

## Abstract

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An evaluation of the practice of environmental education in New Zealand schools

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This paper reports on a national research project, the first of its kind, that investigated the practice of environmental education in New Zealand schools. The research included a literature review of New Zealand and international environmental education literature, a survey of nearly two hundred New Zealand schools and case studies of environmental education practice in eight schools. In this paper we describe and discuss key features of current practice in environmental education in New Zealand schools. The rewards for teachers, students, schools and the wider school community arising from the implementation of this non-mandatory curriculum subject are highlighted along with critical supports and constraints on practice.

# An evaluation of the practice of environmental education in New Zealand schools

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## Introduction

Environmental education (EE) has long been an area of interest in New Zealand schools with initial support coming from community organizations and teacher enthusiasts. There is no mandatory requirement for New Zealand schools to teach EE. However, in 1999 the Ministry of Education published *Guidelines for environmental education in New Zealand schools* (Ministry of Education, 1999). The *Guidelines* are intended to assist teachers and schools to plan and provide education “in, about, and for the environment” in a way that integrates with learning objectives from the seven mandatory learning areas of the *New Zealand Curriculum Framework*<sup>1</sup> (Ministry of Education, 1993). As such, schools are encouraged to develop environmental education programmes through a process of school-based curriculum development.

This paper reports on a national research project (commissioned by the Ministry of Education, New Zealand) to investigate the practice of environmental education in New Zealand schools in 2002/2003 (Bolstad, Cowie, & Eames, in press)<sup>2</sup>. The purposes of the project were to provide information on current practice, and supports and constraints for practice, to inform New Zealand schools’ current and future EE programmes, and to provide direction for the New Zealand government with respect to future initiatives.

## Background

As in many countries, the development of EE policy in NZ has been influenced by international summits and declarations on the environment and sustainability. Prompted by *Agenda 21*, changes to New Zealand’s environmental policies and legislation, and the New Zealand government’s obligations to the Treaty of Waitangi<sup>3</sup>, in the 1990s both the

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<sup>1</sup> These are: English, science, mathematics, technology, social studies, the arts, and health and physical education

<sup>2</sup> The full reports will be available online from 8 April 2004. Email the authors of this paper to obtain the URL.

<sup>3</sup> The Treaty of Waitangi was an agreement made in 1840 between the British Crown and over five hundred Maori chiefs of New Zealand. The wording of the treaty in English indicated that the chiefs were ceding to Britain the sovereignty of New Zealand and were giving the Crown an exclusive right of pre-emption of such lands as the Maori wished to sell. In return, the Maori were guaranteed full

Ministry of Education and the Ministry for the Environment developed policies on environmental education. “Grass-roots” support for environmental education has also been strong in some New Zealand schools and communities. In the early 1990s, prior to the introduction of the *New Zealand Curriculum Framework*, environmental education communities of interest acted in a number of ways to promote the development of EE policy, curriculum, and practice in New Zealand schools, for example, by holding conferences and developing their own school-based environmental education curricula (Springett & Hall, 1991). When the *New Zealand Curriculum Framework* was introduced in 1993, environmental education did not have a formal place in the curriculum. However, the *Framework* acknowledged that schools could adapt their curriculum to take account of local needs, priorities, and resources, and that the curriculum must help students to be adaptable and play their full part in a changing environment, with reference to environmental and other concerns.

The release of the *Guidelines for environmental education in New Zealand schools* in 1999 gave direction for schools interested in integrating EE into their school curriculum. The *Guidelines* acknowledge a place for EE within the structure of the *New Zealand Curriculum Framework*, and provide examples for ways in which EE teaching can be linked to the mandated learning areas of the curriculum, and to the “essential skills” which all New Zealand students are supposed to develop through their compulsory education<sup>4</sup>. The *Guidelines* indicate that a balanced EE programme should address three dimensions of environmental education: education in the environment; education about the environment; and education for the environment. The *Guidelines* signal that four key concepts should underpin EE: interdependence, sustainability, biodiversity, and personal and social responsibility for action, and ways in which Māori<sup>5</sup> worldviews are embodied in these concepts are described. The *Guidelines* indicate that multidisciplinary holistic teaching and learning approaches are appropriate for meeting the aims of environmental

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rights of ownership of their lands, forests, fisheries and other prized possessions. In addition, the treaty promised them the rights and privileges of British subjects, together with assurances of Crown protection. For more information see <http://www.nzhistory.net.nz>

