better environmental education programme in their school:

Integration of environmental education learning into the other 7 curriculum areas (we are doing this in our school in 2003), targeted funding for staff training and school programmes and resources, a higher public profile for environmental education by the government, Ministry of Education, availability of school advisers in environmental education. [Contributing primary — principal]

**SUMMARY**

The key factors identified by the respondents as having the potential to help them teach a better environmental education programme were the provision of resources, professional development, time for planning and action, and funding. These were most requested in response to a general question and as support from the Ministry of Education. This cluster of factors essentially addresses the practical issue of what to teach and how to teach it. Respondents were concerned to access professional development to enhance their knowledge of the Guidelines, environmental issues, and the local environment. They were interested in accessing units that were successful, cross-curricular, and adaptable to local contexts, and in having sufficient funding to carry out actions for the environment such as gardening, field trips. Access to external experts can also be seen to simultaneously address respondents’ concerns about their own knowledge and skills and for the development of students’, knowledge and skills.

The other factors identified by respondents as having the potential to help them teach a better environmental education programme form an overlapping set. Although the overcrowded curriculum is the next most frequent issue, after resourcing, professional development, and funding, the non-mandatory status of environmental education is possibly pivotal. Concerns with curriculum overcrowding gained particular salience because environmental education is not a compulsory/required curriculum area. For the respondents to this survey, who evidenced a high degree of personal commitment to environmental education, the challenges to implementation arose because environmental education is just one of the initiatives competing for their attention.
and curriculum time. Without school/principal/senior management/Board of Trustees support and/or inclusion in school policies and programmes, it was an “extra” or “add-on”, which those with less commitment and/or understanding could choose not to teach. Hence, there was strong support for whole school involvement and for in-school leadership, and support from either or both of the principal/senior management and an environmental education co-ordinator.

Requests for help with developing integrated units are in line with a desire to teach environmental education in the manner recommended in the Guidelines. On the other hand, some respondents indicated that in a situation where environmental education is non-mandatory in terms of government policy and/or required by the school, integration is a practical way for enthusiastic teachers (and principals at a school level) to incorporate it into their classroom programmes. Likewise, respondents’ support for whole school involvement can be construed as a means of dealing with the non-mandatory status of environmental education, as a recommendation consonant with the Guidelines (Ministry of Education, 1999) and as a practical concern, particularly in relation to topics such as recycling, gardening, and planting.

Respondents would like support from the Ministry of Education in all the areas they consider would improve their programmes. Specific suggestions included resources similar to those provided for other curriculum areas, whole school professional development, funding for teacher time and for environmental education projects, and assistance with integration of environmental education into their existing curricula programmes.
CHAPTER EIGHT: USE OF THE GUIDELINES

One the research objectives was to determine the extent to which teachers used the Guidelines for planning their environmental education programmes. This section sets out data on respondents’ reports of the use they made of the Guidelines.

USEFULNESS OF THE GUIDELINES FOR PROGRAMME PLANNING

Forty percent of the 270 respondents to a question on their perceptions of the usefulness of the Guidelines reported they found it useful (28 percent) or very useful (12 percent) in their planning of their environmental education programme. Just over 25 percent reported the Guidelines were of some use for programme planning. Two respondents reported the Guidelines were of no use and the remainder that they had not used the Guidelines (34 percent).

When responses from those who had previously indicated they were not aware of the Guidelines were removed the proportion of respondents who reported they found the Guidelines useful or very useful rose to 45 percent. Those who indicated they were not aware of the Guidelines were most likely to report they were of no use (86 percent).

Just over 60 percent of respondents (62 percent) who indicated they were familiar or very familiar with the Guidelines reported they found them useful or very useful for planning. With the inclusion of those who found the Guidelines of some use for planning this proportion rose to nearly 94 percent.

Further analysis indicated the view that the Guidelines were generally useful was more prevalent in respondents from primary, intermediate, and secondary Years 7 to 15 level (useful and very useful ratings ranged from 37 to 58 percent) than at the secondary Years 9 to 15 level (useful and very useful rating was 26 percent).

With the exception of respondents from composite/restricted composite schools (n=4, 50 percent), approximately a third of the respondents from each school type reported they did not use the Guidelines for planning.

One hundred and thirty-two respondents commented on how they used the Guidelines. Nearly a third (30 percent) reported the Guidelines provided a framework or general direction and/or kept them focused when they were planning.

Helps to keep us on track with aims and objectives. [Secondary — teacher with EE training]

Ten percent reported the Guidelines supported integrated or cross-curricular planning through the provision of examples of units of work.

Give structure and direction for application cross curricular. [Contributing primary — curriculum leader with training]
To provide direction and scope for environmental contexts for our integrated studies which have a variety of curriculum ‘hosts’. [Full primary — deputy principal with EE training]

The action planners were used to plan syndicate projects:

We used the action planners to plan syndicate projects. [Intermediate — curriculum leader]

One teacher commented that the Guidelines provided legitimacy for the work the school was doing in recycling and regeneration:

Assisted understanding of how EE sits in various curriculum statements and provides legitimacy for the work we are doing in recycling and regeneration. [Secondary — deputy principal]

Another described the Guidelines as indispensable:

Can’t work without it. My copy is quite torn and tatty! [Secondary — curriculum leader]

Seven respondents reported they had used the Guidelines in their professional development work with other staff in their school.

