Education for sustainability in New Zealand schools: An evaluation of three professional development programmes

Report to the Ministry of Education

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Part One:

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Preliminary Note

Part One of this report provides an overview of the main findings for each initiative and examines what each contributes to EfS in New Zealand. The evaluation findings for each initiative appear in Parts Two, Three and Four.
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Executive Summary

This evaluation of three Education for Sustainability (EfS) professional development programmes—Enviroschools Programme, the National EfS Team and Mātauranga Taiao—was conducted between 2007 and 2009. The Enviroschools Programme is a community initiative funded jointly by local and central government focusing on community partnerships, sustainable school practices and student leadership/engagement. The National EfS Team is a School Support Services advisory group focusing on teacher pedagogy, curriculum development and student achievement/engagement. Mātauranga Taiao is a Māori-medium education professional development programme for kaiako and Resource Teachers in Māori, which focuses on co-constructing mātauranga taiao. The evaluation examined the intentions, processes and outcomes of each initiative against an analytic framework that drew on international and national conceptions of EfS.

Findings show that the initiatives are achieving: greater inclusion of sustainability content and more integrative teaching across the curriculum; the development of facilitative teaching styles that are empowering students to become strongly engaged in their learning and to think critically about issues; and the development of sustainable practices in schools and their communities. Challenges remain for: fostering EfS in large primary and secondary schools; building a strong local knowledge base in EfS; and developing a coherent education strategy for New Zealand EfS to help students learn for a sustainable future.
1. Introduction

This report provides an evaluation of three Education for Sustainability (EfS) professional development programmes funded by the Ministry of Education: the Enviroschools Programme, the National EfS Team and Mātauranga Taiao. The report summarises our evaluation findings and provides our conclusions and recommendations.

1.1 The programmes

The Enviroschools Programme began in Hamilton in the late 1990s as a local government initiative and now involves approximately 20 percent of all New Zealand schools. The Programme delivers EfS professional development support in schools through a local and regional structure funded by local government and supported by a national office. The national office is currently funded by the Ministry of Education.

The National EfS Team grew out of a professional development programme delivered around the introduction of the Guidelines for Environmental Education for New Zealand Schools in 1999 (Ministry of Education, 1999). The team constitutes a group of advisers and two co-coordinators who are located in School Support Services within six New Zealand universities.

Mātauranga Taiao began in 2007, and developed from a recognised need for targeted professional development in EfS in Māori-medium education. A national coordinator and two regional coordinators provide professional development for kaiako and Resource Teachers in Māori to enable them to foster EfS in Māori immersion programmes in kura and schools.

1.2 Background

“Education for Sustainability” (EfS) can be considered an enriched extension of what has previously been referred to in the New Zealand school sector as “Environmental Education” (EE). The recent shift in language from EE to EfS is significant, as it reflects a broadening of concern away from an educational approach that largely focuses on environmental and conservation issues, to one which integrates concerns for social, political and economic development, and addresses education for long-term ecological and social sustainability (Tilbury, 1995; Parliamentary Commissioner for the Environment, 2004). We now consider the international and national context of EfS as a background to evaluating the three initiatives.

1.2.1 International context

International literature regarding EfS in schools emphasises five central themes:

- Systems thinking recognises the need to take a holistic approach to examining problems and processes that seeks to understand the connections between various influences. It supports a focus on local and regional approaches to sustainability (Sterling, 2001).

- Transformational learning advocates the need for change towards more sustainable behaviour and promotes critical thinking to understand the underlying reasons or causes for our current relationship with the environment and encourages thinking and action towards a sustainable future (Jickling and Wals 2007; Sterling 2001).

- Whole-school approaches emphasise the need to engage the whole community in EfS and to participate democratically in education that empowers learners.
• Participatory action taking suggests that education must lead to an ability to act with knowledge and intention, to develop what is known as action competence, with reference to the environment and a sustainable future (Blanchet-Cohen, 2006; Jensen, 2002).

• Cultural inclusiveness promotes the incorporation of indigenous ways of knowing and doing in EfS, and recognises the interconnectedness of the world’s peoples (Malone & Tranter, 2003; Tilbury & Wortman, 2005). Cultural inclusiveness indicates a uniquely New Zealand approach to EfS that supports inclusion of Māori perspectives as tangata whenua, and recognises the perspectives of all cultures in New Zealand.

International movements that also guided this evaluation include:

• *Agenda 21* (UNCED, 1992) that called for education for sustainable development in schools and to which New Zealand was a signatory.

• The *Decade of Education for Sustainable Development 2005–2014* (UNESCO, 2007), for which New Zealand is a signatory, which promotes interdisciplinary and values-based learning, critical thinking, participatory decision making and locally relevant actions.

1.2.2 National context

The following *Key Messages* for the Government’s purpose in EfS were espoused in the Request for Proposals for this evaluation:

• Education is a key part of the Government’s strategy to protect and enhance the environment.

• Education for Sustainability will have social, cultural, economic and environmental benefits for all New Zealanders.

• Education for Sustainability links to New Zealand’s developing image of a socially and culturally inclusive society committed to protecting and enhancing our environment.

• Education for Sustainability requires effective partnerships between a range of government and non-government organisations.

These key messages are affirmed by the Ministry of Education’s Statement of Intent 2007–2012 (Ministry of Education, 2007a) that recognises that education is “critically important” for New Zealand’s long-term sustainable development, and that the Ministry of Education can support sustainable practices through influencing curriculum development (p. 17).

Other New Zealand documents which informed this evaluation include:


• The *New Zealand Curriculum* includes sustainability as a future-focus theme, includes principles and values for sustainability and encourages schools to engage in their own curriculum design. These emphases provide a stronger message, and greater potential, for inclusion of EfS in schools than in the previous curriculum.

• The *Guidelines for Environmental Education in New Zealand Schools*, produced in 1999 (Ministry of Education, 1999), is the only current Ministry document supporting EE/EfS in schools. However, the *Guidelines* need updating to reflect changing international conceptions of EfS, the Ministry’s change of emphasis from environmental education to education for sustainability and alignment to *The New Zealand Curriculum*.

• The Ministry for the Environment’s *Learning to Care for Our Environment: Me Ako ki te Tiaki Taiao* (Ministry for the Environment, 1998) promotes development of sustainable behaviour through environmental education that fosters community participation and inclusiveness.
The Parliamentary Commissioner for the Environment’s (2004) *See Change: Learning and Education for Sustainability* calls for whole systems redesign that encompasses critical thinking and reflective learning, a future focus, participation and transformation.

### 1.3 Evaluation methodology

This evaluation took place between May 2007 and May 2009. The evaluation team focused on the individual and joint contributions of the three initiatives to EfS in New Zealand schools and kura. The questions that guided this evaluation were:

1. **What are the key messages, goals and intended outcomes of school-based EfS and how does each initiative align with these?**
   - What key motivations and developments have informed and supported the initiation and growth of these initiatives?
   - How have the goals and intended outcomes of each initiative aligned with or extended the “aims for Environmental Education” outlined in the *Guidelines for Environmental Education in New Zealand Schools* and other government guiding documents in school-based environmental education?
   - How do the goals and intended outcomes of each initiative align with or extend internationally-promoted and New Zealand governmental *Key Messages* for EfS in schools, and specifically New Zealand/Māori conceptions of sustainability?

