



The Ngahere Project

Teaching and learning possibilities in nature settings



Janette Kelly and E. Jayne White

with Marion Dekker, Julie Donald, Kathryn Hart, Fiona McKay, Lynley McMillan, Amy Mitchell-King and Gill Wright

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EXECUTIVE SUMMARY

Engagement with the outdoors is a core element of New Zealand's heritage, identity and culture. Taken together with our status as international curriculum leaders in early childhood education (ECE), we are uniquely placed to contribute to the worldwide community in relation to pedagogical implications for education in the outdoors. This research explored ECE pedagogy 'within' and 'beyond' the gate in ECE settings committed to sustainability. The findings have universal relevance and are in keeping with the New Zealand ECE emphasis on bicultural practice and diversity of provision and programmes.

The Ngahere Project was an 18-month-long action research project involving Tauranga Region Kindergartens in the Bay of Plenty, Campus Creche Trust in Hamilton and the University of Waikato. Teachers from the six research sites and their leadership representatives shared a commitment to sustainability. A lead teacher researcher was identified in three sessional or extended day kindergartens, two full-day education and care centres and a home-based education setting to oversee the research and liaise with the two researchers from the University of Waikato who led the project. Leadership representatives, teachers and the home-based educator and coordinators, children and several Maori elders were involved in the project

The project considered the following overarching questions:

1. What might nature-based learning look like in diverse Aotearoa New Zealand ECE services that are committed to sustainability?
2. What are some of the pedagogical issues and provocations teachers face in this domain?

Each research site also had a supplementary research question (See Table 1) and focus groups were held at the start and near the end of the project. To answer these questions, a mosaic of participatory research tools and methods relevant to young children was used (Clark & Moss, 2001). We drew on key theories that would support the perspectives of young children and were committed to listening and seeing multiple interpretations of the data and children's learning. With the support of university researchers, participants at each site nominated tools specific to their research question and read literature specific to their research question. Data was generated over an eight week period. It included a variety of methods: learning stories; video diaries and reflections; videoed staff meetings and 'group-time' discussions; oral interviews with Māori elders; and stimulated recall interviews with children about their photography.

As there had been little research into ECE pedagogy outdoors in this country to date, this project aimed to better understand what nature-based learning might look like in a range of ECE settings in Aotearoa New Zealand. We also wanted to examine the relationship between nature education and sustainability. The combination of research tools and questions across research sites helped us to see and hear children's and teachers' perspectives of learning experiences in nature settings. Findings suggest a variety of ways that learning occurs in natural environments, what it might entail and some of the pedagogical issues and challenges teachers face.

Key findings

1. Teachers call upon a combination of sources to inform their practice. Some are unique to Aotearoa New Zealand, for example the *Treaty of Waitangi*, *Te Whāriki* and Enviroschools, while others are international such as the United Nations Convention on the Rights of the Child (UNCROC) and early childhood education for sustainability (ECEfS).
2. Nature environments 'within' and 'beyond the gate' are powerful contexts for children's learning in, about, for and *with* the environment.
3. Children, teachers, and Papatūānuku—the living earth—are partners in 'place responsive' relationships, and agents in a curriculum that responds to the daily provocations of nature itself.

4. Through careful scrutiny of their practice, teachers ‘revised’ their pedagogical roles in relation to the curriculum in the outdoor classroom.
5. Nature education and education for sustainability foster affective learning and incorporate embodied ways of knowing. They involve minds, bodies *and* hearts.
6. Relevant teaching strategies outdoors include observation, silence and being a play partner. Mediating or community building teaching strategies consistent with collective ways of being, knowing, hearing and seeing are also highlighted. All are associated with nature-based learning.
7. Multiple opportunities and possibilities for hands-on, real life play, creativity and learning, risk and challenge are readily available in nature environments.
8. Very young children are agents of their own learning and this agency is magnified in the outdoors. Teachers who take the time to listen and see children’s rich contributions are enriched themselves.
9. The natural route to sustainability for young children is via discovery, and experience, of the wonder, mystery and enjoyment of the natural world we inhabit alongside other living things.

Table 1: Example of key findings in relation to supplementary research questions

Research site	Supplementary question	Key findings (in brief)
Campus Creche Preschool Ngahere Explorers programme	How do teachers ‘see’ children’s dispositions being affected by nature-based curriculum experiences?	Learning stories and video diaries highlighted the primacy teachers gave to three key dispositions: resilience, key to engaging with nature, imagination via storytelling, and reciprocity seen in becoming a group member (Carr et al., 2009).
Campus Creche Teenies	What professional judgments do teachers make during outings with children, and why?	The darker side of risk (Stephenson, 2003) and consideration of opportunities and challenges for toddlers, featured in video diaries. Judgements based on knowing the child and environment, trusting others and working out whether to intervene and when, were all highlighted.
Papamoa Kindergarten	How do children express their working theories after regular engagement with nature outside the gate?	Findings show the multi-modal ways children express working theories; teachers’ increased consciousness of their power when making assumptions about children’s interests and meanings, thereby hijacking the direction of activities or conversations (Peters & Davis, 2011); and embracing uncertainty in teaching and learning.
Paengaroa Kindergarten	How does the nature environment influence teacher pedagogy?	The powerful influence of nature on pedagogy was reinforced as teachers acknowledged the time and space the environment afforded them. Teachers became mindful of slowing down, standing back and observing, and talking as team to reach shared understandings of what constitutes safety and risk.
Maungaarangi Kindergarten	What can local tikanga Māori teach a kindergarten learning community about engaging with nature?	Teachers realised the depth of the children’s understanding of the kindergarten’s kaupapa and tikanga Māori. Elders identified that the kindergarten curriculum – even within the gates—was reinforcing tikanga drawn from local and wider Māori ways of knowing.
Home-based ECE service	What do children ‘see’ in nature-based education beyond the gate?	Children’s photographs showed their unique ways of seeing. Stimulated recall interviews highlighted how adults assume they know what children are thinking and seeing. This insight caused a major shift in planning and assessment practices.

Major implications

1. These teachers came to understand and appreciate more about pedagogy informed by *Te Whāriki*, the early childhood education bicultural curriculum (Ministry of Education, 1996), and its relationship to nature education and sustainability, through this action research. They revised *Te Whāriki* rather than seeing that a paradigm shift was needed to ‘return to nature’ in their pedagogy. These findings suggest that it is timely, two decades after the draft curriculum was published, to revisit the curriculum document. Moving beyond the principles, strands and learning outcomes of the curriculum, teaching could benefit from a renewed focus on the adult responsibilities and what learning should look like for different groups; infants, toddlers and young children, as specified in *Te Whāriki*.
2. Early childhood education in Aotearoa New Zealand continues to draw on European traditions from Froebel, Montessori, Steiner, Reggio Emilia and more recently Forest School. While this latter phenomenon is gaining popularity here, teachers need to be cognisant that Knight, a leading English-speaking authority on Forest School relates the four principles of *Te Whāriki* to the aspirations of Forest School. It is also significant that many of the key elements that define Forest School are evident in nature-based provision in Aotearoa New Zealand today and were so before study tours and literature became available. For example, this research was mostly conducted where the nature-based education occurred in settings ‘beyond the gate’; the programme was as safe as reasonably possible in order to facilitate risk-taking; it happened over time (weekly, fortnightly or several times a term); bad weather was not a deterrent; trust was central; learning was play-based and as far as possible child-initiated and child-led. The exceptions to key elements as discussed by Knight (2009) were the absence of Forest School trained staff and seldom did we encounter a ten-week programme.
3. The luxuries of unhurried time, ‘wild’ open spaces, and fewer distractions including noise, supported teachers’ mindfulness throughout this research project. Nature environments enabled them to slow down, ‘be present’, recognise more, and teach intentionally. These kinds of programmes do not exist for all children in Aotearoa New Zealand. Without the personal and professional ethical, financial and philosophical commitments on the part of all involved in this project, it is unlikely that these nature-based experiences would exist. A national commitment is needed for such programmes to be available in all ECE sites. Based on the experience on this study, such commitment should take the form of professional development programmes, targeted funding, mentoring, and increased recognition of the additional support that is necessary.
4. Child-initiated, child-led play based learning outdoors involves challenge and risk. In order to recognise both their competence and their vulnerability outdoors, it is important to get to know each child. Nature-based education is complex and must be approached with care, ongoing dialogue and constant decision-making. Knowledge about each child, and cognisance of the governing regulations, careful planning and preparation, and teamwork are all essential to children’s wellbeing beyond the ECE setting gate. Our findings foreground the importance of professional relationships that involve high levels of trust: trusting the environment; adults trusting each other (dialogue and constant decision-making); communication; and knowledge of the environment.
5. Natural environments contain huge potential for learning, including multiple possibilities and opportunities for exploration and play. Adults knowledge of the environment is important alongside recognising that the natural environment is the *context for* learning and not just the *focus of* learning. Knowing about the local land features from traditional Māori and non-Māori perspectives supports teachers to become more ‘place responsive’ in their teaching outdoors and ‘beyond the gate’(Wattchow & Brown, 2011). Sustainability principles are allied with tikanga Māori values of accountability for the living earth. Children can learn these values in many ways including through pūrākau (traditional stories) that emphasise kaitiakitanga and manaakitanga—guardianship of, and care for Papatūānuku and her children. Relationships with the local environment are deepened when families’ funds of knowledge and those of local iwi are sought and incorporated.

6. This project complements the research project *Titiro Whakamuri, Hoki Whakamua. We are the future, the present and the past: Caring for self, others and the environment in early years' teaching and learning* (Ritchie, Duhn, Rau, & Craw, 2010) and adds to our unique Aotearoa New Zealand contribution to education in the outdoors, and its relationship to sustainable practice. Our findings are consistent with *Te Whāriki*, (Ministry of Education, 1996) and ECEfS—early childhood education for sustainability (Davis, 2010). Rather than copying what happens abroad, we need to continue to evolve distinct ways of doing things that highlight the unique social and cultural context this country provides alongside our bi-cultural curriculum and sector diversity.

The Ngahere Project findings—summary diagram

Figure 1: Nature-based learning in Aotearoa New Zealand

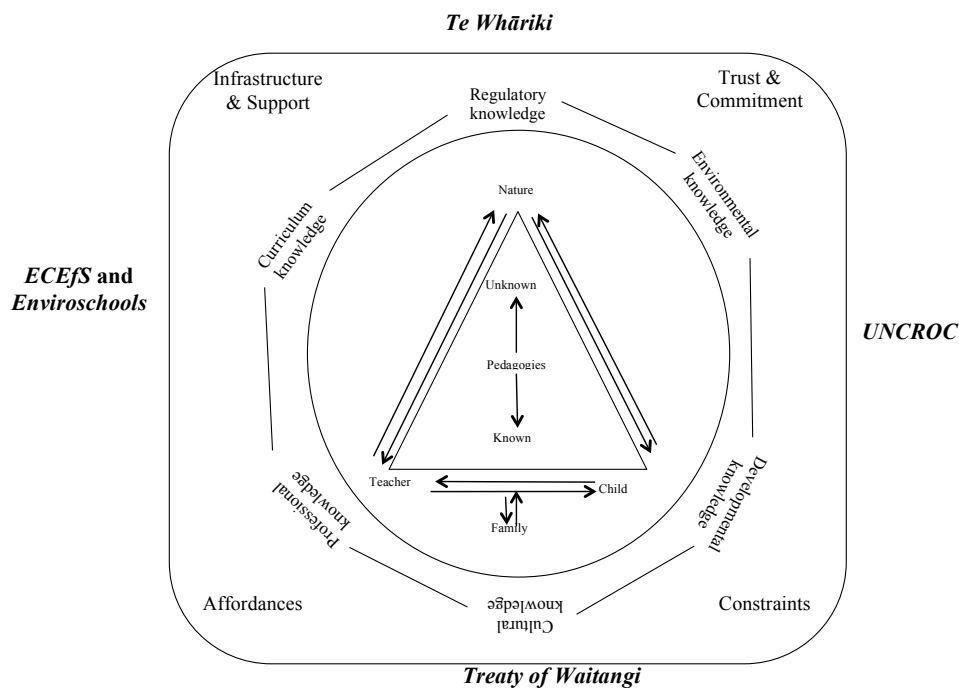


Figure 1: Nature-based learning in Aotearoa New Zealand summarises our findings by highlighting the relationships and interconnections between nature and teachers, children and their families, as well as the sophisticated knowledge base that is required. Teachers in this country draw from a range of documents and knowledge in their pedagogy and recognise the rich potential of the environment. Throughout the research project, children’s right to play and to have regular access to nature and culture were celebrated and affirmed.