Five teachers stated they used the Enviroschools materials for planning:

I prefer to use Enviro-schools documents and workbooks as main source, therefore Te Mauri Tau. [Special school — teacher]

The Guidelines were more for background info and direction — I tend to use the enviro-kit to schools in the environmental programme. [Contributing primary — curriculum leader]

Two teachers claimed that they had moved past using the Guidelines. One explained:

I have been trained as a facilitator and as such have gone past the ‘very useful’ category. As my own skills have developed, I need to lean on the Guidelines less, as would be expected. [Intermediate — deputy principal]

Another commented that his/her involvement predated the Guidelines:

My concern for the environment predates the Guidelines and so I have not used them to guide my teaching. [Secondary — deputy principal]

**Summary**

Forty-five percent of those who were aware of the Guidelines reported they found them useful or very useful for planning their environmental education programmes. The usefulness of the Guidelines for planning was related to awareness of the Guidelines, with just over 60 percent of those who were familiar or very familiar with the Guidelines reporting they found them useful or
very useful for planning. The Guidelines were considered to be more useful for focusing planning and for supporting cross-curricular integration through the provision of examples of units of work.
CHAPTER NINE: SUMMARY, CONCLUSION, AND IMPLICATIONS

This chapter summarises the findings of the critical stocktake. It is set out in 3 sections. The first section describes characteristics of schools and teachers who responded to the survey. The second section describes characteristics of environmental education practice in these schools. The third section sets out the conclusions and implications from the study.

CHARACTERISTICS OF SCHOOLS AND TEACHERS WHO RESPONDED TO THE SURVEY

Schools involved in environmental education

The surveys were sent to a non-random sample of schools believed to be involved in environmental education. A database of potential schools for the sample was developed using information from a range of providers of environmental programmes and resources, including the Ministry of Education, local authorities, and environmental sector groups. The final database of 475 schools (17.5 percent of mainstream New Zealand schools) included all school types and school deciles. Although there were more contributing primary and full primary schools in the database than any other school type, primary schools were proportionally under-represented because of the large number of primary schools in New Zealand. Three copies of the survey were sent to each school: one to a curriculum leader in the school; one to the environmental education leader in the school; and one to a classroom teacher of environmental education. A total of 367 responses were received from 193 schools. Primary schools were slightly under-represented in the sample with respect to the proportion of those school types in the school population as a whole. Fifty-one schools sent in 3 responses and 70 sent in 2 responses.

Individuals involved in environmental education

As might be expected from a purposive sample of schools with some involvement in environmental education, the majority of the 367 survey respondents reported a high level of involvement in and enthusiasm for environmental education. Overall, the respondents were a very experienced group with 59 percent having more than 15 years’ teaching experience. Almost 75 percent of respondents reported they had been involved in environmental education for less than 5 years. Forty-five percent reported that they had been involved for less than 2 years, suggesting there may be an association between their involvement in environmental education and the publication of the Guidelines for Environmental Education in New Zealand Schools (Ministry of Education, 1999), and/or participation in professional development in support of the Guidelines. Nearly 20 percent of respondents reported they had been involved in environmental education for as long as they had been teaching; for 42 respondents this was for over 15 years.

Slightly more than a third of the respondents were environment education leaders or co-ordinators, while more than two-thirds were involved in environmental education as classroom
teachers. Two-thirds of those who were environmental education co-ordinators or leaders had other responsibilities in their school (29 percent were principals and 38 percent held curriculum leadership positions of some sort) suggesting that in nearly a quarter (24 percent) of the respondent schools environmental education had direct senior management support and involvement.

It is important to remember that the survey did not provide a definition of “environmental education”, and so respondents had to decide for themselves whether or not they were doing environmental education. There was some indication that respondents may have been participating in environmental studies and actions for the environment without labelling them as environmental education. For instance, discussions with the 5 schools that queried the basis for their inclusion in the stocktake revealed they were engaged in activities such as recycling and gardening. In addition, one survey respondent explained:

> I feel that although I have not been following the Guidelines I have still been covering aspects of environmental education in the various topics I cover under social studies, technology and science. We look at impact of man on the Amazon River and mangroves, recycling, and waste etc. [Full primary — curriculum leader]

**Training and familiarity with the Guidelines**

Over half of the respondents had had training in environmental education with most reporting having in-service training. Responses highlighted a range of training sources, including Guidelines professional development, other Ministry of Education programmes, and programmes delivered by local authorities, botanic gardens, and a range of community groups. Very few reported pre-service training.

Half of the respondents indicated a familiarity with the Guidelines for Environmental Education in New Zealand Schools. This is somewhat lower than might have been expected given the sample. In particular, half of respondents from schools that had participated in Guidelines training were unaware of the document or not familiar with its contents. Respondents who held an environmental education leadership position in the school, or had participated in environmental education in-service training, were more familiar with the Guidelines than other respondents.

**Enthusiasm for environmental education**

Respondents’ descriptions of student, school, community, and their own achievements indicated that many respondents gained a great deal of satisfaction from their involvement in environmental education. This may be an attribute of the sample but nevertheless respondents indicated they experienced a sense of satisfaction from seeing their students enjoying learning about, and taking action for, the environment. Another source of satisfaction was their belief that the changes engendered in student attitudes would have a positive impact on the environment in the long term. Respondents valued their greater involvement and interaction with the parents and the local community and appreciated the kudos that flowed from this. They felt that student and school action for the environment had tangible benefits for the community. The following comments illustrate respondents’ enthusiasm for environmental education.
Environmental Education in our school has ‘grown’ very fast and permeates through a whole range of areas. It supports our values programme and is integrated into the programme. We give it ‘high priority’ for community information getting parents and wider community on side. Next year, zero waste and global monitoring is our focus. Excellent! [Full primary — principal]

As a school principal I feel that this new initiative in our school is without doubt one of the more exciting developments for some time. The capacity of environmental education to enable adolescent (low decile) kids to engage in hands on learning is wonderful. Our early involvement has also brought about more connecting with our wider community than any other curriculum area. Very enthusiastic about our involvement. [Intermediate/decile 2 — principal]