<sup>4</sup> These include skills in the areas of: communication, numeracy, information and problem-solving, as well as: self management and competitive skills, social and co-operative skills, physical skills, and work and study skills

education, and suggest an eight-step process for schools to plan their EE programmes<sup>6</sup>. In addition, the Ministry of Education funded two professional development programmes in support of the *Guidelines: Environmental Education Professional Development* (1999–2002, Christchurch College of Education), and Professional Development for Sustainable School Organic Gardens (2002, Massey University and the Soil and Health Association of New Zealand). The Environmental Education Professional Development programme involves a three-step process, beginning with a “train the trainers” approach. In 2000, several educators from around New Zealand were trained as EE facilitators. In 2001, facilitators in each region held two two-day workshops for selected schools in their region. Two teachers from each school had to attend the workshops. In the third stage of the programme (2002) facilitators selected approximately 64 “pilot schools” to develop EE programmes with the support of their school facilitator. To date over two hundred schools have taken part in this programme. The Sustainable School Organic Gardens project began in 2000 and currently involves 24 urban schools and 12 kura kaupapa Māori<sup>7</sup> throughout New Zealand. The aim is to assist teachers and schools to create and maintain organic gardens, to develop policies and programmes to support organic gardens, and to develop curriculum integration plans that integrate EE across learning areas. The programme includes an emphasis on Māori perspectives on the environment. Marae-based<sup>8</sup> training seeks to develop school facilitators’ understanding of EE and sustainable growing from Māori and western perspectives, and concentrates on integrated curriculum approaches, and organic and Māori gardening practice (Davies, Delidjani, & Moeed, 2002).

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<sup>5</sup> Māori are the *tangata whenua* or indigenous people of New Zealand

<sup>6</sup> The 8 steps are: 1). Identify student needs 2) review current programmes 3) identify new opportunities for the inclusion of environmental education within the New Zealand curriculum 4) identify possible links between school programmes and initiatives undertaken by regional and local councils and by community agencies 5) decide how environmental education will be managed within the framework of the New Zealand curriculum 6) develop programmes based on effective teaching and learning approaches 7) select appropriate resources to support teaching and learning programmes 8) plan how evaluation will be carried out

<sup>7</sup> primary schools in which teaching and learning is based around Māori cultural values and principles, and delivered wholly in the Māori language

<sup>8</sup> For readers unfamiliar with this term, a Marae could be described as a community centre, incorporating buildings and an area of land. Local Māori meet at their marae for a wide range of cultural and community activities.

Several other environmental education initiatives involving environmental and community groups, NGOs, and universities, have been important in supporting the development of school-based environmental education practice. In 1993, the first three “Enviroschools” were established in one city by a taskforce including teachers, the local and regional council, and other environmental education groups. Enviroschools is an “eco-school” model which supports schools to develop a whole-school approach to EE, and has similar overseas counterparts (e.g. see Posch, 1999). The Enviroschools programme connects closely to the *Guidelines*, and in 2002 was made available to schools in all regions of New Zealand.

To summarise, the 1990s through 2000 and beyond saw a number of developments in EE policy, curriculum, and support, all of which created opportunities to support New Zealand schools to develop their own environmental education teaching and learning programmes. The study reported in this paper was the first to attempt to develop a national picture of the nature of environmental education practice in schools since the introduction of the *Guidelines*.

### **Methods and data sources**

The study reported in this paper was an evaluative study which drew together information from New Zealand and international research on environmental education, quantitative and qualitative data elicited from a purposive sample of over two hundred New Zealand schools, and in-depth information on the nature of current practice in eight schools known to be actively involved in environmental education.

#### *The literature review*

The literature review served as a background for the other two components of the research and set out recent trends and issues from the international and New Zealand literature (Bolstad, Baker, with Barker, & Keown, in press). Although we were interested in identifying research literature, we also examined a range of descriptive and non-technical literature to develop a preliminary picture of EE practice in New Zealand schools. Interestingly, at the time we conducted the review, we found little existing New Zealand environmental education research. The small number of studies available prior to 2001 tended to investigate themes such as: teachers’ views of environmental education; personal characteristics/attributes of teachers committed to environmental

education; surveys to identify curriculum areas in which environmental education is taught; and studies which identify problems or barriers for the implementation of environmental education in New Zealand schools. Only a few studies investigated environmental education teaching and learning practices, and their impacts or outcomes for learners engaged in environmental education (e.g. Chapman, 2000; Keown, McGee, & Carstensen, 1999). However, many new developments had occurred in EE policy, curriculum, and practice in the few years prior to this research, thus a lag might be expected before research on these developments would appear in the literature<sup>9</sup>.