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CHAPTER 1: INTRODUCTION

Nature-based learning ideals have existed for several thousand years. The significance of experiences in nature for young children's learning and development has been expounded by philosophers and educationalists dating back to Rousseau (2003 [1762]). In many contemporary early childhood education (hereafter referred to as ECE) settings, such experiences are highly valued. Nowadays, Froebel's notion of kindergarten as 'a children's garden' is likely to be complemented by ideas from Steiner, Montessori, Malaguzzi, and more recently by Scandinavian notions of Forest School (Knight, 2009; Robertson, 2008). In our focus group discussions, participants referred to this phenomenon as 'Forest Kindergarten' in acknowledgement of the Forest School influence on ECE in this country. The bush or 'Ngahere', as it is known in Te Reo Māori or Māori language, is increasingly being seen by Aotearoa New Zealand teachers as a significant learning environment for young children.

This action research project, called *The Ngahere Project*, explored teaching and learning possibilities in nature-based settings 'beyond the ECE setting gate'. The pedagogical issues and provocations teachers encountered during their regular engagements with nature are detailed in this report. It is our hope that these provocations will enhance current debates about the location of nature-based learning within ECE pedagogies. As we engage ECE and other audiences, nationally and internationally, in dialogue about the implications for teaching and learning in the outdoors, we seek to expand on the specific learning potential in wider contexts, from local perspectives. In doing so, we claim that Aotearoa New Zealand offers unique opportunities for strategic engagement with the natural environment and associated sustainability issues that are only beginning to be realised in the literature, in our view.

As international curriculum leaders, we also see that we have much to contribute to the worldwide community in relation to pedagogical implications for education in the outdoors. This contribution is in keeping with Aotearoa New Zealand's emphasis on diversity and bicultural practice, two cornerstones of *Te Whāriki, He Whāriki Matauranga mo nga Mokopuna o Aotearoa* (Ministry of Education, 1996), the early childhood education (and first bicultural) curriculum document. Both are evident within nature-based education and in children's "ability to enquire research, explore, generate and modify their own working theories about the natural, social, physical and material worlds, working theories about the living world and knowledge of how to care for it" (p. 90).

i *The Ngahere Project*—background to the research

The Ngahere Project developed out of provocations from ECE teachers who had undertaken Forest Kindergarten study tours to Europe and the United Kingdom in 2009. The ideas they brought back to their settings struck a chord with their colleagues, their organisations and local communities. Combined with existing projects related to education for sustainability (*EfS*) and EnviroSchools already taking place in their ECE settings, an agenda developed to work with children, families/whānau and communities to understand and experience nature settings beyond the gate.

Teachers approached the researchers at the University of Waikato to invite their collaboration on an investigation of practice, based on existing relationships and relevant strategic goals. In doing so, they sought academic partnership and complementarities of expertise (Kemmis & McTaggart, 2005) in order to achieve their goals. Both organisations have explicitly committed to education for sustainability (*EfS*) values and beliefs in their strategic plans and are committed to the ongoing implementation of *Te Whāriki* and high quality teacher-led ECE.

Hence, *The Ngahere Project* was conceived. Ngahere, the Māori word for bush, was specifically chosen for this project to differentiate what happens in these settings, in Aotearoa New Zealand, from the Forest School movement gaining momentum in Europe and the United Kingdom (Knight, 2009). Whilst parallels can and will be drawn, the unique, diverse cultural,

historical and social contexts of ECE settings in this country are significantly distinct to warrant regular nature-based education in bush settings being seen as a separate phenomenon.

Teachers, children, families/whānau and members of the communities in these settings (hereafter referred to as ‘research sites’) are committed to the collaborative action research project. Three sessional or extended day kindergartens, two full day education and care centres and a home-based education setting were involved. Together, we sought to explore regular nature-based excursions, as teachers worked within their communities to examine the pedagogical and practical implications of teaching in the outdoors.

From the outset, therefore, teachers shared a commitment to providing research based on Davis’s (2009) assertion that there is a “research hole” in the area of ECEFS, as well as seeking to explore the practice of outdoor experiential learning beyond the gate, within the ECE sector. This research gap seemed to be around the pedagogy of teachers’ practice in sustainability rather than the busy ‘practice’ itself, for example, gardening, worm farms, composting, and water conservation and so on. While sustainable practices were valued, we were keen to unearth teaching and learning strategies, beliefs and processes that sat underneath these practices. It seemed that there was a risk of teachers doing things because the curriculum/programme advocated it rather than what we came to describe as ‘dialogic and responsive teaching’. Hence, the importance of knowing what we (as teachers and learners) are doing, and the reasons why, became the starting point for our enquiry. This led to “problematizing [our] pedagogy” in a number of settings (Edwards & Nuttall, 2005).

ii The shape/structure of the report

This report discusses the main findings from our action research *The Ngahere Project*. It contains six chapters. Chapter 2 outlines the context to the study. Key literature in a number of related areas is reviewed including: experiential learning; play and nature; place-based education; Forest School; indigenous perspectives; education for sustainability (EfS) including EnviroSchools; and the role of the adult. Next we look at the nature-based learning contexts relevant to *The Ngahere Project*. The six kindergarten and education and care settings, their immediate neighbourhoods, such as the farm next door or stream adjacent to their setting, and the places teachers, children and families/whānau travelled to, on a regular basis, will be identified and briefly discussed.

Chapter 3 introduces the research methodology, including “the principles and values, philosophies and ideologies that underpin the research” (Roberts-Holmes, 2011, p. 22). This chapter also provides details about: the research participants; profiles of the participating early childhood education settings; specific phases of the action research cycle we used; the two overarching research questions, and the six specific research questions and methods used to generate data; theoretical perspectives; and data analysis.

Two findings chapters follow—the first (Chapter 4) relates specifically to the provision of nature-based education in answer to the overarching question: What might nature-based learning look like in diverse Aotearoa New Zealand ECE services that are committed to sustainability? The second findings chapter (Chapter 5) responds to the second overarching research question: What are some of the pedagogical issues and provocations teachers face in this domain? Both chapters draw heavily on data generated from an initial and final focus group that were audio-recorded as part of the project and data that was generated by participants during the research itself.

Finally, in Chapter 6 we synthesise the research findings to consider what we have learnt through the research process. We make suggestions about possible directions for policy and practice. Several areas are identified where we see further research being beneficial to the sector. We also note some limitations of the study and areas for development. References, make up the remaining section. Throughout the report, we offer some insights as a means of theorising nature-based learning and its relationship to sustainability through an examination of provision and pedagogies ‘beyond the gate’.

CHAPTER 2: THE STUDY IN CONTEXT

In this chapter we set the scene for *The Ngahere Project* by introducing the conceptual and physical context for our investigations. We begin by examining the literature that informed and shaped the teachers' practice in outdoor education, and conclude by introducing the sites for their investigations. Taken together, they offer insights into the approaches taken by teachers and their pedagogical imperatives.

2.1 Introducing the field

Although there is now a vast body of literature on the broader topic of sustainability, and its location in nature-based education programmes, much less is known about the associated pedagogies or their orientations. As already mentioned (see Chapter 1: i) Davis (2009) describes the absence of research in the field of ECE as a “hole” (p. 227) arguing that it is an aspect that has received little attention until recently. There are several reasons cited for this phenomenon, not least the perceived newness of ECE and ‘Education for Sustainability’ under the broader framework of ECEfS (Davis, Engdahl, Otieno, Pramling-Samuelsson, Siraj-Blatchford, & Vallabh, 2009). ECEfS is an approach to learning that promotes ecological awareness through engagement with nature (Duhn, Bachmann, & Harris, 2010).

Yet outdoor education is not merely posed as a political initiative promoting sustainable ecologies in the ECE literature. Claims are also made (see for example Chawla, 2006; Cornell, 1998; Littledyke, Taylor, & Eames, 2009; Ward Thompson, Aspinall, & Montarzino, 2008; Wells & Lekies, 2006) that educational experiences have positive benefits for children and their life-long learning—enhancing a sense of rhythm, social skills, and the restorative potential such engagement can provide in relation to health, well-being, and ‘nature deficit disorder’ (Louv, 2010). Similar claims are also made, and perhaps even reconciled within the ECEfS agenda, from an indigenous perspective. Here an anthropomorphic view of nature as nurturer and sustainer of life is posed (Ritchie, 2011; See also eco-feminist principles) with an associated ethic of care (Noddings, 2005). Taken together, these concepts set the scene for an Aotearoa New Zealand approach to education that draws on experiential learning as a basis of bi-cultural nature-based education.

While a detailed examination of the discourses that inform these contemporary approaches to sustainable practice in education is beyond the scope of this report (for further reading see, for example, Tulloch, 2012; White, Kelly, & Zusammenarbeit mit Lehrerinnen und Lehrern des Ngahere Projekts, 2011), it is important to recognise that they exist within texts, practices and the languages that are used to convey them (Dahlbeck, 2012). Notwithstanding this recognition, the chapter that follows explores the range of literature, and associated discourses and practices, that dominated the ECE landscape at the time of writing. These framed the location of nature-based ECE education within the broader notion of sustainable practice in *The Ngahere Project*.

2.2 Experiential learning and teaching

Experiential learning as a pedagogical route to nature-based ECE education has its origins in the educational theories of John Dewey (although ideas originated before his time, for example, in the writings of Rousseau, Pestalozzi, and Froebel). Dewey (1920) suggested that it was possible “to make claims for experience as a guide in science and moral life” (p. 78) and therefore paved the way for learning based on real life experience. In *The school and society*, Dewey (1915) specifically advocated an experiential approach to student learning in the local environment, suggesting that experience is influenced by its geographic, artistic, literary, scientific and historical locations (Woodhouse & Knapp, 2000).

Dewey's ideas still hold currency today and have been developed further by ideas from Steiner, Montessori, Malaguzzi, and more recently by Scandinavian notions of 'Forest Kindergarten' (Knight, 2009). These ideas combined with work by environmentalists Thoreau, Carson and Leopold (Cafaro, 2001) lay the foundations for education in, about, and for the environment (Davis, 2010; Davis, Elliott, & Early Childhood Australia, 2003). Ideas from each of these three disciplines can be seen in Laevers' (2000) 'Experiential Education' ECE approach whereby "children are helped to develop an attitude of linkedness with: (1) themselves; (2) the other(s); (3) the material world; (4) society; and (5) the ultimate unity of the entire eco-system" (p. 23).

Ideas about real life learning and deep-level learning are being used now to investigate how children develop strong dispositions and competencies towards learning and a positive learner identity, fundamental for life in the 21st century and lifelong learning (Carr & Claxton, 2002; Claxton, 2002; Claxton & Carr, 2004; Laevers, 2000). Several educationalists, for example Waite (2011), Maynard & Waters (2007) and Bailie (2010), advocate for experiential learning in the outdoors based on the principle that children are curious and playful and need to explore their wider world. They also possess natural instincts which nurture creativity when unleashed. This relationship between learner and the wider world is described by Brownlee (2007) as a 'love affair' that is nourished with experience:

Young children need countless opportunities to explore Mother Earth and Her treasures, growing their senses of belonging as a citizen of this amazing planet. Our children are dependent on us for access to experiences. It is our job to see that they have rich experiences, and to provide more 'helpings' of experiences they have enjoyed. Conservationists are not born from one bush walk. A love affair with the bush, like any deep love, takes time to grow and develop". (p. 12)
[Her capitals and speech marks]

In a similar vein Franke (2011) conveys the relationship as an appreciation, or communion with. He cites poets who share romantic and philosophical ideals, personifying nature through engagement; giving nature a will and a personality of its own. This is akin to Water's anthropomorphic trees' talking (2011) and to the personalities of nature found in pūrākau, or traditional Māori stories such as 'the story of creation and the separation of Ranginui, the sky father and Papatūānuku, the earth mother by their children'. This is the genesis of nature according to Māori, pre Christianity.