Meanings and purposes attached to the term “environmental education”

The survey asked respondents to describe what they understood the term “environmental education” to mean, and their own purposes for teaching it. Comments were analysed in terms of the 5 aims, 3 dimensions, and 4 key concepts of environmental education outlined in the Guidelines for Environmental Education in New Zealand Schools [Ministry of Education, 1999]. Responses were dominated by a concern with “education about the environment” (Aims 1 and 2). In terms of respondents’ meanings and purposes:

- over two-thirds of the mainstream respondents mentioned the development of student knowledge, understanding, and awareness of the environment and environmental issues (Aims 1 and 2);
- one-third of respondents described the development of student values and attitudes towards the environment (Aim 3);
- around 20 percent listed student actions for the environment. This rose to 33 percent when respondents outlined their programme purposes (Aim 5);
- a concern with interdependence and personal and social responsibility were evident in a third of responses;
- just over a fifth of the responses specifically mentioned the concept of sustainability and/or a concern with the future; and
- biodiversity was mentioned by less than 1 percent of respondents.

The Guidelines indicate that a balanced environmental education programme needs to include the 3 dimensions of “in”, “for”, and “about” the environment. Less than 20 percent of those who described what the term environmental education meant to them and why they taught environmental education described all 3 dimensions. This raises questions about how the respondents view the interaction of the 3 dimensions.

Interestingly, the 4 key concepts figured more prominently in responses from the kura kaupapa Māori respondents. They emphasised their personal and familial involvement with the environment more than respondents in the mainstream schools and considered the 4 key concepts
to be in line with Māori worldviews and with the principles underpinning Te Aho Matua (Mataira, 1997). It needs to be remembered however that data from kura kaupapa Māori participants was generated via face-to-face interviews, most lasting for over an hour.

**The Key Characteristics of Environmental Education Practice in New Zealand Schools and Kura Kaupapa Māori**

**At the level of school systems**

**Inclusion in school policy and planning documents**

Where environmental education is included in school documents, this tends to be through school strategic plans (36 percent) and departmental curriculum plans (64 percent), and to a lesser extent in school charters or Board of Trustee policies (around 25 percent of responses). Environmental education did not feature significantly in either student reporting or teacher appraisal. Lack of inclusion at the systems level was of concern to some respondents who proposed that school-wide policies and planning in support of environmental education would help them teach a better programme. Five percent of respondents reiterated this point in the “any other comments” section at the end of the survey.

> We’re really only starting with environmental education. Our big problem was that we had lots of ideas and we’re already doing ‘bits and pieces’ but nothing was cyclic or cohesive. We’re trying now to fit it into our cross-curricula plans as school-wide topics that obviously incorporate our long-term plans. Also we need a long-term environmental plan/policy etc. [Full primary — curriculum leader]

**Sustainability of environmental education**

As has been pointed out, environmental education is relatively new within most schools although it would appear a few of the sample schools have sustained an involvement in environmental projects over a number of years. Units described as ongoing for some years involved recycling, worm farming/composting, gardening, and planting.

Faxed responses from 5 schools stating they would not take part because the person involved in environmental education had left the school suggests that when environmental education is promoted by an enthusiastic individual, its long-term viability is not assured.

Some respondents considered that environmental education needs to be incorporated into school policies and careful planning and integration to be viable:

> Planning is crucial to long-term success and time is needed for excellent careful planning & integration of environmental education. [Full primary — curriculum leader]

This point was endorsed by a school principal:
Currently it is reliant on an already busy teacher doing extra work to lead the programme in our school. If it is to be sustainable, time needs to be given to development and funding needs to reflect that!! [Full primary — principal]

Whole school approaches

The Guidelines support the development of whole-school approaches to environmental education, and wholeschool approaches are widely advocated in the international literature in environmental education. Interestingly, only 12 percent of the environmental education units (n=30) described by survey respondents included a whole-school approach, usually in conjunction with Board of Trustees and principal support, although this was more evident in primary than in secondary schools.

There was evidence that participants endorsed a “wholeschool” approach to environmental education. Whole staff professional development, including the development of greater understanding of environmental education by the principal and/or Board of Trustees, was seen as a way of increasing “ownership” and involvement by the whole staff (n=30).

This is on the fringe of curriculum. Trying to get a school-wide unit off the ground requires lots of work and commitment by all staff. Unless a strong leadership decision is made or there is a curriculum requirement unity here is hard to attain. [Contributing primary — teacher]

The Guidelines provide examples of how environmental education might be integrated with and across curriculum areas. Integration, notably with science, social science, and technology, was reported as the most common means of school provision of environmental education with primary and secondary Year 9–15 reported integration at a higher level (by around 80 percent of respondents) than intermediate and secondary Year 7–15 respondents (60 percent). It is difficult, however, to know how respondents construed “integration”: that is, whether they meant environmental education was integrated within a single curriculum learning area, or integrated across 2 or more curriculum learning areas. It seems likely that the secondary Year 9–15 respondents viewed it as involving the integration of environmental education into either science, social sciences, or technology.

Nearly 70 percent of respondents indicated that the EE unit they considered effective was integrated with science. Twenty percent of the units integrated science, social science, and technology. Fifteen respondents (4 percent), all from primary schools, reported the unit they described as effective was integrated with all 7 curriculum areas.

Respondents requested more integrated units, and more professional development to help with the development of integrated units appropriate for respondents’ local contexts. The Guidelines’ unit examples were identified as useful in this regard.

Most respondents (58 percent) reported environmental education is taught throughout the year with timetabling largely left up to teacher choice, suggesting that environmental education was not part of formal and/or collegial planning in most schools.
In-school support and leadership

A third of the respondents reported they were the environmental education leaders or co-ordinators, indicating that environmental education was accorded some leadership status in their school. Just over two-thirds of the environmental education leaders held other leadership positions in their school indicating support for environmental education at the principal and senior management level. A small number of respondents stated that an in-school co-ordinator was needed in their school.