2. **How effective are the three initiatives in “operationalising” EfS key messages and achieving EfS goals in schools?**
   - What and how do contexts, processes and practices support the achievement of EfS outcomes within each initiative?
   - To what extent have the initiatives achieved the goals and outcomes set out in their service agreements with the Ministry of Education?
   - To what extent do the EfS initiatives impact on: students’ learning opportunities, understanding and assessment of student learning outcomes in EfS; teaching practices, including pedagogical change; school-wide structures and curriculum development; and community partnerships and sustainability?
   - To what extent do the initiatives individually contribute to the achievement of EfS goals?
   - How do the three initiatives work together and complement each other to achieve EfS goals?
   - To what extent do the initiatives achieve outcomes suggested by wider literature and conceptions of Education for Sustainability (in comparison with Environmental Education)?

3. **What are the future directions for school-based Education for Sustainability in relation to current and potential goals?**
   - What are the key areas that require further development within each of the initiatives?
   - What could the Ministry of Education do to support the ongoing development of Education for Sustainability in the New Zealand context?

In this evaluation we brought together an outcomes-based evaluation methodology that aligns with a linear, programme logic approach examining inputs and outputs, with an ecological systems approach that highlights the importance of visions, values, principles and processes, as well as the interconnectedness of whole systems beyond discrete steps or
parts. In practice this means that we evaluated the extent to which the data indicated that key EfS principles were evident in school and teacher change, and student outcomes. Our ability to examine student outcomes was somewhat limited by the scope of the project.

The evaluation was conducted in two phases. In Phase One, in 2007, we examined the alignment of each initiative with national and international conceptions of each EfS, the mode of operation of each initiative and the perceptions of staff within the initiatives of the effectiveness of their work. This involved document analysis, interviews with staff and key stakeholders and, for EnviroSchools and the National EfS Team, a survey of the facilitators/advisers. During Phase Two, in 2008, the effectiveness of each initiative was examined through interviews (for Mātauranga Taiao), school case studies and lead teacher surveys (for the EnviroSchools Programme and National EfS Team).

Findings were analysed using a framework based on four central ideas derived from national and international conceptions of EfS and the objectives of the initiatives:

- Transformational learning—as described above.
- Systems thinking—as described above.
- Cultural interface—emphasising the interrelationships between cultures in New Zealand, especially between Western culture and Māori culture, and dynamic spaces between different cultural ways of knowing/being/doing.
- Professional development—emphasising the focus of the three initiatives on a professional development process to develop EfS professional learning communities.

1.4 Report outline

The remainder of this report provides an overview of the main findings for each initiative (in Chapters 2–4) and examines what each contributes to EfS in New Zealand (full reports on the evaluation of each initiative are in the appendices). Chapter 5 outlines what the three initiatives jointly achieve and Chapter 6 examines challenges and future implications for EfS in New Zealand schools. Appendices 1-3 present full report with data on each initiative. A Brief Summary Report also accompanies this Overview Report.
2. The Enviroschools Programme

The Enviroschools Programme has grown from early beginnings in the 1990s to be a significant factor in EfS delivery in New Zealand schools. The programme is governed by the Enviroschools Foundation and hosts a national office in Hamilton. This office houses the national director, operations director, development and administration staff. These staff provide direction and co-ordination, obtain funding and provide resources and professional development. The national office receives Ministry of Education funding through the project to run the programme.

The Enviroschools Programme operates on a regional basis with the regions defined by the boundaries of the regional councils of New Zealand. From 2008, the programme has been offered in all regions of New Zealand. In 75 percent (9/12) of regions, a regional coordinator runs the Programme from a base within their regional council (in the other regions, the coordinator is based in other organisations) as at March 2009. The regional dimension connects with the local level through employment of facilitators. The regional coordinator raises funding for employment of facilitators through lobbying of their own organisation and contributing city and district councils. The Enviroschools facilitators are primarily responsible for delivering the Programme into schools. In March 2009, there were 65 facilitators working in the Enviroschools Programme. The facilitators can be seen as conduits for the flow of education for sustainability resources between the national office and schools in the one direction, and between local government and their communities in another direction. These conduits are important for the connectedness that the concept of sustainability embodies.

The Enviroschools Programme promotes learning and action for sustainability through provision of resources and facilitation support in schools. It aims to create sustainable schools and communities through student engagement and developing competencies that foster achievement of educational and environmental goals. The programme promotes a change in culture both in sustainable living and educational processes.

2.1 Enviroschools Programme alignment with key messages, goals and intended outcomes of EfS

This study finds that in theory the goals and intended outcomes of the Enviroschools Programme align very well with government guiding documents in school-based EfS, with international conceptions of EfS and with specific New Zealand/Māori conceptions of sustainability. Firstly, this alignment is seen in its model of distributed leadership which places the focus of its work at the level of the local community. This encourages schools to be recognised as integral to their communities, and the whole to be seen as a learning partnership for sustainability. Secondly, the alignment is seen in the focus on empowerment of students to become engaged in critical thinking and action for a sustainable future. Thirdly, the alignment is emphasised in notions of a whole-school approach and an inclusive society that recognise that change in systems requires everyone to be involved (Part 2, pages 21–28).

In practice, Enviroschools staff appear well aware of the programme’s structure and also aware of aspects that need further work to improve the programme. Staff in schools receiving the Enviroschools Programme seem reasonably clear about the purposes of the programme but may lack some of the systems thinking that would allow them to see the complete picture of EfS. Participants sought further clarity from Government regarding its goals for EfS (Part 2, page 28).

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1 Some enviroschools receive Enviroschools’ facilitation from National EfS (NEfS) advisers according to specific regional arrangements.
2.2 The effectiveness of the processes and practices of the Enviroschools Programme

The contexts, processes and practices of the Enviroschools Programme were examined for their effectiveness from the perspectives of the Enviroschools staff and a sample of enviroschools. The following key points emerged:

• The Enviroschools Programme has a distributed leadership structure involving a national office, regional coordination and local facilitation in schools. This structure appears to allow a generally nationally-consistent approach with local interpretation (Part 2, pages 30–34).

• The facilitators who deliver the programme in schools are a highly committed group of mainly part-time women who are knowledgeable about sustainability. These individuals appear capable of delivering sound advice to schools about changes for sustainability (Part 2, pages 31–34).

• School staff were highly complimentary about the knowledge and skills of the Enviroschools facilitators (Part 2, pages 33–34).

• Schools appear to join the Enviroschools Programme for a variety of reasons ranging from a staff-, student- or community-initiated concern for sustainability to a consideration of gaining a marketing edge on competing schools (Part 2, pages 34–35).

• The number of schools who have joined the Enviroschools Programme has risen rapidly since 2002 and at the end of 2008 stood at 639 (Part 2, pages 18–19, 42).

• The facilitation programme provides professional development for school staff and focuses on encouraging a whole-school approach to sustainability wherever possible. Facilitators reported that their main tasks were to provide teachers with resources, environmental/sustainability knowledge and teaching ideas, and encourage student participation in decision making (Part 2, pages 34–38).

• An Awards Framework has now been assimilated into the Enviroschools Programme and provides a dimension that allows schools to chart and celebrate their progress. Whilst providing an incentive for change, there was a call to ensure the awards were fostering genuine and ongoing sustainability progress in schools, and not just providing another feature for schools to tick off as achieved. The new process developed in 2008 may well assist this but it is too early to comment more fully (Part 2, pages 38–39).

2.3 The achievement of their service agreement by the Enviroschools Programme

The Service Agreement objectives of the Enviroschools Programme fall under three headings: national coordination, regional support and programme development. Achievement of the objectives was examined from the perspectives of the Enviroschools staff and a sample of enviroschools. The following key points emerged from the data:

• Strategic direction and growth are being achieved well, as evidenced by the steady increase in schools joining the programme, and development of new initiatives such as Youth Jam.

• Relationship maintenance and growth are being achieved well, as evidenced by continued strong relationships with the Department of Conservation and community councils, and developing relationships with the Ministries of Education and Environment.