An appreciation of the 'living' qualities of nature through the senses rather than exclusively through cognitive means has been described as a dialogic process (Hardy, 2006). While nature can be experienced through sight, sound and touch, it is simultaneously unknowable and uncertain within this view. Seen in this way, human engagement with nature evokes a response and is characterised by surprise. According to Hardy, nature can be seen to have many voices of its own, including silence or the dawn or dusk chorus. Teaching and learning in dialogue with nature therefore requires "active listening, humility and playfulness" (p. 274). The natural world demands no answers but instead invites openness towards what can be gained from it. The development of children's 'naturalistic' intelligence, as characterised by a fascination with and affinity to the natural world and animals (Gardner, 1998) can be encouraged through the provision of playful learning experiences that connect children to the environment as a natural world through which they will gain insight and perspective.

Children's right to play and to have regular access to the culture, recreation and the arts are also enshrined in Article 31 of the *United Nations Convention on the Rights of the Child* (United Nations, 1989). Traditionally, 'play' and 'nature' have been fundamental tenets of early childhood education. These "two ecological contexts help sustain healthy human beings" according to Waters (2011) who argues that both of these contexts are being "eroded from many children's lived experiences" (p. 251). Alderson (2008) also suggests that we have become overprotective of children. This assertion and its underlying tensions is addressed in recent ECE literature where the issue of safety and its interrelationship with risk and challenge appears often. For example, Stephenson (2003) talks about "the 'darker' side of risk—seeing the uncertainty, the possibility of failure, of injury" (p.42). (See also: Elliott, 2010; Huggins & Wickett, 2011; Waite, 2011; Waite, Davis, & Brown, 2006.) Whereas, Cooke (2010) asserts that "healthy child development relies on being able to take risks, face challenge and overcome diversity" (p. 250).

Children are also being denied the freedom to be expressive, creative and active in the belief that we are looking after their best interests according to Alderson (2008). Meanwhile, Peck (cited in Cornhill & Grey, 2010) reinforces connections between play, the arts and the garden. This author suggests:

Play is essential to the life of the kindergarten child. The garden is not only the richest setting for play, but it holds in secret all of the life's lessons to be discovered by the child. It is truly the source of wisdom and the basis of all art. (p. 79)

A number of writers have linked an awareness of nature with respect and care for the environment. According to Wattachow and Brown (2011) an appreciation of nature's presence in one's life leads to environmental awareness. Plotkin (2008) argues that this awareness and subsequent care are attainable through play for the young child. Meanwhile, Hardy (2006) posits that nature is the 'other' and when it is viewed as a subject in its own right (rather than an object for human manipulation) nature demands respect. Such a view is deeply ethical and promotes a response. Thus learning is not gained merely by visiting nature spaces, but rather through "answerability" as a result of this dialogic encounter (Hardy, 2006, p. 275). Answerability implies that sustainable practice is a natural response within a loving relationship with other (White, Kelly et al., 2011). Since play is now viewed as a significant medium for learning (Plotkin, 2008)—especially for very young children—the relationship between play and nature is frequently drawn. When aligned with notions of sustainability, place-based education plays a prominent and active role in this education process (Wattachow & Brown, 2011).

2.2.1 Place responsive education

In '*A pedagogy of place*' Wattachow & Brown (2011) ask:

Why place? Because place refers to a participatory and experiential phenomenon. Our experience of place is always a combination of a specific physical location, our embodied encounter and cultural ideas that influence the interpretations that we make of the experience. This provides rich potential for outdoor [we could say ECE] educators who are already well versed in experiential pedagogies. (p. ix)

Place-based, place-responsive, place-conscious or ecological education is a distinctive type of experiential learning. Notions of affective learning are evident in this tradition which draws heavily on responsiveness to place as a source of identity, security and "a way of understanding how humans live, experience and relate to particular locations on the earth's surface" (Wattachow & Brown, 2011, p. 51). Citing Lines (2001, p. 65) the authors suggest that place is experienced through embodiment, that is the feel or sense of an experience "through what I could sit on, touch, taste, see, breathe, smell and move within" (p. 72). Here the notion of biophilia is invoked as a means of supporting learners to develop "the innate tendency to focus on life and lifelike processes" (Wilson, 1984, p. 1). As such, pedagogical imperatives are located in existential realms of engagement commonly referred to as place responsive pedagogy (Everett, Noone, Brooks, & Littledyke, 2009). They refer to sustainable living as a disposition that can be communicated or understood through holistic engagement in artistic or creative projects where we engage with hearts as well as hands and minds.

Orr (2005) argues that we should let "the place itself become an agent in the curriculum" (p. 97). This view clearly connects to the significant role of place or places in *Te Whāriki*. The curriculum document emphasises "the critical role of socially and culturally mediated learning and of reciprocal and responsive relationships for children with people, places, and things" (Ministry of Education, 1996, p. 9). Learning within ECE settings and beyond the gate within this approach signals implicit connections with children's natural, social and cultural worlds through these relationships. Engagement with places, therefore, has the potential to build learning power and learner identity through empowerment and holistic development that is central to Aotearoa New Zealand ECE curriculum. This view is also shared by ECE

programmes elsewhere, including the Forest School movement that had significant influence on the current study.

2.2.2 The influence of Forest School

Several authors (Comisiwn Coedwigaeth Cymru/Forestry Commission Wales, 2007, 2009; Knight, 2009) from the United Kingdom, trace the origin of Forest School in their part of the world to a visit to Denmark, in 1994, by the early years department at Bridgewater College. They also note that this movement draws inspiration from a number of interrelated sources, citing Pestalozzi, Frobel, Steiner, Montessori and Reggio Emilia along with the Outdoor Adventure Education movement as influential to Forest School programmes in the United Kingdom. Knight (2009) notes that the New Zealand curriculum *Te Whāriki* and Claxton's 'Building Learning Power' have developed in parallel with Forest School. She relates the four principles of *Te Whāriki* to the aspirations of Forest Schools, arguing that "Forest School is one way, *Te Whāriki* another" (Knight, 2009, p. 65).

The physical, cultural and geographical contexts for Forest School are different to standard educational programmes according to Waite, Davis, and Brown (2006). They stress that a key concern of the movement has been to distinguish Forest School from other outdoor activities with children. In their small study they found distinguishing factors to include emphasis on repetition, sustained period of time, spontaneity and choice. A range of skills alongside behavioural, social and emotional development were identified in terms of learning outcomes. They point out that

Although the natural environment was essential in Forest School, it was not the *focus of learning* but the *context for learning*. This echoes findings by Dillion et al., (2005) that use of the outdoor context is heuristic, so that the purpose and process within the context was more important than the context per se. (Waite, Davis, & Brown, 2006, p. 11)

Regardless of whether the outdoor context is in woodlands, on-site or within walking distance or a short bus ride away from the education setting or at a woodland education centre, Knight's (2009) definition of a Forest School includes the following principles: i) not the usual setting; ii) as safe as is reasonably possible to facilitate risk taking; iii) happens over time (minimum of a half day a week over ten weeks); iv) no such thing as bad weather, only bad clothing; v) trust is central; vi) learning is play-based and, as far as possible; vii) child-initiated and child-led (pp. 15–17). These principles differ from the Norwegian Forest School (Comisiwn Coedwigaeth Cymru/Forestry Commission, 2009) where emphasis is placed on the development of social, physical and cognitive skills as key outcomes for engagement in the outdoors. A number of feasibility studies and evaluations of Forest School have also been carried out, mainly in the United Kingdom, where the governments, forestry commissions and educationalists are looking to extend provision (see for example Borradaile, 2006; Knight, n.d.a; O'Brien & Murray, 2005, 2007; Robertson, Martin, Borradaile, & Alker, 2009).

Knight (n.d.a) notes that there is a cultural concept missing from British, Welsh and Scottish Forest School. It has a different identity to its origins in Scandinavia where it is closely linked to their philosophy of outdoor life or '*friluftsliv*' described as 'open air living' (Henderson & Vikanger, 2007 cited in Gambino, Davis & Rowntree, 2009). Other authors also make the point that the tradition of all-weather outdoor learning for young children is closely connected to Nordic identity which like other cultures including Aotearoa New Zealand has its own 'culturally specific philosophical and ontological bases' (Einarsdóttir & Wagner, 2006; Taylor & Guigni, 2011). Indeed, Henderson & Vikanger (2007) caution against transplanting traditions and their associated cultural and social norms and practices to other countries and continents (cited in Gambino, Davis, & Rowntree, 2009). Nevertheless, Knight (n.d.b) suggests we ought to consider whether Forest School can act as a spur to better quality outdoor experiences? These are important points in light of learning in the outdoors in this country.

2.3 Indigenous perspectives

Throughout the world, indigenous approaches to nature, conservation and sustainability are rife with moral and ethical principles of accountability (Davis, 1993). Respect for nature is synonymous with care and nurture in this domain. Suzuki (2010) suggests that the lack of care in Western society, evident in practices such as harvesting of land for personal gain, marks the origin of the current ecological crisis. In much of the nature-based ECE literature that exists in Aotearoa New Zealand today, beliefs such as these are evident in consistent references to Noddings' (2005; 2007) 'ethic of care' (see for example, Ellwood, 2010; Ritchie, 2010) or within the notion of spirituality (Ryder, 2007, see also Bone, 2008; Bone, Cullen, & Loveridge, 2007).

Te Whāriki supports indigenous Māori cultural practices and beliefs about the earth. Among these is "the need to live as closely as possible with nature, to learn about it, to understand it" (Pere, 1991, p. 9). For Māori, like many indigenous cultures, nature is seen as a critical source of energy, something that can stimulate imagination and develop creativity. In Aotearoa New Zealand, when indigenous people introduce themselves in Te Reo Māori (mihimihi) they will usually identify specific geographical features associated with their tribal area including their maunga (mountain), awa (river) and moana (sea). They may also identify their waka (ancestral canoe), hapū (sub tribe), iwi (tribe), marae and the ancestor they were named after as a source of genealogical, spiritual and geographical connection, identity and pride.

Traditional and contemporary indigenous views of sustainability (see, for example Ritchie, Duhn, Rau, & Craw, 2010; also Davis, 1993) are underpinned by a relationship with the land and the custodial nature of engagement that is necessary for its long-term survival. Māori views of nature are enshrined in the metaphor of *whenua*, which can be interpreted as both land and placenta. As Pere (1991) explains, "whenua offers one the same feeling of warmth, security, nourishment and sustenance, a feeling of belonging" (p. 22). Thus the natural environment sustains the individual—*Mauri* alludes to the life force in every living thing and gives sustenance.

In Te Ao Māori or a Māori world-view, the holistic and cyclic Māori world-view, Papatūānuku (apa) is the personified earth mother, Ranginui (Rangi) is the sky father and every person is linked to every living thing and to the gods (Ka'ai & Higgins, 2004). Every living thing, including inanimate objects like trees and rivers, is believed to have a spirit or mauri, a life force. Narratives too are highly significant, often telling the stories of heroic ancestors. They are commonly steeped in personal interpretations of actual events to make sense of phenomenon in the environment (Pere, 1998). Māori "interpret the landscape differently from Pākehā or white people and, bestow importance on places and geographical features in a different way" according to Ka'ai & Higgins (2004, p. 13).