Approximately half of the respondents claimed general support from principals, deputy/assistant/associate principals, curriculum leaders, and caretakers/grounds staff. Within-school support was reported more in primary and intermediate schools, than in secondary schools. Some respondents, however, identified lack of principal and/or senior management understanding and support of environmental education as a barrier to their teaching a better environmental education programme. This implies that principal/senior management support is important, possibly because of the status of environmental education as an optional subject.

Two hundred and forty-five of the 367 respondents described an environmental education unit they had taught. Of these, three-quarters said fellow teachers and principals were involved. Caretakers and grounds people played a role in just over 30 percent of these units, particularly those described by respondents from contributing and full primary schools.

Other support

Respondents from primary schools indicated that the environmental education unit they described was actively supported by parents and Boards of Trustees. A third of respondents who described effective units indicated that local councils, particularly regional councils, provided support and/or were involved in their environmental education unit. The Department of Conservation and a wide range of community groups such as local trusts, iwi, and environmental interest groups were also significant supporters.

At the level of classroom practice

A focus on certain areas of content “about” the environment

At the level of classroom practice, a wide range of topics and activities is being offered in environmental education. As existing literature on environmental education practice in New Zealand has suggested (Bolstad and Baker, 2004), popular topics include waste management and minimisation, water studies (fresh and marine), and planting and gardening, and studies with a broader focus such as resource management, native flora and fauna, global issues such as the Greenhouse effect, the school environment, and arts and culture studies. A similar range of topics was identified by respondents from kura kaupapa Māori although they pointed out they did not consider they taught environmental education as a learning area in its own right. The units they described explicitly drew on Māori concepts and traditions, usually through the direct involvement of kaumātua and/or families.
Most topics were offered across all age groups, but gardening, worm-farming, and recycling were predominantly at primary school levels.

The inclusion of a Māori perspective

Only 12 unit descriptions (5 percent of units) included mention of a Maori perspective. Of these, most involved the use of Maori legends, 2 indicated that local kaumatua spoke with students.

The inclusion of activities "in" the environment

Most of the units (92 percent) described as effective in delivering environmental education involved students in learning “in” the environment. Units such as recycling, worm-farming, and gardening were conducted within the school, and units in water studies and native flora and fauna involved students in activities and actions in the local community. In describing their programme purpose many respondents focused on the school and/or local community. In addition, there was a suggestion that teachers start their environmental education programmes with caring for the school grounds.

Schools should start with their school grounds, giving students the opportunity to be hands-on and have a sense of ownership and belonging. Their enthusiasm is infectious. [Full primary — curriculum leader]

Activities that include student action “for” the environment

A variety of student actions were reported “for” the environment across most topics, typically consistent with the nature of the topic itself and involving students in activities and action outside the classroom. Actions included cleaning up and recycling litter, gardening, planting native trees and plants along waterways, and writing letters to businesses, community groups, and government departments. Some topics such as resource management and global issues were less likely to afford reports of student actions, but were said to contribute to students identifying and planning for action, and changing student attitudes towards environmental issues.

Twelve percent of respondents indicated the environmental education units they described included student decision-making and/or student-directed action. One respondent reported in a further comment that student-driven projects were “authentic” and this served as a “powerful motivator”.

The success of our environmental programme comes from the fact that it is student-led. The students decide on an action we should take to improve our environment and the teachers help it to happen. The student-driven projects make it authentic for them and this is powerful motivator. [Intermediate — curriculum leader]

Achievements

Respondents reported a range of achievements for students, for themselves as teachers, for the school, and for the community that accrued from their environmental education units. The
development of knowledge about, and awareness of, the environment and environmental issues dominated respondent descriptions of achievements for their students (91 percent of respondents). Just over 60 percent described increased student respect for their environment, or the development of student values and attitudes towards the environment, as outcomes of the environmental education units described as effective. Thirty percent of respondents reported student action for the environment as an achievement. Other student achievements named were a sense of satisfaction and empowerment, and student enjoyment of learning.

Water and recycling topics were associated with students’ achievements in, for, and about the environment. Student empowerment and satisfaction were a feature of student achievements in the gardening, planting, and recycling units possibly because these topics were also associated with student decision-making and outcomes for the school environment as a whole.

Teacher involvement in environmental education not only contributed to teacher understanding of the environment and environmental issues but also to the development of teaching strategies. Other notable achievements were teacher satisfaction in student learning and development of environmentally-friendly student attitudes.

For schools and the community the main achievements were improved school environments and improved teamwork and community building within the school and between the school and the community. These outcomes were achieved mainly through planting and recycling, and gardening and water topics respectively. All topics were reported to have achieved these outcomes.

**Links, support, and resources**

Consistent with Step 4 of the planning process for environmental education detailed in the Guidelines, respondents indicated they worked with a range of outside services and programmes. Just over 30 percent of the respondents used LEOTC in their environmental education programmes. The TKI Website had been accessed by almost 30 percent (29 percent). Both EEPDP and NWP were used by just over a quarter of respondents. Given that just over half of the respondents reported they had had in-service in training environmental education this suggests that local bodies and other community groups may make a substantial contribution to professional development in environmental education. Less than 20 percent of the respondents used the other resources listed (TKI-Environmental Education, GLOBE, and SOSG). Regional, district, and city councils were most frequently mentioned as providers of environmental education training, as supportive of and involved in school and classroom environmental education programmes.

Alongside this, other important links, support, and resources were provided by other environmental agencies, community environmental groups, trusts, iwi, and the community. These groups were reported as making a valuable contribution to school and classroom environmental education programmes.