• There appears to be good support for regional coordinators, although little data were gathered on this. Raising the profile of environmental education for sustainability was not evaluated.

• The provision of professional development was reported as generally being achieved well with some potential for further development. Facilitator professional development is developing, and new and more advanced training opportunities, particularly in Māori perspectives, were seen to be important for progress. The annual hui, Youth Jam
and regional workshops were seen by most respondents as useful professional development. Facilitators called for more professional development in facilitation/mentoring (Part 2, pages 43–45).

- The development and provision of resources is ongoing, with key resources such as the Enviroschools Kit and the Handbook being recently updated. The Kit, Handbook and Scrapbooks were all valued as useful in their work by both facilitators and teachers. A most important resource was people, either facilitators or community experts. These particular resources were reported as highly valued by the enviroschools respondents (Part 2, pages 45–48).

- Progress towards ensuring student access to EfS pathways and development in kura was reported as evolving steadily, with the latter constrained by availability of trained kaitakawaenga (kura Māori teachers in EfS) (Part 2, page 48).

- Progress towards developing sustainable school operations and buildings was regarded as slow but was seen to be constrained by what schools were allowed to do by controlling authorities (Part 2, page 49).

- Progress in data collection and reporting systems is still developing in the Enviroschools Programme. The development of robust methods for collecting data on outcomes, both environmental and educational, that enhance innovation and commitment to learning whilst recognising the exact purpose of the data collection, would seem to be a priority. New initiatives at both national and regional level that are working towards improving this situation were reported. Improvements could be looked for in training facilitators in collecting data through appropriate research methods, and in ensuring a balance between collection of data on environmental improvement, and on educational outcomes. It is recognised that this latter is not easily achievable at present as the EfS community itself endeavours to understand more about educational achievement in EfS, but it would be important for Enviroschools facilitators to remain knowledgeable about the latest research in this area (Part 2, pages 49–50).

### 2.4 Impact of the Enviroschools Programme

The impact of the work of the Enviroschools Programme was examined on three levels: organisational change, teacher practice and student outcomes. Key findings were:

**Organisational change**

- A range of year levels is being engaged in EfS in schools but it is more challenging to engage secondary students (Part 2, pages 52–54).

- Enviroschools teachers reported that the Enviroschools facilitators were having the most impact on school operational practices, curriculum and physical surroundings. Less impact was reported on organisational management (Part 2, pages 54–56).

- Changes to school sustainable practices such as recycling wastes were widely reported by enviroschools teachers (Part 2, page 56).

- Leadership support was seen as vital to the success of EfS in schools and the development of an enviroschool. Most enviroschools teachers reported strong leadership support (Part 2, pages 56–58).

- Enviroschools teachers reported that through EfS there was greater student input into decision making but that this was only successful when it was transparent and genuine. Enviroschools teachers reported that development of enhanced community interactions depended on the nature of their community (Part 2, page 58).

- Enviroschools teachers reported that the main constraint to their development as an enviroschool was time to implement EfS (Part 2, pages 58–60).
Teacher practice

- Enviroschools teachers were strongly supportive of the professional development they received from the Enviroschools Programme. In-school professional development was the most highly rated professional development (Part 2, page 60).
- Enviroschools professional development was most highly rated by enviroschools teachers as practical, enjoyable and helping teachers to incorporate environmental/sustainability content into their teaching (Part 2, page 60–61).
- Enviroschools teachers reported that Enviroschools professional development had helped them gain better understanding of all aspects of sustainability, and how to apply these ideas personally and in their schools.
- Enviroschools teachers also reported that Enviroschools professional development had helped them learn how to support student-planned actions, and teaching and learning approaches in EfS (Part 2, page 64).
- Enviroschools teachers reported that Enviroschools PD had been of less help in understanding how to assess student achievement in EfS (Part 2, page 64).
- Improvements to Enviroschools professional development requested included more facilitator time (Part 2, page 79).
- In terms of teacher change, both Enviroschools facilitators and enviroschools teachers stated that the biggest changes were in inclusion of more environmental/sustainability content in teaching and development of teaching styles that fostered more active student participation in their own learning (Part 2, page 66).
- Enviroschools teachers reported that they were likely to be either delivering EfS as an integrated theme or as an extra/co-curricular activity (Part 2, page 67–68).

Student outcomes

- Enviroschools teachers reported that their EfS work with students was mainly around the themes of water, waste, energy and gardening (Part 2, page 70).
- Enviroschools teachers reported that they were seeing strong student outcomes in critical thinking, knowledge development, action taking and increased engagement in learning (Part 2, pages 70–73).
- Most enviroschools teachers reported evidence of transfer of EfS learning from school to home (Part 2, pages 73–74).
- Some enviroschools teachers reported that their EfS teaching was helping students to develop a better understanding of Māori perspectives of the environment, and encouraging improved Māori student achievement (Part 2, pages 74–75).

2.5 Summary

In this section we summarise our findings on the Enviroschools Programme through the lens of our analytical framework. Table 1 presents this summary as a matrix that addresses what we see as the key aims, achievements and challenges for the programme. The aims are based on intentions of the Enviroschools Programme according to Enviroschools documentation and Enviroschools staff (Part 2, pages 18–23). The achievements and challenges are developed from the impact statements above and the corresponding detailed evidence in Part 2.
Table 1: Summary of findings on the evaluation of the Enviroschools Programme

<table>
<thead>
<tr>
<th>Aim</th>
<th>Achievements</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transformational learning</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change towards sustainable practices.</td>
<td>Achieving school change and some transfer to students’ homes.</td>
<td>Constraints to change from regulatory authorities.</td>
</tr>
<tr>
<td>Empowering teachers and learners.</td>
<td>Evidence of development of facilitative teaching styles.</td>
<td>Lack of initial teacher education in EfS pedagogy.</td>
</tr>
<tr>
<td>Development of student critical thinking and reflection.</td>
<td>Teachers report student development in these areas.</td>
<td>Need to enhance teacher PCK² in EfS to further develop this.</td>
</tr>
<tr>
<td><strong>Systems thinking</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promote whole-school approach to EfS.</td>
<td>Evidence of whole-school approaches in small schools, and those in the programme longer.</td>
<td>Harder in large/secondary schools, and dependent on school leadership support.</td>
</tr>
<tr>
<td>Promote school–community links.</td>
<td>Highly developed in some schools, but not others.</td>
<td>Links dependent somewhat on the nature of the school’s community.</td>
</tr>
<tr>
<td>Connect people to their environment.</td>
<td>Good sustainability knowledge base increasing environmental/sustainability content in teaching. Students engaged in environmental actions.</td>
<td>Further develop facilitator and teacher knowledge in economic and political aspects, and Māori perspectives, of sustainability.</td>
</tr>
<tr>
<td>Foster integration of EfS across the curriculum.</td>
<td>Evidence that this is developing and that EfS is providing a vehicle for cross-curricular delivery.</td>
<td>Exemplars needed to scaffold teachers lacking EfS or sustainability knowledge background.</td>
</tr>
<tr>
<td>Develop systems thinking.</td>
<td>Evidence of some connections within and between schools, planning that flows through systems and inclusion of different knowledge systems.</td>
<td>Bringing about genuine school culture change.</td>
</tr>
<tr>
<td><strong>Cultural interface</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognise Māori perspectives and the Treaty of Waitangi.</td>
<td>Partnership with Te Mauri Tau providing excellent resources and facilitator training. Some evidence of outcomes for Māori students.</td>
<td>Demand for resources and training currently outstripping supply.</td>
</tr>
<tr>
<td>Value multiple perspectives.</td>
<td>Resources support multiple perspectives.</td>
<td>Lack of ethnic diversity amongst facilitators.</td>
</tr>
<tr>
<td><strong>Professional Development</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distributed leadership that focuses effort at local level.</td>
<td>Evidence of some development of sustainable practices and networking through and between communities.</td>
<td>Maintaining a consistent approach through the distributed leadership. Time required to support this.</td>
</tr>
<tr>
<td>Support for changing practice.</td>
<td>Evidence that ground-up development is leading to good environmental outcomes in schools and communities, which may in time lead to systemic educational change.</td>
<td>Evidence of long-term educational change requires long-term study.</td>
</tr>
<tr>
<td>Reflective conversations.</td>
<td>Data gathering and assessment of EfS under-developed.</td>
<td>Evidence that facilitators and teachers are not confident in recognising achievement in EfS of their school, themselves and their students.</td>
</tr>
</tbody>
</table>