Indigenous approaches to learning also connect heart, hand and head and are deeply concerned with place. Mika (2011) suggests that the Māori term whakapapa means action, or to act for (whaka), towards the living earth (papa) through encounter. As Ritchie (2010) further explains, this world-view is embedded within an ethic of care that is underpinned by notions of *aroha*, *whānaungatanga* and *wairuatanga* simply explained as love, kinship and spiritual connectedness (p. 11). Taken together, these concepts provoke an action of care and concern that is shared by all within the community. Such priorities are noted in the following abstract from a recent Teaching and Learning Research Initiative project (Ritchie, et al., 2010), outlining a raft of subsequent publications about this ECE research which

focused on global issues of ecological sustainability in a variety of local early childhood education contexts, drawing from both kaupapa Māori and Western perspectives. Ecological sustainability as a teaching and learning issue (Gruenewald, 2003) was, within this project, philosophically grounded in an ethic of care (Martin, 2007; Noddings, 2005) and an ethics of place (Smith, 2001, with a particular focus on respect for Papatūānuku, the Earth Mother (Marsden, 2003). Retrieved from <http://www.tlri.org.nz/titiro-whakamuri-hoki-whakamua-we-are-future-present-and-past-caring-self-others-and-environment-ear/>

This Māori belief system is aligned with indigenous perspectives from across the world. For example, Davis (1993) explains the sacred meanings embedded in social relations with nature:

This close attachment to the land and the environment is the defining characteristic of indigenous peoples: it is what links together, in a philosophical and cosmological sense, numerous geographically disparate and culturally diverse peoples throughout the world. (p. x)

An indigenous view of the land and the environment is also evident in the statement by Aldo Leopold (1949/1987), a pioneering environmentalist. Leopold argued that “We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong we may begin to use it with love and respect” (p. viii). This view of the land as a community rather than a commodity resonates with indigenous views. Adopting a Māori approach to sustainability, then, the role of the teacher (and everyone else too) in sustaining the world is as *kaitiaki*, steward or guardian (O’Connor, 2011; O’Malley, 2008; Ritchie, 2010). This guardian of the land—as community—has an appreciation of the historical significance of the land through understanding and enacting the stories that tell of its genesis (Wattchow & Brown, 2011).

Māori perspectives are integral to Enviroschools/Kura Taiao, an Aotearoa New Zealand phenomenon based on the principle of sustainability and partnership; a way of being and acting that nurtures people and nature, now and in the future (Eames, Barker, Wilson-Hill, Law, & Mardon, 2010). Enviroschools starts from an interrelated philosophical and pedagogical basis and involves indigenous perspectives, sustainability, social justice, democracy and active citizenship. Key values, concepts including a ‘sense of place’, and associated learning processes are taught in an attempt to create healthy and viable schools, communities and ecosystems. These teachings honour the status of the indigenous people of the land. There is recognition that Māori perspectives and knowledge of the environment offer unique insights built up over time (see, for example, www.enviroschools.org.nz).

2.4 Early childhood education for sustainability (ECEfS)

The concept of sustainability is arguably one of the most serious issues of our time. It encompasses natural, social, economic, cultural and political dimensions. The Brundtland Commission report defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 43). The slogan ‘Enough for all, forever’ is also commonly used (Queensland Government Department of Education, Training and Employment (DETE), 2008). Sustainability is the driving force behind Enviroschools (Eames, et al., 2010) and other education for sustainability (EfS) programmes and experiences happening in education settings (Davis, 2010). In early childhood education, where we recognise the environment as the ‘third teacher’ (Malaguzzi, 1998) sustainability and associated practices are becoming increasingly common. Kelly (in press) argues that the concept of sustainability can be applied to anything from decisions about the arts budget, the future of excursions to the bush, planting the sand dunes to prevent further erosion, or to issues relating to the national economy, such as child poverty, or the global environment.

Sustainability is a contested concept with a unique, yet not unproblematic, relationship with nature-based education and experiential learning (Dahlbeck, 2012). The education for sustainability field draws from a series of overlapping spheres of influence including education, philosophy and environmental studies (Dryzek, 2005; See also Ärlemalm-Hagsér & Sandberg, 2011; Davis, Elliott, & Early Childhood Australia, 2003; Littleddyke, Taylor, & Eames, 2009) alongside influential, well documented, international initiatives. These notions are prominent in current thinking around the future of the planet and the role that education should play:

The ecological crisis is in every way a crisis of education... “All education is environmental education ... by what is included or excluded we teach the young that they are part of or apart from the natural world.... The goal is not just

mastery of subject matter but making connections between head, hand and heart.
(Orr, 2005, pp. x–xi)

At least three disciplines—philosophy, education and environmentalism—are involved within this discourse. Together they construct the basis for early childhood education for sustainability (ECEfS). For example Rousseau (2003 [1762]) insisted that nature is the child’s ‘best teacher’; Malaguzzi (1998) argued that the environment is ‘third teacher’ after adults and peers and Froebel saw educators as ‘gardeners’. In this locale education is viewed as the cultivation of values, calling on traditions that stretch from Plato through Rousseau to Dewey and Alfred North Whitehead. Orr (2005) argues that

Education, as they knew, had to do with the timeless question of how we are to live. And in our time the great question is how we will live in light of the ecological fact that we are bound together in the community of life, one and indivisible. (pp. x–xi)

Meanwhile, Rachel Carson, a founder of the modern environmental movement wrote *The Sense of Wonder* in 1956, in which she records her observations of nature with her young grand-nephew. She urges parents [and teachers in loco parentis—our emphasis] to introduce their children to the wonders of nature all around them and to nurture a child's innate sense of wonder and beauty. The following quote is reproduced in Davis, Elliott, and Early Childhood Australia (2003):

If a child is to keep alive his inborn sense of wonder ... he needs companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in. (Carson, 1998, first published 1956, p. 55)

The *United Nations Decade of Education for Sustainable Development* (2005–2014) challenges teachers and teacher educators to reflect on the contribution education can make to a sustainable future (UNESCO, 2005). They establish parameters around the question “How should we live?” Pramling Samuelsson & Kaga, (2008; see also Davis, 2010) respond to this challenge by suggesting that ECE is the key institutional site beyond the family where life-long learning starts. They argue that basic values, attitudes, skills, behaviours and habits about nature developed in the early years can last a lifetime. According to Fien (2003) an awareness of our connections with, and in the world, and an attitude of caring are required. Again this suggestion points to education and the role of the teacher or significant adult in a child’s life as being influential.

Interest in ECEfS has increased in parallel with the dedicated *United Nations Decade of Education for Sustainable Development* [2005–2014] (Siraj-Blatchford, Smith, & Pramling Samuelsson, 2010). A range of specific ECE and early years texts dedicated to this topic have been published recently, for example: Davis (2010), Knight (2009), Waite (2011), Littledyke, Taylor & Eames (2009) and special issues of journals, for example *Education 3-13* (2009, 37, 1). The goal of the dedicated United Nations decade, and the education associated with it, is the creation of a “better world for this generation and future generations of all living things on planet Earth” (UNESCO, 2005). There is widespread agreement that environmental education and education for sustainability should begin in early childhood; the starting point for lifelong learning (Carson, 1956/1998; Chawla, 2006; Davis et al., 2009).

Davis, Elliott, and Early Childhood Australia (2003) and Davis (2010), leading writers in the field of ECEfS, offer a structure for thinking about contemporary practice:

Education **in** the environment: seeks to foster wonder, empathy, and love for the natural world; playing with water and sand, collecting leaves, creating habitats for birds and insects and gardening are all practices for building responsive and Earth-nurturing values and behaviours.

Education **about** the environment: encourages learning about how natural systems work, their complexity and understanding how these and human systems interact e.g., watering plants, the water cycle, precious clean water, not to be wasted. Often includes a focus on science learning.

Education **for** the environment: Through education for the environment young children develop a sense of responsibility and active participation in the resolution of environmental problems ... children not only know about water conservation issues but also have a commitment to enact conservation strategies in their daily routines. (pp. 6–7; 30–31)

These initiatives generated a flurry of research, publications, and a teacher education programme *Teaching and learning for a sustainable future* (UNESCO, 2005) that sets out the parameters for engagement in current ECE practice. In order to make early childhood environmental education mainstream Davis, Elliott, and Early Childhood Australia (2003) suggest that:

Meaningful ways need to be found for children to observe, imitate, talk with and walk alongside adults who encourage close observation of the world around them and who actively demonstrate knowledge of, and respect and caring for, the environment. This is an interactive social process where educators are active participants and researchers with children in a dynamic world of exploration.... In all settings inhabited by children; ... [there] needs to be a priority—a recommitment to the idea of the ‘kindergarten’ (children’s garden).... An appreciation of the principles of social justice and recognition of the value of outdoor play provides a good start to embedding ideas about sustainability. (p. 10)

Enviroschools, an Aotearoa New Zealand response to the EFS phenomenon, is ten years old (Eames, Roberts, Cooper, & Hipkins, 2010). The kaupapa or philosophy is based on five guiding principles: Empowered students; learning for sustainability; Māori perspectives; respect for diversity of people and cultures; and sustainable communities. An increasing number of early years settings are joining with the Enviroschools Foundation to develop healthy and viable schools/centres (ECEfS), communities and ecosystems. Enviroschools kaupapa is consistent with the ethics of “caring, listening, participating and hopefulness”, described by Robinson & Vaealiki (2010) as a key tenet of early childhood education for sustainability (p. 154).

2.5 The Aotearoa New Zealand ECE context of this study

Taking children into the outdoors, as a primary site for learning and discovery, is not a new concept for Aotearoa New Zealand ECE (Greenfield, 2007; Ministry of Education, 1996, 2009). However, the influence of international projects such as the Forest Kindergarten movement in Scandinavia and United Kingdom (Borradaile, 2006; Knight, 2009; O’Brien & Murray, 2005), coupled with a developing awareness of sustainability issues internationally (Davis, et al., 2009; Pramling Samuelsson & Kaga, 2008) have led to an expanded interest in exploring the wider community with young children. Yet, for teachers in this country there are additional sources of provocation arising from this call to action.

In the current ECE climate, diverse issues such as values associated with outdoor learning, legislative challenges in encountering safety and risk, and concerns regarding the types of ECE environments now offered to very young children provided additional impetus. Coupled with attention to indigenous perspectives that position nature as a living entity and a curriculum that casts children as confident and capable learners who encounter ‘people, places and things’ as learning potential (Littledyke & McCrea, 2009)—teachers were keen to pursue this agenda.

In the final section of this chapter we introduce the six research sites, the nature-based locations and the teachers’ espoused priorities for nature-based education. We anticipate that a brief description of each, at the time of the project, will set the scene for fuller engagement in the research findings that follow. The places that were special to children and their teachers in *The Ngahere Project* included their kindergarten and education and care settings, their immediate neighbourhoods and the places they travelled to on a regular basis. Each was seen as holding great potential for learning.

2.5.1 Maungaarangi Kindergarten and Family Centre

The Maungaarangi Kindergarten and Family Centre opened in May 2010 and is situated adjacent to Welcome Bay School in Tauranga. Teachers have worked in close partnership with children and families/whānau to design, create and care for a spacious environment (4200 m² or 1.04 acres) that reflects the high value placed on the natural environment and natural science. According to a recent review of the centre, it was reported that “Children have many opportunities to increase their understanding of Te Ao Māori through meaningful experiences. This includes manaakitanga—welcoming and caring for each other and visitors to the centre” (ERO, 05.04.2012). The kindergarten whānau had only one trip during the data generation period so most of their research occurred within the gate.



Photographs sourced from Learning Stories written by teachers at Maungaarangi Kindergarten

2.5.2 Campus Creche Preschool

Campus Creche Preschool began their *Ngahere Explorers* programme in 2010. A group of seven children and two teachers visit Pukemokemoke Bush Reserve every Thursday throughout the year, in most weather. They generally leave in a hired university van around 9.30am and return about 2.30pm. Children rotate out of the group after eight visits and are replaced by new children from the centre roll. The group is often joined by additional adults including teachers, parents, student teachers and occasionally researchers (*Ngahere Explorers handbook*—Campus Creche, 2010).