The available literature (including descriptive literature) suggested some general characteristics of environmental education policy, curriculum, and practice in New Zealand schools. For example, policy and curriculum statements clearly encourage schools to create links with extra-school agencies such as regional authorities, conservation and environment societies, and other interest groups, to support their EE programmes. Policy and curriculum statements also generally endorse “whole school” approaches to EE, advocate the integration of EE with the seven learning areas of the New Zealand curriculum, and advocate the inclusion of Māori knowledge and values in environmental education. However, prior to 2001 there was little research to indicate how these characteristics translated, if indeed they did, into curriculum and practice in New Zealand schools.

#### *National survey of schools*

The national survey of schools believed to be involved in EE was conducted by way of written questionnaire. Two focus group sessions were held to inform the development of the questionnaire. The first focus group was an “expert” focus group of people from the EE community of interest. This included staff from tertiary institutions involved in in-service and pre-service teacher education in EE, and people from local and regional government agencies and NGOs involved in environmental education. The second focus group was composed of teachers from ten primary and secondary schools in one region. Question development was also informed by the literature review. The questionnaire asked teachers to define what “environmental education” meant to them, and inquired about current EE practice in the teacher’s classroom and in their school. Teachers were also asked about their

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<sup>9</sup> Since the literature review was conducted, a number of new studies and theses have been published which investigate aspects of EE practice in New Zealand schools.

goals and purposes for teaching EE, and what (if any) resources, outside people, or agencies they used to support their EE programmes.

Quantitative data was analysed using SPSS. Qualitative data was transcribed and categorised into themes, informed by key themes from the literature review (Bolstad & Baker, 2003). Data categorisation was peer reviewed.

#### *Case studies of school practice*

The case studies were designed to provide rich, contextualised descriptions (Bassey, 2000; Bishop, 1997) of actual environmental education practice in schools known to be actively involved in environmental education. A researcher spent two to three days in each school interviewing the principal and curriculum leaders, classroom teachers and students. The case studies included two primary schools, two area schools, one intermediate, two secondary schools, and a kura kaupapa Māori school.

## **Results**

The remainder of this paper reports on findings from the survey which generated information about the general nature of environmental education as a curriculum innovation in practice in New Zealand schools, and the case studies which elaborated on student, teacher and school experiences.

Three hundred and sixty seven survey responses from 193 New Zealand schools involved in EE were analysed. The survey results indicate that most teachers had been teaching environmental education for five years or less suggesting that the *Guidelines for environmental education in New Zealand schools* (Ministry of Education, 1999) may have had some impact on practice, although some teachers said they had been teaching EE for as long as they had been teachers.

#### *Features of current practice*

The survey and case study data indicated a great deal of enthusiasm about EE. This was evident in the breadth and depth of responses in both the survey and in the case studies.

As one teacher commented, “to me environment education is so important, it needs to be in absolutely everything, all the time”.

The focus of teachers’ EE programmes tended to be education “about” the environment, with attention to encouraging students’ care and respect for the environment. This focus is evident in a teacher’s comment that environmental education is about “developing an awareness and knowledge why we must look after our environment”. Many survey respondents (92%) described programmes that involved learning outside the classroom, implicating learning “in” the environment. However fewer teachers specified that their environmental education practice involved action “for” the environment. Approximately a third of respondents (n=261) in the survey noted that they hoped students would develop attitudes and values towards the environment or take direct action for the environment. Taking action is a key plank of the EE *Guidelines*. However, it was not always clear whether teachers directly addressed this dimension of learning in the design of their EE programmes, or whether it was simply a desired outcome.

The *Guidelines* document also specifies that EE should be integrated into one or more of the seven mandatory learning areas. The survey found that a majority of respondents were integrating their EE teaching with science (70%, n=245). Approximately one third of respondents stated that their EE unit satisfied social science (38%), technology (33%) and language (31%) curriculum objectives. Fewer than 20 percent of respondents reported their units integrated with the three remaining learning areas: mathematics, health and physical well-being, and the arts.

Overall, very few respondents described activities with an obvious cross-curricular focus. A cross-tabs analysis found that approximately 20 percent of the EE teaching units described integrated science, social science, and technology together with EE. 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.  
[primary teacher]

Although there was general support from the surveys and case studies for a whole-school approach to EE, only some respondents appeared to be engaged in whole-school EE projects and activities. Teachers who were doing EE generally believed a whole-school approach was needed. However, this view was not necessarily shared by other staff in the school, nor occurring in practice.

### *Outcomes of environmental education practice*

The research project sought to investigate what teachers felt were the outcomes of their EE teaching and learning programmes for students, teachers and schools. Significant outcomes were reported for each group in both the survey and case studies.