² PCK—Pedagogical content knowledge
3. The NEfS Programme

The NEfS initiative is a professional learning support programme for schools, with national- and regional-level presence. The NEfS strategy is driven by research knowledge about the challenges of educational transformation. It focuses primarily on teacher professional development and teacher learning communities, and foregrounds the importance of teacher pedagogy, curriculum development and student outcomes and achievement.

The NEfS Programme is delivered by the National EfS Team (NEfS), which is led by two NEfS co-coordinators (one of whom is also a regional EfS adviser). They are responsible for building the capacity of EfS nationally, including professional development for the EfS regional advisers. The regional advisers are employed by six School Support Services teams, each associated with a university education faculty. As at late 2008 there were 22 EfS advisers in total, approximately half being part-time in their EfS role (Part 3, page 5).

The NEfS Team grew out of an initial contract to pilot professional development to assist schools with the implementation of the *Guidelines for Environmental Education in New Zealand Schools* (Ministry of Education, 1999). A key goal of the *Guidelines* is to encourage environmentally-responsible behaviour and informed participation in decision making, and its vision is for a clean, healthy and unique environment that sustains nature and people’s needs and aspirations. The formal scope and sphere of influence of the EfS advisory service in achieving this goal and vision is somewhat limited, considering that they are attempting to bring about whole systems transformation in schools and education, and in students and society, albeit in combination with the other two initiatives discussed in this report (Part 3, pages 5, 31).

The advisers work with schools at the schools’ request and aim to establish professional learning communities within and between schools that would help them work towards the goals described above. Their work is governed by a Regional Output Schedule for EfS within the Ministry of Education Teaching Support Services contract. The regional advisers are expected to: increase teachers’ subject knowledge and pedagogical content knowledge (PCK) for successfully teaching EfS programmes; promote changes in teachers’ beliefs and practices in relation to helping all students become successful learners, using achievement data to help them make good decisions about how to do so; and help schools to build their cultures as learning organisations with plans to ensure their EfS developments can be sustained over time (Part 3, pages 19–23).

3.1 NEfS Programme alignment with key messages, goals and intended outcomes of EfS

As for the Enviroschools Programme, this study finds that in theory the goals and intended outcomes of the NEfS Programme align very well with government guiding documents in school-based EfS, with international conceptions of EfS, and with specific New Zealand/Māori conceptions of sustainability. This alignment is seen in the intent to focus on whole-school (systems) change, and on helping schools and individual teachers to align EfS learning with the potentially transformative features of *The New Zealand Curriculum* (Ministry of Education, 2007b), which is currently being implemented in schools. The pedagogies employed by the advisors for their own collective learning and for facilitating teacher learning are congruent with those emphasised in the literature as being needed to achieve transformative change (Sterling, 2001) and to shift teacher thinking (Timperley, Wilson, Barrar, & Fung, 2007) (Part 3, pages 23–26).

In practice, NEfS advisers sometimes struggle to gain the support needed to achieve whole-school change, particularly in secondary schools, and in larger schools. When this is not possible, they work pragmatically to create learning
communities that bring individuals from different schools together, and they work alongside teachers, whatever the realities of their school context, in ways that support them where they are, and help to move their thinking and practice forward. Notwithstanding the intent to include Māori cultural perspectives wherever possible, they lack resources in this area, where they feel they are still learning themselves. The emphasis on the use of assessment data to raise achievement, which is a standard feature of all School Support Services advisers’ work, does not sit easily with the more participatory goals of EfS, which are often achieved collectively and include a strong value/dispositional component that cannot be appropriately quantified to make the sorts of data comparisons that are expected and well established in core curriculum areas. We acknowledge that EfS advisers were perhaps attuned to “what we don’t yet know” because discussion about cultural responsiveness and student outcomes in transformational learning environments had been a focus of their ongoing professional learning conversations (Part 3, pages 24, 26–31, 37–41, 77–80).

### 3.2 The effectiveness of the processes and practices of the NEfS Programme

The contexts, processes and practices of the NEfS Programme were examined for their effectiveness from the perspectives of the advisers, a range of school leaders and teachers, and in two case study schools, some students and parents. The following key points emerged:

- Similar to Enviroschools, NEfS has a distributed (though smaller) leadership structure involving national EfS coordinators and regional teams of EfS advisers. This structure provides support to the locally-based advisers, a process for the development of shared resources and hence a degree of alignment between the beliefs and practices of the individuals involved (Part 3, pages 35–40).

- The advisers who deliver EfS in schools are a highly committed group, many working more than their part-time hours. They are seen by teachers to be knowledgeable about EfS and they are responsive to local contexts and challenges so that they can provide flexible professional learning programmes, regardless of the constraints dedicated teachers may face in their schools (Part 3, pages 39–40, 45–48).

- Notwithstanding some tensions between specific EfS goals and the more general goals of School Support Services, the NEfS advisory programme has succeeded in making workable alignments between School Support Service contractual requirements, broader EfS intentions and the ecological approaches to school transformation that are such a strong signal in international EfS theory and suggested best practice (Part 3, Chapter 3).

- In keeping with their systems focus, regional advisers value connectedness and coherence. They connect: individual teachers with whole-school, school-cluster or whole-community professional learning; teachers across year levels and learning areas; EfS with the national curriculum; teachers and schools with EfS resources in their local communities, including Enviroschools facilitators, providers of other complementary education programmes, Mātauranga Taiao facilitators, the New Zealand Association for Environmental Education, and EfS-promoting Non-government organisations such as World Wildlife Federation, and local businesses (Part 3, pages 37–40).

### 3.3 The achievement of regional EfS outputs

The achievement of the agreed School Support Services regional output schedule was examined from the perspectives of the advisers, teachers, school leaders and some School Support Services managers. The summary is organised by a paraphrased title for these outputs. More detail is provided in the impact summaries that follow:

- **Increase teacher content knowledge and PCK**: NEfS advisers have helped teachers to better understand what sustainability/EfS entails, including the broad intentions of EfS, and the holistic, interdependent and multifaceted nature of sustainability. They have also successfully helped teachers learn about the “how to” of teaching for EfS and how to work towards whole-school shifts towards more sustainable practices. The pedagogy that advisers used,
and teachers described, during this study appears to align extremely well with the seven aspects of effective pedagogy in *The New Zealand Curriculum* (Ministry of Education, 2007b, p. 34) (Part 3, page 85).

- **Change in teachers’ beliefs and practices**: EfS encourages effective teaching but making changes is harder in practice. Just over half the participating teachers had actually made changes to their teaching approach. Both primary and secondary interviewees suggested that they had gained new insights for their own teaching by interacting with teachers from other year levels and learning areas through attending NEfS professional development and/or through developing EfS in their school, as supported by an NEfS adviser (Part 3, pages 85–86).