Our school has many environmental projects from planting of organic heritage fruit trees, olive growing and processing, worm farms etc., tremendous support from caretaker, council, environmental organisations. [Full primary — curriculum leader]
“Effective” environmental education units often included opportunities for students to listen to and question environmental sector professionals both in-school and on-site.

Time constraints and school-based hindrances such as curriculum overcrowding, lack of leadership and support, school location, and lack of funding were perceived to be the main barriers to forming links with supporting organisations in environmental education. Communication difficulties arising from different work patterns exacerbated any difficulties and so did mismatches in goals and expectations. Perhaps for this reason, a strong recommendation from respondents was that a central database of materials, programmes, services, and people be established by the Ministry of Education, possibly on the Internet.

In response to a direct question with a 4 point response (inadequate to adequate) almost half of the respondents judged the adequacy of funding to be inadequate and a further quarter judged it as somewhat inadequate to meet the needs of their environmental education programmes. However, nearly two-thirds (62 percent) assessed the adequacy of teacher access to information to be adequate or reasonably adequate, and over half of the respondents (58 percent) said that their access to resource materials was adequate or reasonably adequate. It considering these responses however it needs to be remembered that the sample was of schools with some involvement in environmental education as identified by providers of environmental education programmes and services and so a high satisfaction rate might be anticipated.

Nearly two-thirds (60 percent) of those who commented on the adequacy of government policy described it as either somewhat inadequate or inadequate. As respondents did not elaborate on their view it is not possible to determine the reason for the perceived inadequacy. However, later comments by some respondents indicated that the non-mandatory status of environmental education was an issue for them.

Support needed for the provision of enhanced environmental education

Factors identified by respondents as having the potential to help them teach a better environmental education programme fell into 2 main categories, one practical and the other more policy-based.

Practical help with the teaching of environmental education

The first form of help requested by respondents addressed issues to do with their own knowledge and awareness (of the environment, environmental issues, and teaching) and with teaching and taking action within environmental education. The main practical help requested was:

- better/more teaching resources;
- additional funding to assist with the costs of field trips, equipment, and teacher release time for planning and action;
- professional development for themselves and for their colleagues;
- help with planning for integration; and
- opportunities to work with “experts” and/or for these individuals to work with their classes.
Respondents teaching in kura kaupapa Māori considered their programmes would benefit from more resources for teaching and professional development consonant with the Maori world view in Maori.

Five percent of respondents suggested that they be able to share ideas with and between schools and with environmental education agencies.

Some respondents (2 percent) indicated that their participation in professional development for environmental education had been a stimulus for further development.

We have been involved in environmental education without calling it that but are at a new beginning of our journey forward in environmental education with being involved in the pilot schools project in 2003. [Full primary — curriculum leader]

One respondent summed up the general view saying that if he/she were able to access programmes of professional development “my staff and myself would jump in with joy” (Secondary — head of department).

The ambiguous status of environmental education in the *New Zealand Curriculum Framework*

The other factors reported as having the potential to help respondents provide a more effective programme flowed from the ambiguous status of environmental education in the *New Zealand Curriculum Framework*. Respondents identified both curriculum overcrowding and the non-mandatory status of environment education as issues in this regard. Some respondents, presumably those who were lone enthusiasts and/or from schools were there is only limited support for environmental education, indicated that their programmes would benefit from in-school leadership (from the principal, an environmental education co-ordinator, and/or the Board of Trustees) and from whole staff involvement. Respondents from both primary and secondary schools noted that, while environmental education was a valuable area of learning, there really was not enough time to do the subject justice given the perceived “overcrowded curriculum”.

There needs to be some way to balance school programmes as there are far too many curriculum areas for a teacher to do ‘justice’ to. [Contributing primary — teaching principal]

The issue for our school is the ‘crowded curriculum’ hence a decision for 2003 to remove the current option subject called Environmental Education. In 2003 we plan to ‘map’ the teaching in other subjects of environmental education to see if there are gaps. [Secondary — deputy principal]

Many of the respondents explained that integration was the only way they could include environmental education in their programme, suggesting that the integration of environmental education into classroom learning was often up to the individual teachers who saw an opportunity to do so. Respondents indicated they saw environmental education as a valid “extra” whilst others saw it as an “add-on” that competed for their attention with other government initiatives.
We are already VERY BUSY and not looking to extend curriculum whilst acknowledging the value of the programme. I regard it as currently being a valid ‘extra’ and a strand to informally include, emphases in existing programmes. [Intermediate — deputy principal]

Some primary respondents (6 percent) pointed out that environmental education competed for their attention with the numeracy and literacy initiatives.

Few teachers seem to be motivated to include environmental education — perhaps as the “new” [numeracy] initiative has gone around schools this year, an environmental educator could speak to schools to encourage and expand a knowledge base to inspire teachers to include environmental education in their programmes. [Additional comment — intermediate — teacher]

Likewise, a secondary respondent cautioned any introduction of environmental education would need to be carefully planned so as not to clash with the National Certificate of Educational Achievement (NCEA).

Environmental education is a long overdue initiative, but nonetheless welcome and well conceived. However it needs to be made mandatory for schools to formulate and carry out environmental policies, audited by ERO, within a few years. Careful implementation is essential and it must not be botched by ‘clashes’ with NCEA implementation demands on teachers’ time and energy! [Composite/restricted composite — teacher]

There was some suggestion that environmental education could be made mandatory in schools although others cautioned it is “as much a state of mind” as a structured programme.