The main “student outcomes” reported by the surveyed teachers were achievement of knowledge, understanding and awareness about the environment (91% of respondents, n=235), and the development of attitudes and values towards the environment (61%). Less than 30 per cent of respondents reported that students took action for the environment. However, several of the case studies provided evidence of students engaged in learning experiences which are consistent with ‘action competence’ approaches advocated in the environmental education literature (Breiting & Mogensen, 1999; Jensen & Schnack, 1997). For example, projects at some schools involved students identifying an environmental issue, making decisions, liaising with sponsors, community agencies, or the media, and executing actions identified as necessary for reaching their environmental goals. It is important to note that teachers in many of the case study schools had been involved in some form of EE professional development. The case studies also revealed students’ development of attitudes and values towards the environment, with one student commenting that EE was all about “learning to respect the place we live in, and doing all we can so that future generations have what we had”. In another case study school, a teacher felt that EE activities had proved valuable for

students who were having difficulties with learning, socialisation, or anger management. The teacher commented that “[the students] would go out there in that garden, and they would be stars. They would be part of something that they really cared about. It was absolutely lovely to see”.

The main teacher outcomes reported in the survey were development of the teacher’s own knowledge, understanding and awareness about the environment (38% of respondents, n=211), satisfaction in teaching and seeing students enjoy learning about the environment (37%), and development of enhanced pedagogical strategies (22%). For example, one deputy principal noted that EE had developed for them a “new way of teaching, more action focused, great for teaching”. It is difficult to know from the survey data the depth or extent to which EE pedagogy reflected the notions of student participation and socially critical action advocated in the EE literature (Breiting & Mogensen, 1999; Fien, 1994). However, some of the case studies illustrated rich examples of environmental education where student input, leadership, and decision-making were at the forefront of environmental education activities. Students involved in these projects often described immense pride in their undertakings. Many felt they had learned more about the environment through involvement in these activities than they might have in a classroom. They also talked about learning how to actually “do” something—for example, how to:

- cultivate a garden, compost system, or a worm farm;
- develop landscaping plans;
- approach businesses, councils, or school Boards of Trustees with a funding proposal;
- liaise with the media; or
- find ways to communicate an environmental message to the wider community.

For a handful of students at two of the case study schools, involvement in environmental education gave them the opportunity to go to international competitions or conferences on children and the environment.

The main school outcomes reported in the survey were an improved school environment with features such as gardens, recycling systems and composting (35% of respondents, n=195), teamwork and community building within the school (21%) and an enhanced

profile and links with the community (18%). For example, one teacher noted that an outcome was “continued beautification of the area, strengthening relationship between adults, teachers and students”. In one case study school, the students and teachers worked together to create ‘Islands of Life’, planted areas within the school grounds to attract birds and insects. This created a great sense of achievement, as one student explained “You can just look out your window and see what two classes of kids and teachers accomplished ... it was so easy to do something like that to make such a big difference in the school”.

### *Issues for school-based curriculum development in environmental education*

The issues raised by teachers and leaders of schools around their environmental education focused on the need for support and the status of EE within the school. Environmental education is a non-mandatory subject for which the Ministry of Education has produced *Guidelines* but no curriculum document. Environmental education does not have the same status as the mandatory seven curriculum learning areas in New Zealand and consequently is not subject to the same levels of funding, professional development, or assessment and reporting requirements. However, the *New Zealand Curriculum Framework* and the *Guidelines for environmental education in New Zealand schools* both suggest that EE is seen as having a legitimate place in New Zealand schools, and that schools can develop and design EE programmes through school-based curriculum development processes. However, this study found that schools’ interest or success in achieving this was variable<sup>10</sup>. The evolution of practice of EE in many schools appeared to be of an *ad hoc* nature, driven by one or more enthusiastic teachers, who were acting with or without knowledge of the *Guidelines*. The issue of leadership was seen as critical in building EE programmes in schools. Some teachers noted their frustration in the lack of support from their colleagues and leaders. On the other hand, some survey respondents saw EE as yet another curriculum initiative to deal with. For example, one deputy principal wrote, “To be blunt environmental education appears to me to be yet another add-on to an already crowded curriculum”. Yet without the support of colleagues and leadership, some EE teachers wondered about

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<sup>10</sup> Our knowledge of the New Zealand context is that many New Zealand schools do not explicitly include EE in their school curriculum programmes at all.

the sustainability of their programs, should they themselves run of energy or leave the school.