- **Building inclusive school cultures for all students**: Participatory decision making, collaborative learning and acknowledgement of cultural diversity are key EfS principles and most teachers reported that their understanding of these has been strengthened through their work with the NEfS advisers. The advisers model these ways of working and work alongside teachers in their classrooms where possible, thus contributing to the deprivatisation of practice. Some teachers and school leaders are successfully building more inclusive school cultures. EfS is understood to provide opportunities for building greater knowledge of different cultural perspectives, although this remains an area where more support is needed by both the advisers and teachers (Part 3, page 86).

- **Building effective learning communities**: The NEfS advisers aim to establish professional learning communities within schools but they are more likely to succeed in doing so in primary schools, where it is easier to embed the ideas and practices across the whole-school, both in terms of staff involvement and structural changes. They also establish professional learning communities that bring together like-minded teachers from different schools. The structure of the initiative allows the NEfS advisers to work as a professional learning community of their own, pushing boundaries at the leading edge of change (Part 3, page 87).

- **Raising achievement through evidence-informed inquiry**: Student learning outcomes are understood to include engagement and achievement (including across a range of learning areas), self-confidence and self-awareness (related to values clarification and life long learning qualities), sustainability knowledge and behavioural change, critical and systems thinking and action competence. Describing and then determining what counts as evidence of most of these is a developing and contested field, so it is not easy for advisers to document their success in achieving this output. Some teachers had developed ways to understand EfS achievement and/or achievement in learning areas in which they had integrated EfS. Advisers had developed a range of reflective data capture tools and documentation strategies and were encouraging teachers to use these. Both advisers and teachers feel they are building beyond current assessment knowledge and skills, and the NEfS team is asking—and responding to—pertinent questions about how to appropriately assess transformational learning, thus making a valuable contribution towards education fit for the 21st century. The new EfS standards have paved the way for standardised quantitative assessment of selected outcomes for students in the senior secondary school (Part 3, page 87).

- **Planning for sustainability over time**: Many teachers and schools are still in the early stages of developing ideas and practices related to embedding EfS across a whole-school. Progress often appears to be slow or inconsistent, but where it happens indicators include embedding EfS in high-level documentation, a shared commitment to EfS beyond the teachers directly involved in the EfS professional learning and establishing ongoing school-to-school and community collaborations. Again there are indications that this is easier to achieve in small schools and in primary schools, and changes in key staff may impede progress (Part 3, page 88).
3.4 Impact of the NEfS Programme

The impact of the work of the NEfS advisers was examined on three levels; school-wide change, teacher practice and student outcomes. Key findings were:

School-wide change

- EfS is seen as well aligned with The New Zealand Curriculum (Ministry of Education, 2007b) because it: encourages school-based curriculum development; identifies sustainability within the future-focused principle; provides rich authentic contexts that entail use/development of values and key competencies and that provide coherence across learning areas (another principle); and emphasises collaborative decision making and big picture thinking to stand students in good stead as lifelong learners prepared for an uncertain future (as articulated in the vision) (Part 3, pages 18, 30–31, 48, 61–62).

- Some schools described EfS as providing an umbrella for design of the whole-school curriculum, while others included EfS as an “integrating theme” across syndicates or learning areas. Both these types of school-wide change were more likely to happen in primary schools, but cross-faculty conversations and planning were also taking place in the case study secondary school (Part 3, pages 60–61).

- Secondary schools are more likely to develop EfS as a co-curricular activity, which is more manageable for a small number of enthusiastic teachers, with some EfS classes offered on the timetable. In practice, this means that only a proportion of the school’s students experience EfS learning opportunities (Part 3, pages 49–50, 60).

- Where EfS was integrated into the secondary curriculum, the learning was most often located in science and social studies (Part 3, page 60).

- EfS contributed to the adoption of participatory practices that involved students, and sometimes their families and communities, in learning decisions and actions. Participatory approaches to school decision making may be more easily achieved in primary schools and in small schools (Part 3, pages 56–57, 63).

- Implementation of changes such as more recycling of wastes and more sustainable purchasing practices is happening in some EfS schools, particularly those where advisers successfully engage the school leadership in embracing EfS at the whole-school level. NEfS advisers were seen to have a positive impact on both leadership support and sustainability practices in most of the primary schools and a third to half of the secondary schools that they worked in (Part 3, page 63).

- Some schools have successfully engaged parents and members of the wider community in participation in sustainability initiatives such as establishing school gardens (Part 3, pages 64–65, 75).

Teacher practice

- Teachers were strongly supportive of the professional development they received from the NEfS advisers. They see the advisers as knowledgeable and good role models for EfS (Part 3, pages 45–48).

- EfS professional learning has supported teachers to deepen their knowledge about the interdependence of environmental, social, cultural, political and economic aspects of sustainability. Their independent ratings of each aspect suggest that broadening the scope of sustainability education to connect in economic systems and knowledge from other cultures (and especially Māori knowledge) needs further support and development (Part 3, pages 55–56).

- Teachers see connections between the outcomes intended for EfS, the vision of The New Zealand Curriculum, the aims of the Guidelines for Environmental Education in New Zealand Schools and some of the outcomes messages in Ka Hikitia. There may be barriers to achieving these intentions to their fullest potential in practice (for example, perceptions of an assessment-driven curriculum-coverage imperative in the senior secondary school) (Part 3, pages 61–62, 77–79).
Most teachers said NEfS professional development had led them to include more sustainability content in their teaching (Part 3, page 63).

Just over half the teachers indicated that NEfS professional development had led them to adopt more facilitative teaching styles, enable students to share decision making and provide learning opportunities that were more authentic, action-oriented, inquiry-based or cross-cultural. Some of those who did not indicate a change noted that their teaching style already aligned with pedagogies valued by EiS (Part 3, pages 57–60).

There appears to be some movement towards authentic learning opportunities driving assessment, rather than assessment driving learning opportunities. Advisers introduce teachers to a wide range of potential assessment strategies, which are sometimes taken up (Part 3, pages 80–81).

Student outcomes

A majority of the teachers said that students had developed their critical thinking skills, reflected on their personal understandings of sustainability, developed their understanding about the biophysical environment, taken action for sustainability and imagined the future through EiS learning opportunities. Nearly as many teachers agreed that students had clarified their ethics and values and modified their lifestyle due to EiS learning opportunities (Part 3, page 72).

These opportunities are more likely to be provided in primary schools—all were reported by at least 80 percent of the primary teachers, with secondary teachers’ self-reports being around 20 percentage points lower (Part 3, page 72).

Specific learning opportunities that could enable students to develop as “systems thinkers” were ranked lower than other opportunities mentioned in the teacher survey. For example, opportunities for students to question and research a specific environmental issue or strategy were more common than opportunities to question or learn about big picture sustainability themes or opportunities to use a variety of knowledge systems or disciplines to understand sustainability (Part 3, pages 74–75).

Over half the teachers described ways students translated their learning about/in/for sustainability to their lives beyond school. In decreasing order, examples included: waste management; gardening including vegetable growing and composting; energy conservation; waste reduction; native re-vegetation, such as riparian planting; sustainable procurement; alternatives to car use; and protection of waterways. The overall tendency is to behaviours that “reduce” and “recycle”, more than those that “reuse” and “redesign” (Part 3, pages 75–77).

EiS learning impacted positively on students’ engagement, interest, and motivation in their learning. Some lower achievers experienced successes that noticeably motivated them to better engage with learning in core curriculum areas such as literacy and numeracy (Part 3, pages 73–74).

EiS principles and some EiS learning opportunities appear to create space for Māori students to bring their cultural knowledge to their learning and for whānau to become more involved in schooling. However, NEfS advisers have had little impact in supporting schools to develop relationships with local iwi, hapū or marae (Part 3, pages 26, 55–56, 64–65).