I am not sure schools can cope with adding yet another curriculum add on. The best option for environmental education is to continue to educate/inform teachers over a variety of curriculum areas about environmental issues etc. [Secondary — head of department]

The role of the Guidelines for Environmental Education in New Zealand Schools

Over half of the respondents reported that they were familiar or very familiar with the Guidelines, with this rising to 75 percent for environmental education co-ordinators. Mainstream school respondents’ descriptions of the meanings they held for environmental education and the purposes they sought to achieve were consonant with the aims and dimensions of the Guidelines.

Respondents from kura kaupapa Māori foregrounded their personal and familial sense of connection with the environment, indicating that the Maori worldview and Te Aho Matua (the
principles underpinning kura kaupapa Māori) are consonant with the 4 key concepts of environmental education.5

Forty percent of those who commented on the Guidelines found them useful or very useful for planning. The usefulness of the Guidelines for planning was related to awareness of the document, with just over 60 percent of those who were familiar or very familiar with the Guidelines reporting they found them useful or very useful for planning. The Guidelines were considered to be useful for focusing planning and for supporting cross-curricular integration through the provision of examples of units of work.

The curriculum links in the back of the Guidelines are really helpful. More suggestions like that would be good. Suggestions for making environmental education an ‘umbrella’ over other curriculum areas would be useful.

[Contributing primary — principal]

The survey did not specifically ask which (if any) of the individual components of the Guidelines’ 8-step planning process teachers used, although commentary on what would help them teach a better environmental education programme suggests support for steps 3, 4, and 5 (developing links to the curriculum, and links with other agencies or people involved in environmental education) were important to respondents.

CONCLUSION

Respondents’ views of environmental education

Respondents saw environmental education primarily in terms of education “about” the environment with a secondary focus on students coming to respect and care for the environment. Student actions for the environment had a lesser focus in respondents’ definitions of environmental education, their stated purposes for teaching environmental education, and their descriptions of student achievements in environmental education.

The Guidelines for Environmental Education in New Zealand Schools (Ministry of Education, 1999) were seen as useful by those who were familiar with them, particularly those who were environmental education leaders or co-ordinators. They served as a useful guide for planning and source of integrated units.

Characteristics of environmental education

Environmental education in New Zealand schools and kura at this time:

5 Some of the differences between mainstream and kura kaupapa Māori responses may be due to the different way the data was collected, namely, a written survey (mainstream schools) versus face-to-face interviews (kura kaupapa Māori).
• involves a wide range of activities;
• includes student participation in activities outside the classroom, particularly in the school
  grounds but also in the local environment;
• involves students taking practical action such as gardening, planting, and clearing up litter in
  the school grounds and local community along with monitoring waterways, students making
  and implementing decisions, and students advocating in the home and community;
• is thought to contribute to a better school and/or community environment and to enhance
  school-community relationships;
• enhances student knowledge and understanding of the environment and environmental issues
  and develops student values and attitudes towards the environment;
• may involve an enthusiastic individual or small groups of teachers or the whole school
  (principal, staff, student interest groups, and caretaker);
• may involve the wider school community, particularly parents and Boards of Trustees;
• involves the use of environmental education service and programme providers, particularly
  local authorities;
• may involve environmental sector professionals; and
• may involve community-based environmental and service groups.

Issues related to improving environmental education

Issues to improving environmental education are:
• non-mandatory status of environmental education;
• the challenge of integrating environmental education into other learning areas;
• the need for whole school support and involvement;
• the need for in-school leadership (from the principal and/or an environmental education co-
  ordinator);
• the need for further professional development;
• the need for resourcing in the form of environmental education units and the equipment
  needed to take action “for” the environment; and
• the need for funding for teacher release time to plan, prepare and share ideas, and make
  contact with support people.

Implications

The following implications may be seen to arise from the stocktake:
• Teachers would benefit from greater access to professional development to enhance their
  knowledge and understanding of the environment and environmental issues and of the
pedagogues appropriate for teaching environmental education, in particular how to plan, prepare, and teach it in an integrated way.

- The implementation of environmental education may require further support in the form of time and/or funding as it requires teacher time to plan and undertake action with their own students and/or as a support for colleagues, particularly if a whole-school approach is to be adopted. Resources and equipment are also needed for practical action.

- Environmental education programmes would benefit from the development of links, resources, programmes, and support from environmental experts and environmental education services and providers but setting up networks and liaising with these individuals and groups is very time consuming. A central database may facilitate this process. Consideration also needs to be given to how to reconcile the different goals, expectations, and experience of those involved in environmental education.

- For environmental education to be sustainable within a school it needs to gain whole school involvement, including incorporation into school policy documents.

- The status of environmental education as an area with a Guideline rather than a mandatory curriculum requirement means that schools and/or individual teachers are left to make their own decisions about if and how to implement an environmental education programme. It seems that a school-wide integrated programme poses a challenge to current school organisation and structures. Teachers consider more direction and/or guidance is required from the Ministry of Education and anticipate this would have flow-on in terms of funding, resourcing, and professional development.
REFERENCES


APPENDIX 1

SURVEY SENT TO SCHOOLS

ENVIRONMENTAL EDUCATION IN NEW ZEALAND SCHOOLS

In this survey we wish to obtain an understanding of current practice of environmental education in New Zealand Schools. Your responses will help the researchers to provide good information to teachers and the Ministry of Education and to support the teaching of this important topic.

About You and Your School

Please tell us about your school and your position in your school. These responses will be used only for statistical purposes to provide an overview of what types of schools participated in our survey. Your data will not be disclosed to any third party.

1 Your role in your school
(You may choose more than one).
- Principal
- Deputy/Assistant/Associate principal
- Curriculum/Syndicate leader
- Head of department/Head of faculty
- Classroom teacher/Subject teacher
- Other (please specify)

2 What level(s) do you teach?
(You may choose more than one).
- Years 1-3
- Years 4-6
- Years 7-8
- Years 9-10
- Years 11-13.
3 Your total teaching experience:
   • < 2 years
   • 2-5 years
   • 6-10 years
   • 11-15 years
   • >15 years.