2.5.3 Pukemokemoke Bush Reserve

Pukemokemoke Bush Reserve is a 40 hectare remnant of lowland native forest gifted to the nation by David Johnstone on his death in 1990. The Bush, declared a key ecological site by Environment Waikato in 2004, is located off the Tauhei-Whitikahu Road near the Tauhei marae (or complex of buildings used for traditional gatherings for Māori) in the Waikato/Hauraki district. Local Māori have a strong and ancient affinity for the bush which is very much part of their history. The reserve’s benefactor was concerned for the future of young people and saw education as a critical part of his bequest both in the parent trust and the Bush Trust. He wished that young people could see and enjoy the forest that used to be part of his childhood. It is administered by a trust that includes representatives from the university and local iwi—tribes (Irving, 2010).



Photograph sourced from Learning Story written by a teacher at Campus Creche Preschool

2.5.4 Brann's Farm

Brann's Farm also known as Roydon Downs Bush and Farm is privately owned by Gill and Geoff Brann. Children, families/whānau and teachers from Papamoa and Paengaroa Kindergartens visited the farm on a monthly basis during the project. The farm is located six kilometres from Paengaroa and boasts a redwood forest, streams, meadows and walking tracks set in re-established native bush.



Photograph sourced from file collection at Papamoa Kindergarten

These two kindergartens also regularly visit their immediate neighbourhoods including the farm next door, known as Suttons in the case of Paengaroa Kindergarten, and Tui Park as the children from Papamoa Kindergarten have renamed the local reserve, commonly known as Topaz Park.

2.5.6 Mauao

Mauao (Mount Maunganui) is the focal point of the coastal Bay of Plenty. Standing at a height of 232 metres, Mauao is a dormant volcanic cone and is of great cultural significance for tangata whenua (the people of the land) and the local community. Owned by local iwi or Māori tribes—Ngāi Te Rangi, Ngāti Ranginui and Ngāti Pūkenga, this sacred mountain is managed by Tauranga City Council. The 3.4 kilometre Base Track, suitable for pushchairs, is a popular destination for Tauranga Region Kindergartens *Kimi Haere* (learning journeys) by home-based ECE children, educators and coordinators.



Photographs sourced from researcher's private collection

2.5.7 Summerhill Recreational Farm

Summerhill Recreational Farm is privately owned by David and Chloe Blackley. It is located 20 minutes from Tauranga and 15 minutes from Papamoa and Mount Maunganui. The 130 hectare recreational area is 250 metres above sea level and has spectacular views of the region. The farm boasts a mixture of open pasture, mature exotic trees and remnant native forest. There are several streams and a dam with an associated pond. This is also a popular destination for the home-based ECE *Kimi Haere*.



Photographs taken during home-based ECE Kimi Haere by (L) teachers and (R) Scooby Doo 23.06

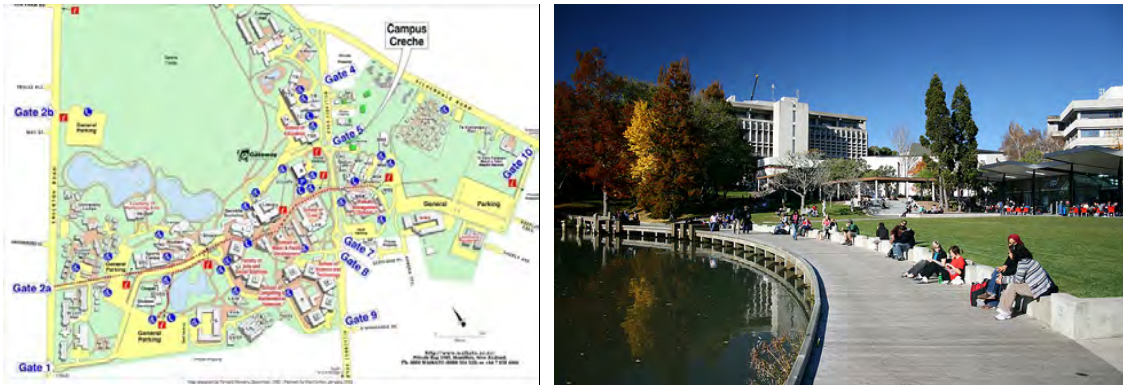
2.5.8 The University of Waikato Hamilton campus

The University of Waikato Hamilton campus occupies a 68-hectare block of land that was transferred to the Waikato-Tainui iwi in 1996 as part of the Crown's settlement of their raupatu or confiscated land claim. The university leases back the land. Campus Creche is associated with the university and caters for the children of students, staff and the wider community surrounding the university campus. Creche is operated by a charitable trust and has five centres located on the university grounds. Teenies is the toddler centre catering for children aged 14 months to 2½ years. Children and their teachers regularly explore the campus across the road which boasts a village green, duck ponds, boardwalks, playing fields and bush areas as well as a range of university buildings.

A concrete example of the spread of Forest School ideology can be found in their *Ngahere Explorers handbook* (Campus Creche, 2010) where it states that,

Ngahere (forest) Explorers is an innovative educational approach to outdoor play and learning. The philosophy of this approach is to encourage children to experience positive learning opportunities in a native bush setting. *Ngahere Explorers* follows some of the concepts introduced throughout Europe with their Forest School's model.

Unsurprisingly, senior staff in this setting had visited Forest Kindergartens in Germany and the United Kingdom as part of an Aotearoa New Zealand ECE study tour.



Both images sourced from Google Images – University of Waikato, CampusMap Creche.jpg

The sites presented in this chapter represent the multiple nature-based locations that formed the basis of our investigation. Each location shared an espoused commitment to nature-based education and sustainable practice. ECEfS was actively promoted on their advertising material, in their strategic plans and in the dialogue shared throughout the project. For example on a website, one of the organisations states:

Tauranga Region Kindergartens has endorsed education for sustainability (EfS). This means we are working to operate the educational programme, and our kindergartens, in a sustainable manner.... Endorsing EfS means that all our kindergartens and the administration are on board with sustainability, and resources will be provided to support them. It provides an opportunity to create a difference for our environment by focusing on sustainability practices for children, whānau and local communities.
(<http://www.taurangakindergarten.org/Sustainable-Education.html>).

In the chapter that follows the glossary (Chapter 3) we examine research sites' practice in light of these commitments, and the ways in which provision and pedagogies supported, and also challenged, this agenda.

2.6 Glossary

Ao	world
Aotearoa	land of the Long White Cloud, Māori name for New Zealand
Aroha	expression of love, care
Awa	river
Hapū	sub tribe, descent group, wider kin than whānau
Hui	social gathering or meeting
Iwi	tribe, collection of hapū, people
Kaitiaki	guardian, trustee, protector, spirit guardians
Kaitiakitanga	ethic of guardianship, stewardship, protection
Karakia	incantation, chant, prayer, ritual
Kaumātua / mātua	elders, male elders
Kaupapa	plan, theoretical framework, philosophy
Kimi Haere	learning journey
Kuia	older woman
Kura Taiao	Enviroschools
Manaaki	hospitality, generosity, compassion, respect, kindness
Manaakitanga	ethic of hospitality, generosity, care
Marae	complex of buildings used for traditional gatherings for Māori
Matariki	Māori New Year

Mātauranga	knowledge
Maunga	mountain
Mauri	life essence, life principle (metaphysical concept)
Mokopuna	grandchildren
Mihimihi	oral greeting, oral introduction, a speech
Moana	sea
Ngahere	native bush, forest
Pākehā	of European descent, white person, a New Zealander of non-Māori descent
Papatūānuku/Papa	Mother Earth
Pou	carved wooden post, upright post, support, pole, sustenance
Pūrākau	stories, oral histories
Rakau	wood, wooden, pole, tree stick
Tangata whenua	people of the land, locals
Tamariki	children
Tāne Mahuta	god of the forests, plants, birds and animals
Taniwhā	mythical monster in traditional stories, guardian spirit, guardian
Taonga	valued possession, something tangible or intangible that is highly valued
Te reo	Māori language
Teina	younger sibling, cousin, novice
Tikanga	Māori customary practice
Tuakana	elder sibling, cousin, same gender, more competent other
Wairua	spirit, shadow
Wairuatanga	spiritual connectedness
Waka	canoe, ancestral canoe
Whakapapa	origins, oral narrative, history of genealogy, action for / towards the land
Whānaungatanga	relating to others as you would a member of your family, as kin
Whānau	extended family
Whāriki	woven mat
Whenua	land, the natural environment, also refers to the placenta

Our thanks to Mika (2011) for reminding us of the complexity of Māori etymology, that is the history, origin, form and meaning of words and how they have changed over time; thanks also to Ritchie et al. (2010) for our extensive borrowing from their *Glossary*. Finally, we acknowledge the existence on many Māori loanwords in the everyday language of Pākehā and other New Zealanders and refer readers to the website ‘100 Māori words every New Zealander should know’ (<http://www.nzhistory.net.nz/culture/Māori-language-week/100-Māori-words>).

CHAPTER 3: METHODOLOGY

The Ngahere Project is another study aimed at practice in the ECE sector and the research ‘hole’ in this area. At the commencement of project in 2010, much of the literature in this field concerned practical considerations such as bush safety, equipment and technical (or scientific) knowledge about the environment (Chaille & Britain, 2003; Haesaerts, 2002; Warden, 2005; 2007). While there was potential to draw from studies that have taken place in school-based services it appeared that ECE practice in outdoor settings was moving ahead of the research base. Research of this nature has become more common recently. In the section that follows, the research methodology and associated methods for such an emphasis, are presented.

Participants

Management representatives, lead researchers and other teacher participants self-selected for the research and are individually named in the Acknowledgements section of this report. A lead teacher researcher was identified in each site to drive the research and liaise with the university. Four participants (management representatives including senior teachers) had been on Forest Kindergarten study tours to Germany and the United Kingdom, in the year prior to the project’s commencement; five teachers currently work together in an Enviroschools’ kindergarten, and all of the participants including management representatives were qualified registered teachers¹ (with two exceptions—a student teacher undertaking a field-based teaching qualification, and a home-based educator²). Of the thirty-three teachers, management representatives and researchers involved in the project, three were male and the rest were female.

The participating early childhood education centres

The six early ECE settings that participated in the project were managed and operated under the auspices of two non-profit organisations; Tauranga Regional Free Kindergarten Association in the Bay of Plenty, and Campus Creche Trust in the Waikato. The settings differed from each other in roll characteristics, socioeconomic profile, service type, operation, and staffing. Table 2 gives a profile of the settings.

¹ Holding an ECE teaching qualification recognised by the New Zealand Teachers Council—a three year diploma or degree or a one year post graduate qualification. Under the Education (Early Childhood Services) Regulations 2008 all teachers at Supervisor level must also be registered as teachers by the New Zealand Teachers Council.

² There is no requirement for home-based educators to be qualified. However, a HBECE Coordinator is a qualified teacher who is responsible for a home-based service, visiting educators and observing children participating in service, at least monthly, under Education (Early Childhood Services) Regulations 2008, Regulation 28(2), (b) & (c).

Table 1: Profile of the early childhood education settings

Name	Type and operation**	Roll**	Socioeconomic profile*	Main child ethnicity**
Home-based ECE service ³ (suburban)	Home-based	Four only children aged over two	Middle/high income	All Pākehā ⁴
Maungaarangi Kindergarten and Whānau Centre (suburban)	Kindergarten and Family Centre Open school hours	40 over twos	Low income	Approximately three quarters Māori and one quarter Pākehā.
Paengaroa Kindergarten (rural)	Kindergarten Sessional	Morning roll: 30 over twos Afternoon roll: 30 over twos	Low/ middle income	Approximately half Pākehā with the next largest group being Māori and a small number of other groups including Pasifika, other European and Indian.
Papamoa Kindergarten (coastal suburban)	Kindergarten Sessional	Morning roll: 40 over twos Afternoon roll: 30 over twos	Low/ middle income	Approximately half Pākehā with the next largest groups being Māori, Indian and a small number of other groups.
Campus Creche Preschool (community)	Education and care Full day	40 over twos	Low/high income	Approximately half Pākehā with the next largest groups being Māori, Asian and a small number of other groups.
Campus Creche Teenies (community)	Education and care Full day	24 aged 14–30 months (over and under twos)	Low/high income	Approximately half Pākehā with the next largest group being Māori. Chinese, other European, Samoan, Tongan and a small number of other groups.