Some teachers saw EiS as a means to foreground Māori cultural knowledge, enable students to participate and contribute in ways that were important to their communities and/or provide opportunities to view other cultural forms of knowledge in relation to Western scientific knowledge (Part 3, pages 78–79).
### 3.5 Summary

In this section we summarise our findings on the NEfS initiative through the lens of our analytical framework, following a structure similar to the Enviroschools section of the overview report. The commonalities of the two programmes are evident when analysed with this holistic framing, as would be expected of initiatives that draw on similar conceptual foundations. Table 2 summarises the aims, achievement and challenges of the NEfS Programme found in this study. The aims are based on Efs intentions according to Efs advisers’ interviews and NEfS documents, especially the NEfS strategy (Part 3, pages 19–23). The achievements and challenges are developed from the impact statements above and the corresponding detailed evidence in Part 3.

**Table 2: Aims, achievements and challenges of the NEfS Programme**

<table>
<thead>
<tr>
<th>Aim</th>
<th>Achievements</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational learning</td>
<td>Transformational approach informed by ecological change principles, constructivist educational theory, the intentions of The New Zealand Curriculum.</td>
<td>Evidence more co-constructive facilitative teaching with authentic, action-oriented, inquiry-based learning opportunities.</td>
</tr>
<tr>
<td>Students develop action competence to become innovative thinkers who act sustainably.</td>
<td>High agreement that students: develop critical thinking, clarify values/ethics, take action, imagine the future, increase environmental knowledge.</td>
<td>Extending Efs opportunities to all students.</td>
</tr>
<tr>
<td>Students experience educational success and achieve in core learning areas.</td>
<td>High agreement that students became more engaged and motivated in learning. Some evidence of increased achievement.</td>
<td>Further developing appropriate assessment strategies to usefully inform student and teacher inquiry.</td>
</tr>
<tr>
<td>Schooling models and catalyses sustainable behaviour and design.</td>
<td>Evidence that sustainability initiatives developed as learning opportunities in schools and similar practices transferred to students’ lives beyond school.</td>
<td>Embedding sustainable practices and extending to “redesign” principles with the support of school leadership.</td>
</tr>
<tr>
<td>Systems thinking</td>
<td>Shift environmental education to wider sustainability focus.</td>
<td>Teachers enhanced holistic sustainability knowledge (most confidence with “environmental” and “socio-cultural” elements).</td>
</tr>
<tr>
<td>Work with Ministry of Education frameworks and a range of Efs providers/communities to support whole-school shifts towards Efs.</td>
<td>Teachers supported to make cross-curricular connections and school–community links.</td>
<td>Furthering thinking and resources to “deeply” link Efs to the transformative potential of The New Zealand Curriculum.</td>
</tr>
<tr>
<td>Efs as context and content for school-based curriculum development and integration.</td>
<td>Most teachers increased sustainability content in their plans. Some schools developed Efs as integrating theme for whole or part of school’s curriculum.</td>
<td>Integrating learning areas to maximise complex systems thinking. Moving Efs beyond science, social studies and co-curricular spaces in secondary schools.</td>
</tr>
<tr>
<td>Cultural interfaces</td>
<td>Value Māori pedagogies and sustainability knowledge.</td>
<td>Some evidence that some teachers are including more Māori perspectives.</td>
</tr>
<tr>
<td>Develop Efs bicultural vision that honours the Treaty of Waitangi.</td>
<td>Efs pedagogy and focus has created space for Māori students to participate as Māori.</td>
<td>Developing partnerships with iwi.</td>
</tr>
</tbody>
</table>
Table 2: Aims, achievements and challenges of the NEfS Programme — continued

<table>
<thead>
<tr>
<th>Aim</th>
<th>Achievements</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional development</td>
<td>Support teachers’ action-based exploration of EfS pedagogy and content knowledge.</td>
<td>Teachers learnt “how to” provide EfS learning opportunities.</td>
</tr>
<tr>
<td></td>
<td>Foster EfS professional learning communities across schools, communities and regions.</td>
<td>Enhanced individual teacher learning, with professional learning communities established within and between some schools.</td>
</tr>
<tr>
<td></td>
<td>Model EfS professional learning community as EfS advisers.</td>
<td>Regional and national networks generate and distribute EfS learning and leadership.</td>
</tr>
</tbody>
</table>
4. Mātauranga Taiao

Mātauranga Taiao was born from a decade of intermittent hui that brought together Māori educators interested in environmental education, and development work in the area by members of the National EFS Programme. There was recognition that a stand-alone initiative was needed to develop mātauranga taiao (environmental knowledge) through a group that was distinct from the National EFS Team (Part 4, pages 5–6).

Mātauranga Taiao is a professional development service specifically dedicated to sustainability education in Māori-medium education. Its project director and national coordinator is based in Te Kura Māori at Victoria University of Wellington. The service has two regional coordinators, one for the North Island and one for the South. Together the coordinators have provided two years (2007–8) of professional support for 25 kaiako and Resource Teachers of Māori (RTMs). The intention was that these “students” would essentially become Mātauranga Taiao advisers/facilitators with their own kura initially and another in the second or third year (Part 4, page 1).

4.1 Mātauranga Taiao alignment with key messages, goals and intended outcomes of EFS

- There are some alignments between Education for Sustainability as expressed in international and national documentation and the kaupapa of Māori-medium education. At the same time Mātauranga Taiao represents a move away from Māori educators contributing a Māori perspective to add into mainstream environmental education programmes and associated teacher education (Part 4, pages 1 and 21).

- Mātauranga Taiao is embedded in, and draws explicitly from, Māori epistemologies and addresses many of the issues that EFS is concerned with. While mātauranga taiao literally means “knowledge about the environment” Māori epistemologies mean that the programme’s name encapsulates much more than cognitive knowledge about the physical environment (Part 4, page 7).

- A number of philosophical and conceptual understandings underpin Mātauranga Taiao. One is the interconnectedness and interdependability between the physical environment, people and ātua Māori, as expressed, for example, through whakapapa matrices and whakataukī. Another is the importance of puna (literally “wellsprings” or sources) of knowledge situated in local communities, and related to this the connections between narrative and environmental wellbeing. Historical stories, such as pēpeha, pakiwaitara and pūrākau, are part of “knowing” the environment and are integral to the wellbeing of the physical environment (Part 4, pages 7–9).

- These types of conceptual understandings were central in interviewees’ narratives and guided the aims and process for the professional development programme.

4.2 The effectiveness of the processes and practices of Mātauranga Taiao

- The backbone of the Mātauranga Taiao Programme was a series of five national noho held in different locations over a two-year period. Each noho included a range of workshops facilitated by the Mātauranga Taiao coordinators and various guest speakers and the learning was grounded in the specific context of the land. These supported kaiako/RTMs\(^3\) to, for example: experience learning in the specific environment, develop teaching resources for their kura; and make connections with the puna mātauranga in their local communities. Between the noho Mātauranga Taiao coordinators provided follow up support to kaiako/RTMs during site visits and via telephone and email contact (Part 4, pages 11–12).

\(^3\) Please note that we refer to the kaiako/RTMs in the Appendix 3, Mātauranga Taiao report.
• Mātauranga Taiao’s pedagogical process of co-constructing mātauranga taiao with the kaiako/RTMs, and then in turn to supporting these kaiako/RTMs to co-construct knowledge with their kura students and local communities, strengthened over time. This was evident in the progression of the noho, where there was a move from bringing in environmental experts and sharing relevant literature towards more emphasis on whakaaaro Māori and with kaumātua in each area to building kaiako/RTMs’ lived knowledge about sustainability from within traditions and korero (Part 4, pages 14–15).