4 If you are a secondary school teacher, what learning areas do you teach in?
   *(You may choose more than one).*
   • Language and Languages
   • Mathematics
   • Science
   • Technology
   • Social Sciences
   • The Arts
   • Health and Physical Well-being.

5 Have you had any pre-service or in-service teacher training in environmental education?
   *(You may choose more than one).*
   • No training
   • Pre-service
   • In-service
   If so, please specify.

6 In what ways are you involved in environmental education activities in your school?
   *(You may choose more than one).*
   • Not involved
   • As a classroom teacher
   • Leader/coordinator for environmental education in the school
   • Other *(please specify)*
For how many complete years have you been involved in school-based environmental education (include any time at other schools where you have worked)?

- < 2 years
- 2-5 years
- 6-10 years
- 11-15 years
- > 15 years.

To you, what is environmental education?

How aware are you of the ‘Guidelines for Environmental Education in New Zealand Schools’, published by the Ministry of Education in 1999?

- Not aware of the Guidelines
- Know of the Guidelines, but not familiar with their contents
- Know of the Guidelines, and familiar with their contents
- Know of the Guidelines, and very familiar with their contents.

Current Practice for Environmental Education in Your School

In your present school, please indicate if each of the following documents or processes includes environmental education.

<table>
<thead>
<tr>
<th>Document</th>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>School charter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board of Trustees policy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School strategic plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School/Departmental/Long term plan(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher appraisal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student reporting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11 How is environmental education structured in your school?
(Choose one response for each of 'a', 'b' and 'c' below).

a  • Environmental education as separate modules/subjects
    • Environmental education integrated across learning areas
    • Environmental education within existing learning areas/subjects

b  • Timetabled
    • Individual teacher choice of timing during the week
    • Other (please specify)

12 If you know how environmental education is integrated across the learning areas in your school, please indicate below in which specific learning areas it is taught.
(You may choose more than one).
    • Language and Languages
    • Mathematics
    • Science
    • Technology
    • Social Sciences
    • The Arts
    • Health and Physical Well-being.

13 Please indicate what interest groups, if any, exist to support environmental education in your school
    • Board of Trustees
    • Principal
    • Deputy/Assistant/Associate principal
    • Curriculum/syndicate leader
    • Head of department/Head of faculty
    • Classroom teacher/Subject teacher
    • Students
    • Parents
    • Environmental organisations (e.g., WWF, etc.)
    • Wider Community
    • Caretakers/Grounds staff
    • Other (please specify)
14 How many years has environmental education been offered in your school?
   * Don’t know
   * < 2 years
   * 2-5 years
   * 6-10 years
   * 11-15 years
   * > 15 years

15 If you are PERSONALLY involved in the teaching of environmental education in your school, please answer Questions 15-22 if not please go to Question 23.

   What are you trying to achieve with your environmental education programme?

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

16 Please indicate if you used the ‘Guidelines for Environmental Education in New Zealand Schools’, published by the Ministry of Education in 1999 for planning in your environmental education programme, and if so, indicate how useful you found them:
   * Not used at all   * Of no use   * Of some use   * Useful   * Very useful

   Please comment

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

17 Please tell us about ONE example of an environmental education topic that you have found works well to meet the purposes of your environmental education programme, and describe what you did in that topic.

   Topic
   ________________________________________________________________
   Level
   ________________________________________________________________
   Duration
   ________________________________________________________________
   Activities
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
18  Who is involved in this topic?

(You may choose more than one).

* Board of Trustees
* Principal
* Deputy/Assistant/Associate principal
* Curriculum/syndicate leader
* Head of department/Head of faculty
* Me
* Other classroom teacher/Subject teacher
* Students
* Parents
* Environmental organisations (e.g., Forest and Bird, etc.)
* Wider Community
* Caretakers/Grounds staff
* Other (please specify)   

19  What curriculum learning area(s) and/or essential skills does the topic you described in Question 17 above contribute to?

________________________________________________________________________

________________________________________________________________________

20  For this topic, what specifically do the students do in their ‘learning FOR the environment’ (i.e., taking action to effect positive environmental changes)?

________________________________________________________________________

________________________________________________________________________

21  What links, resources and support do you use in this topic?

________________________________________________________________________

________________________________________________________________________
For the topic you described in Question 17 what have you achieved for each of the following?

a  Students

b  Yourself

c  School

d  Community
### Links, Support and Resources for Your Environmental Education Programme

#### 23 Which organisational links do you find most useful for the environmental education programme in your school?

*(You may choose more than one)*

<table>
<thead>
<tr>
<th>Links</th>
<th>How Contributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher subject associations</td>
<td></td>
</tr>
<tr>
<td>Formal networks in your school</td>
<td></td>
</tr>
<tr>
<td>Informal networks in your school</td>
<td></td>
</tr>
<tr>
<td>Local iwi</td>
<td></td>
</tr>
<tr>
<td>Local school networks</td>
<td></td>
</tr>
<tr>
<td>Regional/national school networks</td>
<td></td>
</tr>
<tr>
<td>Your city or district council</td>
<td></td>
</tr>
<tr>
<td>Your regional council</td>
<td></td>
</tr>
<tr>
<td>School Support Services</td>
<td></td>
</tr>
<tr>
<td>Ministry of Education funded environmental education professional development</td>
<td></td>
</tr>
<tr>
<td>Central government agencies</td>
<td></td>
</tr>
<tr>
<td><em>(please specify department, ministry, etc.)</em></td>
<td></td>
</tr>
<tr>
<td>Other organisations/programmes</td>
<td></td>
</tr>
<tr>
<td><em>(please specify)</em></td>
<td></td>
</tr>
</tbody>
</table>

#### 24 What, if anything, has hindered you in forming links with outside organisations to support your environmental education programme?