*As identified by ECE staff

**Information from ERO reports conducted in 2011

Prior to the start of the project, ethics approval was gained from The University of Waikato Faculty of Education Research Ethics Committee. Informed written consent was obtained from participants including teacher-researchers, parents/caregivers, and children.

Anonymity was not afforded to the research sites (i.e., the centres/services involved in the project) as we anticipated that they would be identifiable because of the knowledge within the wider early childhood professional community and beyond. Hence, throughout our dissemination we have often named both the research sites and the teachers (by first name only).

Action research, research questions and phases

Cardno's (2010) action research model guided our project as we sought to address research questions related to teaching and learning possibilities in nature settings. Two overarching questions were developed by research participants at the initial 'reconnaissance phase' meeting:

1. What might nature-based learning look like in diverse Aotearoa New Zealand ECE services that are committed to sustainability?
2. What are some of the pedagogical issues and provocations teachers face in this domain?

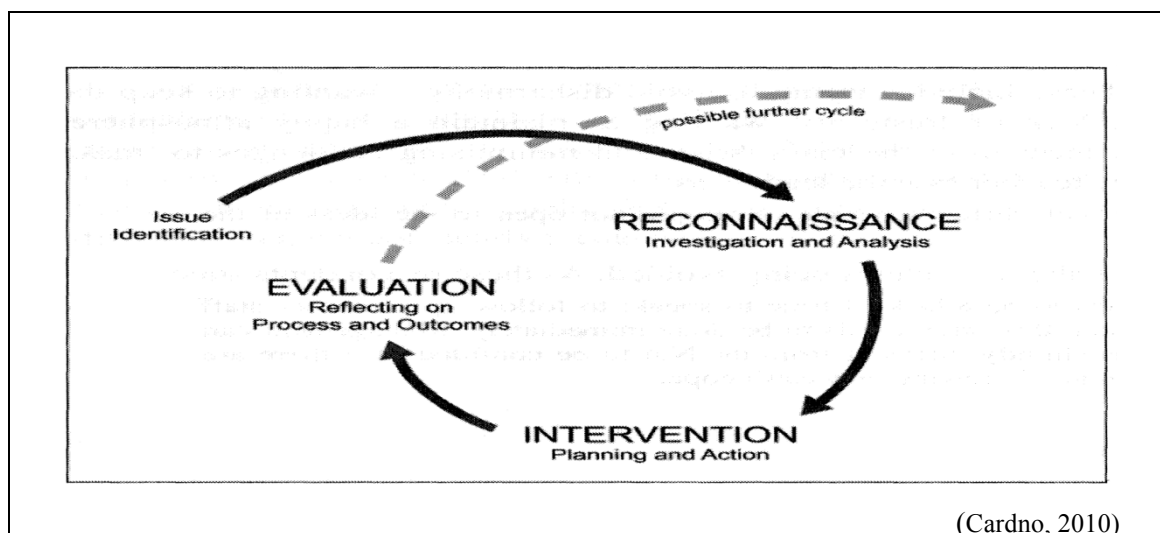
These questions were underpinned by supplementary research questions specific to each site that were developed during the reconnaissance phase (See Table 3).

The project took place over eighteen months and was comprised of three phases as shown in the diagram: Reconnaissance, Intervention and Evaluation. Details of what happened in each phase are outlined below.

³ ECE service based in educator's home licensed under the Education (Early Childhood Services) Regulations (2008).

⁴ Non Māori New Zealander; European; usually applied to white person.

Figure 2: Action Research Cycle



Phase One—Reconnaissance

The researchers met with teachers from Campus Creche and Tauranga Region Kindergartens over a two-day period, to investigate existing beliefs, values and relevant pedagogy associated with experiences in outdoor contexts within and beyond the immediate ECE setting.

- i. A relationship agreement was developed between members of the group in terms of collaborative research practice and protocols in developmental action research methodology (Cardno, 2003).
- ii. Teachers from each ECE setting were invited to share their vision, philosophy, rationale and current practices around teaching and learning possibilities in nature settings in 30-minute presentations to the wider group at a research hui (meeting).
- iii. Researchers led a discussion around the pedagogical strategies that teachers employ during nature-based learning experiences, and intended outcomes for children, families /whānau and community. Teachers were invited to ask questions of one another and share issues and/or challenges that they were facing.
- iv. Researchers invited teachers in each setting to formulate specific research questions (as learning objectives) for their context, based on aspects of their practice in nature settings (Table 3).
- v. A heuristic meaning-making map was developed and two overarching research questions for the project identified (see above).
- vi. Data, that had been audio-recorded, was generated in the form of a focus group interview involving 15 people, lead researchers, management representatives and other interested teachers (hereafter referred to as the initial focus group or IFG).

Phase Two—Intervention

Researchers and teachers negotiated and planned interventions that were relevant for each ECE context, based on their research question. Table 4 shows the research questions and the methods used to generate data that made up our specific 'mosaic' (Clark & Moss, 2001; Clark, 2005b).

Table 2: The Ngahere Project Mosaic

Site/Setting	Context	Research question	Method
Campus Creche Preschool	Regular outings to Pukemokemoke Reserve	How do teachers 'see' children's dispositions being affected by nature-based curriculum experiences?	Assessment documentation i.e., - Learning stories - Video diaries
Campus Creche Teenies	Regular outings to adjacent university campus	What professional judgments do teachers make during outings with children, and why?	- Video diaries
Papamoa Kindergarten	Regular outings to Brann's Farm and local neighbourhood	How do children express their working theories after regular engagement with nature outside the gate?	Assessment documentation i.e., - Learning stories - 'Group-time' videos following visits
Paengaroa Kindergarten	Regular outings to Brann's Farm and local neighbourhood	How does the nature environment influence teacher pedagogy?	- Audio-recorded staff meetings - Reflective diaries
Maungaarangi Kindergarten	Mostly on-site nature-based experiences explicitly linked to teaching philosophy	What can local tikanga Māori teach a kindergarten learning community about engaging with nature?	- Oral interviews (tangata whenua) - Assessment documentation i.e., - Learning stories
Home-based ECE service	Regular outings known as <i>Kimi Haere</i> or learning journeys	What do children 'see' in nature-based education beyond the gate?	- Photo generation - Stimulated recall interviews with children

Data generation methods were selected and teachers were encouraged to read research texts of relevance to their specific research question and methods.

Informed consent/assent was gained from children and their families, and children chose their own pseudonyms to safeguard their anonymity, Children chose names such as Coco, Barbie, Ben Ten, Ben10—many from their favourite TV shows. They had ongoing opportunities to consent or assent to their participation and several children withdrew from the project during its term.

Data generation in the form of field-based interventions took place in each setting, over an eight-week period, based on methods outlined in Table 3.

Combining participatory research tools relevant to young children by using different data sources led to the creation of a fuller picture of children's learning experiences in nature settings. The strength of having all these sites was that they represented a diverse sample group in keeping with Aotearoa New Zealand ECE provision, and each site contributed unique perspectives to the overarching research questions.

Phase Three—Evaluation

Researchers supported teachers to analyse their data, in relation to specific research questions. A further two-day hui was held where teachers presented their preliminary findings and participants responded to the overarching research questions noting shifts that had occurred during the research.

Further data was generated in the form of a second focus group interview involving 10 people, lead researchers, management representatives and other interested teachers (hereafter referred to as the final focus group or FFG) that was audio recorded at the end of this meeting.

Researchers and teachers collaborated in planning for future curriculum, pedagogy and policy, as a result of analysis, after consideration of what had been learned during the project.

Theoretical perspectives

A series of explicit and implicit values and principles about research underpinned the project. These co-existed with philosophies and ideologies held individually and/or collectively by participants. This amalgam made up our methodology (Roberts-Holmes, 2011).

Based on several political, social and research agendas, our approach sought to embrace: “children’s rights under the United Nations Convention on the Rights of the Child” (United Nations, 1989); “the sociology of childhood” (James & Prout, 1997); “a deepening understanding of sociocultural theory in practice; increasing awareness and appreciation of the education approach in Reggio Emilia centres in Italy” (Edwards, Gandini, & Forman, 1998); and “work that investigates the power relations between adults and children” (Peters & Kelly, 2011, p. 20).

An interpretive [hermeneutic] paradigm informed our research (Davey, 1999; see also Giles, 2008) as we sought to hear children’s perspectives on their learning (Carr, 2000; see also Clark, 2005b; Clark, McQuail, & Moss, 2003) and experiences outdoors (Waller, 2006). We drew on two key theories related to listening and seeing young children.

- i. The ‘listening approach’ positioned toddlers and young children as experts in their own lives: as active participants with agency; as skilful communicators; and as researchers and explorers involved in meaning-making, that is, making sense of the world. Clark & Moss (2001) argue that listening to children focuses on the role of the adult in relation to the child involving an active process of exchange of meanings, whereas, in the Reggio Emilia pedagogy of listening, visible listening is positioned alongside multiple listening (Rinaldi, 2001).
- ii. The ‘seeing approach’ positioned toddlers and young children as complex learners, agentic partners (capable of interpreting their learning alongside adults); alteric players (subject to change from moment to moment, not fixed or static); and beyond adult ways of knowing. Under the broad framework of dialogism (White, 2009) such approaches emphasise the role of young children in research as particular in their own right, whose seen and heard voices were central to our understanding.

Our mosaic involved familiar as well as new methods of data generation/collection. Generally, teachers worked with methods familiar to them and appropriate to the research questions (Christenson & James, 2000), such as writing and analysing ‘learning stories’—a narrative form of assessment (Carr, 2001; Carr & Lee, 2012), interviewing adults, audio-taping staff meetings, videoing group times (Flewitt, 2006) and completing reflective diaries (Broadley & Fagan, 2010). Other methods not used before included a combination of photo generation and stimulated recall interviews with children borrowed from (Einarsdóttir, 2007). Children were encouraged to take photographs, select their favourite ones and then be interviewed about their selections (Clark, 2005a). Whilst this method proved challenging, it was powerful and honoured key tenets of our research methodologies around a broadened interpretation of ‘voice’, seeing and listening. Einarsdóttir argues that if the right methods are used, children will be able to speak for themselves. She suggests that this method is particularly useful for ECE but cautions that researchers need to take care to interpret the children’s words through the child’s voice, not their own. We continued to be reflective in order to heed this advice.

The second innovative method used was video diary (Barrett, 2005). A University of Waikato colleague Elaine Bliss introduced us to a form of digital storytelling, using video recordings of reflections and we came up with the practice of recording ten twenty-minute individual teacher reflections, at weekly intervals, as a way of capturing the immediacy of pedagogical moments. For instance, at Campus Creche Teenies, teachers recorded their reflections when they returned from outings with toddlers. They used the reflective framework broadly aligned to the DATA model, which involves four stages: describe, analyse, theorise and act (O’Connor & Diggins, 2002; see also Broadley & Fagan, 2010). Many teachers were familiar with this model and used these processes in their practice. This method proved to be an effective way for busy teachers to generate data and capture the essence of their pedagogical concerns.

Data analysis

Analysis took place in phases. The first round of analysis involved lead researchers/key teachers working alongside a principal researcher with data generated from the setting (August–October 2011). This was an ongoing process as action research methodology enabled teacher-researchers and management representatives to keep moving forward, planning and acting on findings, at the same time as we were reflecting on the process and outcomes (Cardno, 2010).