• Kaiako/RTMs enjoyed participating in the programme and considered it to be valuable learning. Their evaluation form responses demonstrated that kaiako/RTMs most appreciated: site visits; guest speakers; working collaboratively; and developing their critical thinking skills. They found the inquiry, experiential and cooperative learning activities the most useful, and this is consistent with the coordinators’ comments that the professional development needed to be as focused on pedagogy as on mātauranga taiao (Part 4, page 12).

• The kaiako we interviewed were also positive about the programme, although they felt that they would have benefited from more onsite support during 2008. (Unfortunately the North Island regional coordinator retired during 2008 and was not replaced. While the national coordinator did make a number of site visits, the overall level of support was more limited than the kaiako/RTMs we interviewed hoped for.) (Part 4, page 12).

4.3 The impacts and outcomes of the Mātauranga Taiao Programme

• The programme has contributed to the development of new understandings about environmental education in Māori-medium settings.

• Kaiako/RTMs reported that the Mātauranga Taiao Programme enabled them to feel part of a community of mātauranga taiao educators who shared practices beyond the noho. They also gained the confidence to approach others with the relevant expertise to offer new learning opportunities for their kura and further mātauranga taiao kaupapa in their community. Several networks also developed, including a cluster of kura from the central North Island and East Coast, that organised a wānanga with well respected and knowledgeable elders (Part 4, pages 14–16).

• Kaiako/RTMs made links between mātauranga taiao and the Marautanga o Aotearoa. The kaiako/RTMs were shown how to meet the outcomes of different learning areas, including hauora and pūtaiao, by focusing on the kaupapa of mātauranga taiao (Part 4, pages 16–18).

• Developing mātauranga taiao (environmental knowledge) enabled the kaiako/RTMs to more strongly centre mātauranga Māori in their kura curriculum. For example, Māori stories and traditions were the lens that kaiako/RTMs used to investigate and understand the taiao (Part 4, pages 16–18).

• Interviewees also commented that their involvement in the Mātauranga Taiao Programme had contributed to a change towards a taiao focus in their kura. Their end-of-year reflections suggested a growing commitment from kaiako and whānau to the kaupapa. Their comments with the national coordinators suggest that in the long term kura taiao might emerge alongside kura kaupapa Māori and kura-a-iwi, or mātauranga taiao principles might become more explicit within all kura (Part 4, page 18).

• The kaiako/RTMs developed a number of teaching programmes in their kura, including exploring the narratives of the people/land and making their kura more sustainable. By the last noho they were able to report on how they had planned and implemented these. The way these programmes were implemented varied. In one kura, for example, Te Taiaroa was the central organising framework for thematic studies that incorporated the other curriculum areas of: hauora; te reo; hangarau; nga toi; and putaiao. Units of work reported by the Mātauranga Taiao students covered topics such as: recycling; gardening activities, including research into kumara as well as growing and harvesting; learning about the local vegetation and Māori medicinal uses; and investigations into energy use and water
quality/health. Some also described how they had evidenced student learning in mātauranga taiao. They also shared support material that they had developed over the two years, including various unit plans (Part 4, pages 18–20).

Overall, the programme contributed to the capacity of facilitators (the kaiako/RTMs) to implement Mātauranga Taiao into the educational programmes and physical environments of their kura. As this is such a new and important area, we suggest that more time and greater critical mass of coordinators/kaiako/RTMs is needed. Mātauranga taiao, although drawing from a large body of knowledge and practices from Māori epistemologies, is still a very young initiative and it has not yet had time to build the knowledge and best practices for widespread developments across Māori-medium education. The notion of a standalone initiative is important for consolidating Māori conceptions of, and approaches to, developing mātauranga taiao. In the longer term this has the potential to offer challenges to EfS professional development in English-medium schools, which will in turn have benefits for Māori students throughout New Zealand, and to become a significant influence on national conceptions of EfS (Part 4, pages 23–25).
5. The contributions of the three initiatives to EfS

This chapter brings together our findings from the evaluations of the separate initiatives to consider what they contribute as a group to the development of EfS in New Zealand schools. We also identify a number of gaps that suggest opportunities for the ongoing development of EfS.

5.1 The EfS system

The different genealogies and accountabilities of each of these three initiatives mean that different aspects of the EfS system could be said to be supported by each initiative. They bring governmental, community and indigenous approaches which address current priorities for the Ministry of Education (Ministry of Education, 2009):

- The Enviroschools Programme focuses on learning communities that draw on—and develop—the leadership of students and community members, and it foregrounds: community partnerships; sustainable school practices; and student leadership/engagement. The Enviroschools Programme draws on educational knowledge from the community sector, including Māori knowledge. The programme has resources to support kura kaupapa Māori and mainstream Māori education and is developing capacity in this area as supported by a partnership with Te Mauri Tau at the national level.

- NEfS focuses primarily on teacher professional development and teacher learning communities, and it foregrounds: teacher pedagogy; curriculum development; and student achievement. NEfS draws on educational knowledge from the academic and government sector. NEfS has limited capacity to support Māori-medium education, as it is vested in the third initiative, Mātauranga Taiao.

- Mātauranga Taiao focuses on teacher professional development and teacher learning communities in kura kaupapa Māori, and it foregrounds co-constructing mātauranga taiao. Mātauranga taiao draws on situated knowledge from local contexts. Mātauranga Taiao has developed specifically to support Māori-medium education, including kaupapa Māori, and is developing knowledge, resources and teacher capacity simultaneously.

National and regional sharing between the initiatives shows that they mutually support one another and work strategically for EfS. Enviroschools facilitators and NEfS advisers in particular collaborate in ways that make best use of the skill sets of the individuals involved and the institutional knowledge of each initiative. The three EfS programmes each offer something unique for EfS and together they contribute to the Government’s key EfS messages and help build New Zealand towards a more sustainable future. From both a 21st century knowledge generation perspective and a deep ecology perspective, it is important to have many components and interconnections within a change system to enable continuous learning and growth—and the potential for transformation.

5.2 Achievement of outcomes

The evaluation demonstrates that the three initiatives interact to generate change at a collective level across different contexts. Based on the evidence provided above and detailed in the appendices we find that together the initiatives have contributed to the following outcomes:

- **Policy**—the three initiatives have worked together to develop strategy for EfS and have provided leadership in assisting policy development at government levels. They have developed a unified view of their general approach to EfS, Toitu te Ao. A key gap appears to be the lack of a systems approach to cross-government strategy for development of EfS in order to better support the work of these initiatives and other non-governmental organisations.
Education for sustainability in New Zealand schools

- **Curriculum**—these initiatives are impacting on the inclusion of environmental and sustainability content in teaching and learning that connects with the “front end” of The New Zealand Curriculum. This appears to be occurring more readily at primary than at secondary level, and occurring through integration into the learning areas rather than as a stand-alone topic. Teachers are developing more confidence in their knowledge for teaching in this realm. The initiatives address curriculum development from their different perspectives bringing a multifaceted approach with potential to combine academic thinking, community needs and indigenous perspectives. A key gap appears to be in the availability of specific resources such as exemplars that show teachers how they could integrate EfS into their curriculum.

- **Pedagogy**—these initiatives are impacting on the development of more facilitative teaching styles as befitting a transformative learning approach. These approaches are seen to be more challenging by teachers, but also more rewarding for learners, as they allow students to share decision making, and provide learning opportunities that are more authentic, action-oriented, inquiry-based or cross-cultural. Some participants suggested that there may be a gap in the extent to which initial teacher education fosters these teaching approaches in new teachers.

- **Assessment**—these initiatives are beginning to develop ideas around assessment in EfS. This is an area for further development as the data and literature suggest that there are significant challenges in developing appropriate and useful measures of student outcomes in this field.