In contrast, the case study schools, who were considered to be practicing sound environmental education, were in general terms moving from reliance on the individual for driving EE to a whole-school approach fostered by the school leadership. In these cases, EE was becoming embedded in the school's policies and curriculum plans.

Those deeply involved in environmental education were looking for more resources to sustain their programs. This included pedagogical resources such as teaching units, funds to buy equipment and pay for off-site transport, and time to plan units and implement them. As one teacher requested, "Time to reflect and plan next year's campaign, opportunity to share experiences with other schools and listen".

Finally, an important issue for environmental educators in New Zealand schools appeared to be the time needed to establish links with outside agencies. There was ample evidence for the successful operation of existing linkages between schools and environmental organisations. But over half of survey respondents (52%, n=226) requested more time to find out whom they should contact and then to contact them. Setting up new links with outside agencies was seen as problematic and often came down to an individual who pursued the link in their own time.

## **Discussion**

This paper summarises the findings of a national research project that examined the impact of a curriculum innovation implemented by way of a guidelines document rather than a mandatory curriculum statement. This innovation, environmental education, has a history of local and national support from community groups, non-governmental agencies and government departments responsible for the environment (Bolstad & Baker, 2003). Internationally, environmental education has often faced issues of marginalisation in formal education systems even when international declarations like *Agenda 21* have exerted strong pressure on governments to develop environmental education policies and curricula. The findings of this study provide evidence of the challenges for schools to develop EE practice through school-based curriculum development. While some schools have adopted a whole-school approach the viability

of EE in other schools appears dependent on an enthusiastic teacher. Some principals of schools involved in whole-school EE programmes questioned whether the current level of involvement was sustainable in a context where EE competes with other government curriculum and assessment initiatives for time, money and attention.

Given the benefits teachers involved in EE reported for students, schools, and school communities, both the variability of EE practice across NZ schools, and issues about the sustainability of current programmes, are of concern. These issues can be attributed in part to the “cross-curricular” status of EE in the *New Zealand Curriculum Framework*, and there are similarities with the situation in England and Wales described by Scott and Reid (1998). There, EE was identified as one of five cross-curricular themes when the 1990 National Curriculum was introduced. However, the sheer volume of change that schools underwent to implement the new National Curriculum quickly led to a marginalisation of all the non-statutory, cross-curricular themes, as schools prioritised their activities based on the new assessment and accountability requirements. Some of these demands were reduced when implementation of the National Curriculum was formally reviewed in 1994, leading to a reduction in the content and time-allocation requirements of the statutory curriculum on schools. The next few years saw a flurry of governmental policy activity relating to environmental education, including the publication of a guiding document, *Teaching environmental matters in the National Curriculum* (SCAA, 1996). The effect of these policy developments was to pass responsibility to schools to determine their own EE programmes by “pursuing their own concerns and shaping their own curricula” (Scott & Reid, 1998).

This can be seen as a mixed message, however: for some schools, it may well be a green light to (continue to) do a great deal or very little; others may see it as a further loss of status for environmental education and wish for more of a government push, even though this might mean more prescription from the center and loss of freedom to innovate. (Scott & Reid, 1998, p. 218)

We believe that providing schools with the space and opportunity to develop EE programmes to meet the needs of their students and their community is an appropriate policy and curriculum strategy for New Zealand. However, we also believe (as Scott and Reid do) that schools require sufficient guidance and support to develop a clear understanding of *why* they should teach EE, to develop a vision for school-wide EE

goals and aims, to understand how EE can contribute to their overall learning aims and vice-versa, and to develop strategies and processes to achieve these aims. Programmes like Enviroschools, and the Ministry of Education's EE professional development and Sustainable School Organic Gardens schemes appear to provide this kind of support. However, some teachers in this study who did not have access to these programmes struggled with the challenges of creating a sustainable EE programmes in their schools. Foremost of these challenges were: the absence of a school-wide approach to EE, a perception of an "over-crowded" curriculum, resourcing challenges, and difficulties creating and maintaining productive links with environmental education groups and agencies outside the school. It remains to be seen how these challenges may be addressed by upcoming policy and curriculum development in New Zealand<sup>11</sup>.

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<sup>11</sup> The New Zealand curriculum is currently undergoing a review (The Curriculum/Marautanga Project). This follows a large programme of research (the Curriculum Stocktake), which produced recommendations for some changes to be made to the national curriculum to better support teachers and schools to achieve the high expectations set by national curriculum policy. The goals of the Curriculum project are to: clarify and refine outcomes; focus on quality teaching; strengthen school ownership of curriculum; support communication and strengthen partnerships with parents/whanau and communities.

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