At the evaluation phase meeting (November 2011) initial research findings relating to individual site questions were shared and the focus group discussion was recorded in order to answer the overarching research questions and to note possible shifts (if any) made by participants over the course of the research project. The reconnaissance and evaluation phase focus groups (IFG and FFG) transcripts were subject to content analysis using, in the first instance, the research questions as broad coding guides. Text relating to the main research questions was extracted from each of the interviews. Using qualitative data analysis software (QSR NUD*IST Vivo [NVivo], 2008), the text extracts were coded as categories or project nodes.

For our analysis we drew from discourse theory, in particular systemic functional linguistics and multi-modal discourse analysis (Martin & Rose, 2007) that involved careful consideration of discreet data sets across time and spaces within an overarching interpretation. This approach to analysis enabled us to interrogate the data as a social event, embedded within discourses—both dominant and potentially dormant (Dryzek, 2005). Including children's 'voices' within our data set meant that we paid particular attention to clues beyond verbal language, and included tiers of meta-analysis beyond our own (i.e., teachers' analysis of their own research questions).

In addressing our overarching research questions, three key areas for interpretation (Martin & Rose, 2007) were employed simultaneously, as follows:

1. Ideation—Exploring connections between activities, people, places and things:

Data generated during fieldwork before, during and after outdoor experiences and how these were "construed in discourse" (p. 73). We looked for relationships and sequences between practice and place that were evident in words or clauses and images. Main data sources were field work from teachers and their analysis of findings.

2. Conjunction—examining connections that led to new understanding /purpose/ practice:

Data that shows any shifts in practice that allow participants to draw conclusions or make comparisons with fresh insight (Martin & Rose, 2007, p. 116). Analysis would track these and their location in the data. Main data sources were focus group transcripts, analysis sheets from meetings, and teachers' comments on data.

3. Periodicity—analyses the rhythm of the discourse:

Data that, taken together, gives clues that remind us of where we have been and where we are going in order to recognise the journey. Using the rhythm of the discourse "little waves, bigger waves and tidal waves" of discovery become evident in divided up clauses over time (Martin & Rose, 2007, p. 187). The main sources of data here were the final focus group interview, insights generated out of interventions, and any secondary sources that influenced the project, such as policies and assessment practices, and represent shifts.

Taken together, these forms of analysis allowed us to deeply interrogate the rich array of data generated out of the project. In the section that follows we present some of our discoveries.

CHAPTER 4: NATURE-BASED LEARNING IN AOTEAROA NEW ZEALAND

Our research asked two central questions and drew on a vast range of data generated across the six research sites, and from two focus groups held during hui at the beginning and the end of the project. In the chapter that follows, we present our findings in relation to first of these questions. These findings illustrate the cultural situatedness of pedagogy in any location, and the specific approaches taken in nature-based learning contexts. For these teachers, and the settings in which they operated, Māori views of the living land with associated accountabilities, the open-ended nature of the early childhood education curriculum and an interconnected commitment to both children and their wider world underpinned approaches to nature-based learning. These were seen as a natural route to sustainability in the education of young children. This is a strong and defining point of difference. In the sections that follow, we explore this position and its impact on the diverse types of experiences with nature that were offered beyond, and within, the gate of the ECE settings.

Our first question asked: *What might nature-based learning look like in diverse Aotearoa New Zealand ECE services that are committed to sustainability.*

4.0 Key ideas underpinning nature-based provision

From the outset of our investigations, the six settings shared a commitment to regular encounters with nature. For every setting, there was a consensus regarding the significance, power and potential of outdoor environments for children's learning. This significance was located around the importance of large, 'wild' spaces that were seen as a kind of re-visioned classroom. Children's consistent and regular access to nature, based on the close proximity of nature settings in Aotearoa New Zealand, was promoted as an entitlement for all.

A defining feature of nature-based provision was associated with the particular access it gave to large spaces. As one participant hypothesised: "The bigger the space you've got to run around in and do things in, the better educational outcomes for kids" [Peter, IFG: 310–312]. Another described these spaces as "compensatory" because they ameliorated some of the damaging impacts of what teachers perceived to be related to small centre spaces⁵ which limited children's learning opportunities. While neither of these claims were specifically explored in the research, they provided strong incentives for the types of provision that were offered.

In all of the research sites, teachers, children and (sometimes) family/whānau members went on excursions 'beyond the gate'. These first-hand experiences with places, and (sometimes) people in the community, varied depending on factors such as destination, funding, purpose, and relationship to the programme or curriculum of the setting. In *Te Whāriki*, 'curriculum' is described as:

the sum total of experiences, activities and events, whether direct or indirect, which occur within an environment designed to foster learning and development. (Ministry of Education, 1996, p. 99)

Yet no two research sites provided exactly the same kind of nature-based education even in the same nature setting. Each approached the field in different ways: as one teacher explained

⁵ New Zealand ECE settings are regulated by Ministry of Education that specifies minimum spatial requirements per child in any centre context.

[http://www.legislation.govt.nz/regulation/public/2008/0204/latest/DLM1412501.html?search=ts_regulation_Education+\(Early+Childhood+Services\)+Regulations+2008_resel&sr=1](http://www.legislation.govt.nz/regulation/public/2008/0204/latest/DLM1412501.html?search=ts_regulation_Education+(Early+Childhood+Services)+Regulations+2008_resel&sr=1)

All of us have a unique system of what we are doing, so all of us working together is going to show that “you don’t have to do it our way, you don’t have to do it this way or this way, but you can do it your own way” and it will be your own. [Tim, IFG: 750–752]

For some, nature-based learning was described as an opportunity to explore the wider world: “to get outside the traditional centre gates and explore the outside world and go to spaces where—it may be a park or some kind of bush land or whatever where they can gather and explore, and have their learning scaffolded by others” [Annette, IFG: 3–6]. For others, the outdoors provided an antidote to the commercial world that they believed dominated children’s lives even in ECE contexts. They identified nature based provision as “defined as trees, grass and a lack of man-made/manufactured play equipment” [Paengaroa Kindergarten, initial analysis notes].



Spiders’ webs at Brann’s Farm—Photograph sourced from Learning Story written by teachers at Papamoa Kindergarten

The Aotearoa New Zealand landscape offered rich outdoor opportunities beyond the centre gate. This was identified as a strong catalyst for experiences in the bush and other local places and spaces. A return to natural resources and nature provision was signalled by almost every teacher throughout the study. They shared a commitment to access nature across each ECE site and upheld their convictions despite the many challenges they faced in doing so.

4.1 Unique to Aotearoa New Zealand

Whilst some teachers and management representatives had seen examples of nature-based early childhood education overseas, they were clear that what was conceived in Aotearoa New Zealand should be (and was) different and unique. A student teacher, influenced by colleagues who had visited Forest Kindergartens on the other side of the world, was emphatic at the outset of the research;

We’re not going into pure ‘forest kindergarten’. We’re not saying we’ll go into no electricity, no plumbing, nothing of that. We’re saying ‘let’s make our own thing’. We’ll hybridise everything and that will be Aotearoa New Zealand. [Tim, IFG: 695–697]

Others agreed, highlighting the unique social and cultural context this country afforded:

We are mindful of fads in early childhood that come from the northern hemisphere that aren’t relevant to us. And when I think of forest I think of forestry as a commercial venture, but when I think of native bush I think of something completely different. And when I think of taking children into that nature setting and teaching and learning in that environment surrounded by their family and whānau, it is a totally different look. It is something that is unique. It supports our beautiful curriculum and I think it will make that come alive in a new way for us, anyway. [Cathie, IFG; 794–801]

These sentiments are echoed by Wray, Espiner & Perkins (2011) who argue that, “engagement with the outdoors is a core element of New Zealand’s heritage, identity and culture” (p. 140). In *The Ngahere Project* outdoor education was consistently seen as an integral part of what it means to be a New Zealander. This engagement applied to Māori and non-Māori alike and was visible in the learning outcomes of *Te Whāriki*. It is also evident in the guiding principles of Enviroschools—a programme that heavily influenced some of these ECE settings. The taonga (treasures to be protected) status of the earth is also fundamental to Māori views on sustainability (see 2.3). In the *Treaty of Waitangi*, the British Crown guaranteed Māori the protection of their land, resources, rights, belief systems, and self-determination (Colbung et al., 2007). The word taonga or treasures was used in terms of what would be protected. Over time, taonga has been claimed to include treasures such as language, culture, land and even the seabed and foreshore in Aotearoa New Zealand politics.

This precept alongside the principle that everything related to the earth has *mauri* or a life force heavily influenced the provision of outdoor learning in this study. *Kaitiakitanga* (stewardship, guardianship or protection) and *manaakitanga* (caring) that derive from these notions were evident in both focus group dialogues about the underpinnings of nature-based education, and in the programmes themselves.

4.1.1 Connections with land

Teachers from several research sites actively promoted an exploration of children’s connections with the land as an important part of outdoor provision. They viewed these connections as central to the promotion of sustainable practice. One Māori teacher explained his view that nature-based education starts with learning about land features close at hand because such knowledge facilitates engagement and, therefore, a relationship. He suggested that engagement was the first step towards protection because nature became relational and demanded responsiveness:

It comes down from the mountains and it grows from the rain
And that river has got some taniwhā in it
And that river holds wairua
And that wairua got its name from whatever the story is
So it’s bringing that history back to the present day ...
And if we make that real to us, the teachers initially,
then it’s probably easier to make it real for our children
that it’s a living, breathing entity.... [Henare, IFG: 26–32]

Another Māori participant highlighted the significance of stewardship of the land in folklore and legislation alike. She summoned the notion of ‘partnership’ from the *Treaty of Waitangi*, also explicit in *Te Whāriki*, which “reflects this partnership in text and structure” (p. 9). In doing so she invoked a similar relational stance between human and non-human alike:

Our *tangata whenua* (indigenous people), they are the people of the land. When Māori people refer to where they come from they have a real connection with the land. That’s why I think that we need to have that component in this research because Māori people really value where they come from—whether that’s a bit of bush or that bit of coast or [land] in their legends. They all revolve around caring for the land and how it was created and how we need to care for it. We have a Treaty that we have to uphold, and that we have to abide by and teach. And if we are not acknowledging all of that, well then we are not holding up our partnership. As teachers we are not doing our bit. [Lynley, IFG: 511–520]

Pākehā participants also made historical connections with the land in keeping with Ka’ai & Higgins (2004) who note that, “the Pākehā who came to Aotearoa New Zealand originally had their traditional ways of viewing the world, as did Māori” (p. 13). One person contrasted the beliefs of these two peoples—pointing specifically at “the strength of indigenous peoples who hold to those beliefs as opposed to the English, alienated from the land” [Peter, IFG: 482–484]. These perspectives caused another participant to draw parallels between Māori and Celts

arguing that they both “had been alienated from their land by a dominant culture” (Peter, IFG: 511–531), hence both shared a sense of loss of, and respect for, the land.

Consistent with the spirit of partnership that is evident in both the *Treaty of Waitangi* and in *Te Whāriki*, the bicultural ECE curriculum, teachers’ understandings and empathy with Māori world-views were central to their interest and associated provision of outdoor education. Given the investigation’s unique Aotearoa New Zealand context, including the influence of *Te Whāriki*, it is unsurprising that many teachers emphasised the cultural aspects of nature-based learning as a route to sustainability. Within this discourse there is an easy association between nature settings and sustainability, particularly conservation. Alongside this focus was a desire to support the revitalisation of culture through the environment, and vice versa, the revitalisation of the environment via culture through such provision.