- **Professional development**—these initiatives provide valued professional development both within and outside the school, and at individual, collective and whole-school levels. They also foster interschool and school–community networks for sharing of knowledge and skills. It appears that demand is beginning to outstrip supply with calls for more professional development opportunities by schools and a frustration expressed by the professional developers about not being able to provide the service requested.

- **School operations**—these initiatives are impacting on school operational practices, in particular planting and gardening, waste management, water and energy conservation. Schools’ sustainability practices provide meaningful learning and leadership contexts for students. The practices are becoming embedded when supported by the whole-school and its community. The initiatives encourage schools to include all members of the school community, particularly students, in developing visions for a sustainable school. A key gap appears to be a lack of support or coherent planning by regulatory authorities to assist schools to become more sustainable.

- **Community interactions**—these initiatives are impacting on the development of stronger school–community interactions for EfS. These are being influenced by the nature of the school communities and require time and energy to sustain them. Recognition of the educative potential of the school–community interactions is showing benefits for the schools.

- **Evaluation**—these initiatives together are developing some strategies for evaluating change in collective educational and environmental outcomes in schools and communities. A challenge is to establish evaluation processes that will enable an exploration of the long-term outcomes of emerging sustainability innovations.

### 5.2.1 Student outcomes

This evaluation has reported a range of student outcomes being achieved by the three EfS initiatives. These can be described using the lens of action competence, a theoretical approach that expresses the potential of a learner to think, feel and act in a sustainable way. This evaluation, drawing primarily on teacher report, suggested development of action competence for sustainability through the work of the initiatives in the following ways:

- Most students developed critical thinking and personal reflection about sustainability. These were amongst the most frequently reported student outcomes in the Enviroschools and NEfS evaluations.
• Students considered their own and others’ knowledge and perspectives in addressing sustainability issues. This included students contributing and exploring Māori knowledge in some schools.

• Students were strongly engaged in their learning and were actively involved in locally-relevant, authentic learning opportunities. Nearly all participants reported that EfS increased students’ interest and motivation in their learning.

• Students planned and took action to promote sustainability in their schools and communities. While data suggested that most EfS learning opportunities involve students taking action, it also indicated that this opportunity was limited to some students or to contained projects and did not always reflect school-wide democratic decision making. There was some case study evidence that where action taking was an intentional choice, such as through joining an envirogroup, then more successful and sustainable action resulted.

• Students showed evidence of transfer of learning to take actions at home on sustainability issues. There were multiple examples of this evidence, leading to a conclusion that initiative-supported EfS is having an impact on schools’ immediate community members—its parents and caregivers.

• Taking the data as a whole we suggest that EfS, as envisaged and supported by the initiatives, appears to be developing students who are: active contributors to social, cultural, economic and environmental wellbeing; innovative designers; systems thinkers; community builders; protectors of diversity; and leaders of creative responses to sustainability challenges.

5.3 Summary

This chapter has examined the contributions of the three initiatives to the delivery of EfS in New Zealand, and has identified some gaps in the current delivery system. This suite of initiatives is quite unique in New Zealand school education, in that together they combine elements of academic, community and indigenous perspectives that support the kind of systems approach that is internationally advocated for EfS.

The evaluation demonstrates that the three initiatives contribute to meeting a broad array of EfS intentions. They bring about change in individual schools, teachers and students, as well as in wider education and community systems. The initiatives provide direction for transforming education to reconnect learners to their biophysical, social and cultural environments and develop sustainable citizens of the future. Their combined outcomes appear to align with EfS “big picture” visions—the goal of creating more sustainable schools and communities.

The initiatives are achieving significant outcomes in policy, curriculum, pedagogy, school operations and community interactions, and they are slowly developing approaches to assessment and evaluation. When a holistic view is taken of the work of the three initiatives, we can see that they are striving towards sustainable learning communities that continue to build relationships and innovate beyond input from the initiatives themselves.

However, there are gaps in EfS delivery in New Zealand schools that could be addressed through improved government-level policy development, planning and strategic thinking, enhanced teacher education and further research into EfS. These gaps are now elaborated in our considerations of the challenges and implications for the future of EfS.
Education for sustainability in New Zealand schools
6. Future directions

This evaluation concludes that, together, the three initiatives are contributing to bring about changes in the way that education operates in schools, in concert with developing students’, teachers’ and schools’ approaches to sustainability. However, several challenges remain in order to realise goals espoused nationally and internationally for EfS.

6.1 What are the current challenges and what is needed?

The evaluation suggests at least three key challenges for EfS in New Zealand schools. Below, we summarise these challenges and identify possible “next steps” for addressing them.

Challenge: Although there are some good examples of EfS in secondary schools, it is an ongoing challenge to support EfS development and integration into secondary curriculum and teaching practices.

Possible next steps:

- Short term: Support the development of secondary-specific resources to build teachers’ understandings of EfS across and within secondary subject/discipline areas. These might, for example, include “expert” sustainability knowledge relevant to particular disciplines, as well as indicating ways to align EfS with the intentions of The New Zealand Curriculum and the National Certificate Educational Achievement in various subject/disciplinary areas.

- Long term: Ensure that future developments across all the systems components of secondary education (policy, curriculum, pedagogy, assessment/qualification, school operations and community interactions) are aligned to support EfS. EfS has great potential to promote engagement of secondary students through authentic, flexible and empowering education.

Challenge: The three programmes (NEfS, Enviroschools and Mātauranga Taiao) are developing and adding to the New Zealand knowledge base for EfS, at the same time as they are delivering professional learning in the area.

This can be viewed as both a challenge and a strength. As discussed, intersectoral and interdisciplinary networks have played an important role in developing national and international knowledge about sustainability and EfS. This process aligns well with contemporary views about the nature of knowledge building in the 21st century (Gilbert, 2005; Sawyer, 2008). However, as participants in the evaluation noted, both EfS knowledge development, and delivery of professional learning in EfS, are demanding tasks that require time, as well as particular combinations of skills and strengths.

Possible next steps:

- Recognise that developing the knowledge base while simultaneously delivering professional learning requires sufficient time and support, as well as the right combinations of people and knowledge.

- Provide strong linking opportunities between the professional developers and the growing knowledge base through regular and ongoing professional development opportunities for the facilitators and advisers.

- Foster and encourage the development of EfS in all initial teacher education programmes, so that beginning teachers are well prepared to deliver EfS in their classrooms.

Challenge: The national and global significance of “sustainability” is rapidly evolving and developing across all sectors (including financial, governmental, legislatory and community and social sectors, etc.) and EfS needs to stay connected up with these emerging developments.
Possible next steps:

- Develop a coherent, systems-based government strategy which identifies sustainability, including EfS, as a driver for policy making across all sectors. This should incorporate inter-governmental planning and demonstrate clear articulation of policy from strategic level through to practice level.

- Develop stronger synergies between central and local government for development of EfS that encourage consistent policy making and effective programme development.

- Provide support for EfS initiatives to build and maintain networks with people and groups working in sustainability and EfS across different sectors.

- Foster and encourage research into long-term outcomes of EfS in schools to inform the development of enhanced EfS delivery.

6.2 Concluding statement

This evaluation concludes that the three EfS programmes are contributing to bring about educational change that is building collective knowledge and active participation for a sustainable future. Arising from three quite different foundations, the three programmes are fostering grass-roots commitment to sustainability within schools. The professional development support is encouraging more transformative learning opportunities, improved student engagement and stronger school–community interactions. However, while there is some evidence of very good progress in these areas, this is not pervasive within or across all schools, particularly secondary schools. We would encourage further attention be paid to development of a coherent government strategy that would further strengthen EfS delivery in all New Zealand schools.
References