________________________________________

________________________________________

________________________________________

________________________________________
Please rate each of the following in terms of how current support helps you to identify and meet your environmental education needs.

(Please circle that which applies, where 1=adequate and 4=inadequate)

(You may choose more than one).

<table>
<thead>
<tr>
<th></th>
<th>Adequate</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Inadequate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to resource materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to professional development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(please specify and rate)

What would help you to teach a better environmental education programme in your school?

What could the Ministry of Education do that would help you to teach a better environmental education programme in your school?

Please indicate which, if any, of the following programmes or services you currently use for your environmental education programme in your school.

(You may choose more than one).

* The Environmental Education Professional Development Programme
* The Schools’ Organic Gardens Initiative
* Global Learning & Observations to benefit the Environment (GLOBE)
* National Waterways Project (Royal Society of New Zealand)
* Other Learning Experiences Outside the Classroom (LEOTC)
* Te Kete Ipurangi (TKI) generally
* Te Kete Ipurangi (TKI) Environmental Education Kete
Please Feel Free to Make Any Additional Comments Below

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Thank You for Taking the Time to Complete the Questionnaire. Please Return Your Completed Questionnaire to Your School Contact Person.
APPENDIX II

OTHER PROVIDERS OF ENVIRONMENTAL EDUCATION TRAINING

Auckland Botanic Gardens  Northland Regional Council
Auckland College of Education  North Shore City Council
Auckland Regional Council  New Zealand Association of Environmental Education – conferences
Auckland Regional Parks  Pilot school programme
Belmont Regional Park  Orchardists
Botanical Gardens  Recycling workshop
Christchurch College of Education  Riparian planting workshop,
Department of Conservation  SCICON 2002
Dunedin College of Education  Taranaki Regional Council
Eco-Otago  Trees for Survival
Enviroschools  University of Waikato
Education Outside the Classroom\  Waicare
Genesis native plant propagation unit  Waste Wise Tours
GLOBE  Wellington District Council
Hamilton City Council  West Auckland Education Centre
Hawkes Bay Regional Council  Wetland Science
Mana Education Centre;  Worm Farm operator
Manurewa Botanical Garden  
NCEA course
APPENDIX III

RESOURCES AND SUPPORT USED FOR ENVIRONMENTAL EDUCATION UNITS

Anglo Gold Australia - brochure, pictures
The Arts in the New Zealand Curriculum document
Art curriculum unit from Kids Artworks
Auckland City Council – unit on Waste City
Auckland Regional Council – units and resource people
Bateman Encyclopedia
Biodynamic Organic Education Trust
Biozone Workbooks Y12
Books – particularly science books
Board of Trustee members
Caretaker
City Councils
Climate Change Program kit
Community resource people and groups
Conservation posters
CXXX - looking at environmental accounting.
Department of Conservation - information/pamphlets/posters/videos
District Councils
Dive Otago
Department of Conservation resource kits
Education outside the classroom experiences
Enviroschools facilitators and kit
Environment Bay of Plenty
Environment Waikato
Environmental education facilitators (local)
Food forest expert
Forest and Bird
Garden centers and magazines
Green peace
Guidelines for Environmental Education in New Zealand Schools
Hamilton City Council resource material
Nelson Environment Centre – people and resources,
ICT facilitator,
Internet
Kids Edible Gardens Resource
Kiwi Conservation Club magazine
Landcare Trust.
Learnz website,
Local businesses – timber merchants, furniture makers
Local environment, - original bush
Local interest groups

Environmental education in New Zealand schools 126 Volume 3: Critical stocktake
Local iwi
Lower Hut Council - planting trees and supplying them
Ministry of Agriculture and Fisheries
Mana Education Centre resources.
Manukau City Planning documents
Māori Curriculum documents
Matakana Landcare Group
Ministry of the Environment
Ministry of Education - publications
MOTAT
Mountain Safety Club
National New Zealand Library –
National parks – information and personnel
National Waterways Project
Nelson City Council
Newspapers in Education
NIWA website
North Shore City Council
Northland Regional Council
NSCC pamphlets
Nuclear Free NZ
NZ Glass
NZ Herald archives
NZ Marine Studies Centre,
Organic NZ
Paper Chain
Paper making kit,
Parents – expertise, help with field trips and providing materials
Poriroa City Council Recycling Pack
Powerpoint presentations
Radio Clubs
Refuse and Recycling Centres,
Regional councils -Education Officers and resources
Resource Depot (local)
River Estuary Care Group
Rodney District Council - Zero Waste Team
Royal Society of New Zealand education officer
School Journals
School Resource Kit - The Bush Environment
Science Assessment Resource Bank
Science in the New Zealand Curriculum document
Scientists
Social Science in the New Zealand Curriculum document
Soil and Health magazine
Stream Sense Resource kit and video
Take Action Kit.
Taranaki Regional Council
Technology in the New Zealand Curriculum document,
Tiritiri website
TKI,
Totally Outdoors resource
Trees for Survival
University of Waikato
University students,
Video s - various
Waicare booklets and website,
Waikato Regional Council
Waiora resource booklet Disposal
Waitakere City Transfer Station - hand outs
Waitomo Museum.
Wanaka Wastebusters
Waste Transfer Station
Watercare – personal, Robert D Frogg
Resource, video
Wellington District Council - Waterway
Unit
Wellington Regional Council – personal,
'Take action for water ' team
West Auckland Waste Minimisation Centre
Worm Farm
Yellow pages