4.2 Provision in practice

In each research setting, teachers’ operationalised nature-based learning in unique ways. The frequency of planned excursions during the two month data collection period varied from setting to setting. For example, the home-based *Kimi Haere* to different places in the community took place weekly, as did the Campus Creche *Ngahere Explorers* (up to seven children) visits to Pukemokemoke. The latter was a structured ten-week programme with specific learning outcomes. It has a strong resemblance to Forest School definitions (see 2.5.8). In contrast, the entire kindergarten morning group at Papamoa (up to 40 children) and Paengaroa (up to 30 children) visited Brann’s Farm on a monthly basis. At Maungaarangi Kindergarten, exploration of the potential of spaces within the gate was prioritised. However, in keeping with their curriculum focus on pūrākau, a trip to see where Te Pura lived—the taniwhā who was the guardian spirit of the river—took place during the research.



Trip to see Te Pura in the Wairoa River—*Photographs sourced from Learning Story written by teachers at Maungaarangi Kindergarten*

While destination was important, the journey itself was also seen as part of the experience. Small groups of toddlers from the Campus Creche Teenies centre, aged between 14–30 months, visited the university campus regularly on foot. The journey, with all of the spontaneous, unplanned ‘*experiences, activities and events*’ along the way, was seen as much a part of their nature-based learning as their specific weekly destinations. Crossing the road, watching happenings at the building site fence, jumping in puddles, and negotiating space with people and vehicles—all this, and more, became seen as significant experiential learning in the outdoors for this age group and, by association, a source of constant pedagogical decision-making for teachers [Campus Creche Teenies, Video diaries—various].

The bus or car trip or van ride was also a significant part of nature-based learning for children from all of the other research sites.



Ngahere Explorers in the hired university van—Photograph sourced from Learning Story written by teachers at Campus Creche Preschool

Spontaneous events, such as a child dropping a walnut on the floor of the bus on the trip from Brann’s Farm back to Paengaroa Kindergarten, were the source of much shared joint attention and hilarity.

Well, the bus started going and he dropped one, and it rolled down (laughs) and because we were going down, it started rolling down the bus towards the front, and across from [one side of] the aisle to the other. We were watching it and laughing—‘Can you see the walnut?’ and then M, she was sitting up the front, she saw it, you know, and so she was giving her commentary when it was up the front she’d tell us where it is, and we were up the back sort of guessing where it might come out, and, oh it was so much fun just watching the walnut roll around. And N, little N, she was just entranced. The look on her face was just really excited, it was just ... it was very funny. It was a lot of fun. Just a walnut rolling around a bus. (Laughs.). [Julie D, Paengaroa Kindergarten, staff meeting transcript: 1 July]

4.2.1 Tikanga Māori

Through the research processes, particularly at Maungaarangi Kindergarten, where teachers specifically sought this topic in their research question, they realised the depth of the children’s understanding of the kindergarten’s kaupapa/philosophy and tikanga Māori/customary practice. Teachers spoke frequently of *ako*, a traditional Māori pedagogy, at work, where the learner is the teacher and the teacher is the learner. Encounters with nature provided opportunities for teachers to recognise that children, particularly Māori tamariki, were teaching them and other adults, and other children who were not native to Aotearoa New Zealand.

It was hugely apparent to me that many of our children are knowledgeable and tikanga Māori is inherent, whether it is local, whānau-based or a combination of the two. For me, I have learned alongside the tamariki and those [Māori] living and breathing tikanga have passed on this knowledge to the other tamariki in many ways. Ben Ten (pseudonym) is a perfect example of a child at Maungaarangi who personifies tikanga for me [Refer Learning Story, p. 38]. He is teaching a child from Wales, and teachers like me from Scotland. [Fiona, Maungaarangi Kindergarten, initial analysis notes]

Two Māori elders from the local community were interviewed about the visibility (or lack of) of local tikanga within this setting; “the way I see kaitiakitanga, you are already doing it” [Nan: Maungaarangi Kindergarten interview transcript]. Both the *kuia* and *kaumātua* commented on the land and its care. The *kaumātua* provided a salutary message for the teachers, “underneath we all know that the land doesn’t belong to us. We do know that, we are only here to care for it” [Mātua: Maungaarangi Kindergarten, interview transcript].

They also commented positively on the aesthetics of the kindergarten *inside* the gate, favourably noting either the absence of anything plastic or the use of only natural resources. These elders

interpreted the indoor and outdoor environments as teaching children about nature and the god of the forests and plants.

Inside, the building speaks for itself. Just having a look at the resources that are hanging up in there and the way you run your curriculum. It's all about the natural world ... every resource that's hanging up there, every resource that's down on the floor, that's in between the floor and the building and that's coming down from the ceiling. Those are the resources I'm talking about. Obviously, you've, with your curriculum it looks like you, you taught the children about rakau. Rakau is Tāne Mahuta, one of the gods, so there's a lot of that inside the building. I cannot see one plastic [thing] inside the building. I cannot see any outside the building either and what I do see outside the building—looks like the children have participated in growing and gardens which was a big thing when I was growing up. [Nan: Maungaarangi Kindergarten, interview transcript]

Both elders commented on their childhood experiences gardening and recounted memories of harvesting crops around the time of *Matariki*. They connected these traditional activities with the kindergarten's extensive gardens and the community celebration of the Māori New Year that took place during the study. They considered these real-life learning experiences highly significant for children's learning.

It's really helpful for our kids learning these sort of things, like I say our teenagers have gone away from that too far, as far as I'm concerned ... and it's hard to bring them back in ... it is really hard ... we're trying with the kids that we've got now, trying to get them back into the tikanga ... learning at an early stage it's going to stay in there ... it is, it is! [Mātua, Maungaarangi Kindergarten, interview transcript]

These dialogues suggest that the kindergarten plays a significant role supporting the revitalisation of tikanga Māori in terms of protocols, rituals, celebrations and pūrākau through engagement with nature in their community. At several research sites teachers regularly used pūrākau to support young children's knowledge and actions in relationship to the treasured environment. This practice is consistent with Lee (2009) who argues that pūrākau contain morals or lessons to learn. For instance, before the *Ngahere Explorers* from Campus Creche Preschool enter the bush on their weekly excursions to Pukemokemoke, it is customary for experienced children in the group to act out the story of *Rata and the waka* (sometimes called *Rata and the totara tree*) for the newcomers. This initiation rite includes children asking Tāne Mahuta, the god of the forest, birds and animals, if they can enter his world and agreeing that they will look after the bush, taking only dead things and their rubbish with them when they leave. This pūrākau is ideal for reinforcing children's understandings of conservation and sustainable practices.



Rata and the tree—Photograph sourced from Learning Story written by teachers at Campus Creche Preschool.

This same pūrākau is one of the key stories underpinning the curriculum at Maungaarangi Kindergarten. Teachers have identified the core learnings that derive from Rata and the waka as:

an understanding of natural world, making connections to the community and world, kaitiakitanga, a sense of connection to the land, responsibility, asking for permission and following procedures.

In a Learning Story entitled *Ben Ten's relationship with Papatūānuku*, this child demonstrates his learning from the pūrākau, Rata and the *waka* (canoe) by asking for permission to gather sticks for his artwork.

Excerpts from Learning Story by Whaea Fee, a teacher at Maungaarangi Kindergarten

“Papa’s not sad.
I asked her for these sticks and she said I could
have them.”



*Whenua Whangaihia (Translated as living alongside the natural world)
Asking for permission*

Even without going beyond the gate, space was being created for dialogue, investigation and debate as well as action. This was achieved through careful attention to the living aspects of nature, its cultural significance and its prominence in the learning environment.

Respect for the environment was a value that all of the teachers in the study sought to foster. In one setting, there was an expectation that children would adhere to the rules, respecting the boundaries teachers put in place for them. One child’s behaviour was described as ‘*disruptive*’ and it was noted that she had to be spoken to about ‘*destroying the nature*’. The teacher reported that the child had “snapped a whole lot of fungus off a tree” [Tim, Campus Creche Preschool, Video diary: 15.06]. There were suggestions that she might be “stood down” from the following week’s trip as a consequences of her actions. However, two weeks later it was noted that her behaviour, and that of several peers, was markedly different. They had “stopped shouting, were enjoying looking and exhibiting leadership skills” [Tim, Campus Creche Preschool, Video diary: 29.06]. Teachers celebrated these skills which were in line with the explicit goals that were set for the programme—(Campus Creche, 2010). It could be deduced that these children had now become familiar with the environment and the expectations therein. This is consistent with teachers identifying that children went from being novices to experts in the ways of the *Ngahere Explorers* over the ten weeks of the programme (Lave & Wenger, 1991) or from “teina to tuakana—the younger or less competent to the elder or more competent” [Lynley, Campus Creche Preschool, Video diary, 08.06].

While respect for the environment was a core value teachers wanted to pass on, one teacher reminded us to avoid clichéd and romanticised views arguing instead for a realistic appreciation of nature

We do it to encourage the love of nature ... how can we love every aspect of nature when it can cause so much fear, so much destruction, and it’s a force that humans cannot harness. What we can teach is how to respect nature, to understand the forces of nature, to be in wonderment and awe of nature, to be in tune with our planet. [Debbie, Reflection: 03.06]

An understanding of the links between past and present, home, the ECE setting and the wider world; skills in caring for ourselves, each other and the environment—manaakitanga (Ritchie, Duhn, Rau, & Craw, 2010); and experiencing stories and symbols from our own and other cultures are all fundamental to the tenets of *Te Whāriki*. Nature-based education in these settings responds to curriculum obligations and is connected to children’s rights—to play, to education, to culture, and to protection.

4.2.2 Children’s rights

Children’s rights were consistently referred to in the initial focus group discussion. Teachers and management representatives recognised their role in upholding children’s rights to play and to have regular access to culture, recreation and the arts based on Article 31 of the *United Nations Convention on the Rights of the Child* (United Nations, 1989). One participant noted that

We have a social and moral obligation as Aotearoa New Zealanders as signatories to the rights of the child, and as educationalists, to actually uphold and maintain what we’ve signed. [Kathryn, IFG3: 253–256]

Consumerism and the increasing pace of life alluded to by participants were coupled with the notion that society (and ECE) had become overprotective of children. As a result, many teachers believed that children can be denied the freedom to be expressive, creative and active, based on the false belief that their best interests are upheld in doing so—a point also expressed by Alderson (2008). Several participants articulated their desire to support families/whānau to move away from mass-consumption through greater engagement with nature. One participant, possibly with low-income families/whānau from her community in mind, wanted to reassure parents that

It’s OK not to have all the gadgets and gizmos and things and that it’s cool to play with kiwifruit boxes. Just, yeah stripping it back and showing them that it’s cool to play with sticks or whatever. They don’t need all that stuff. [Fiona, IFG: 916–919]

From the outset of the research, several teachers were resolute about their resistance to “the gizmo world” of “plastic toys”. We’ve cluttered our centres and we’ve cluttered our brains as well—there’s just too much to work with [Annette, IFG: 646–647]. Others nodded their support;

... we’ve overcooked their lives with gizmos and things and so many of these things are so not open ended, it’s a two-minute affair and they’ve been discarded ... [and] as teachers we’ve got trapped in that fast-paced world as well, you know because we’ve got so many children [in centres] and so much to do—buy the gizmo, it’s much easier. [Annette, IFG: 16–18; 649–651]

Clearly, these developments were not seen in the best interests of the child, as discussed in Article 3 of the *United Nations Convention on the Rights of the Child* (United Nations, 1989). There was recognition implicit in the teachers’ remarks that education for sustainable development is imbued with notions of supporting children’s right to a ‘good’ life, survival, and development in a safe and healthy world. The notion of children as healthy human beings and the role that ECE has to play in this regard were also implied. Some participants expressed views consistent with Waters (2011) suggestion that ‘play’ and ‘nature’, fundamental tenets of early childhood education, have been “eroded from many children’s lived experiences” (p. 251). Such views were strong catalysts for the kind of provision that was offered in these ECE settings.

4.2.3 Claiming time and space

Teachers argued that the places they accessed for outdoor adventures with children afforded them luxuries not readily available inside the setting gates [or at home, seemingly]. The significance of additional sustained time in nature settings was a repeated refrain from teachers. They stressed time, on nature-based excursions, for children to become familiar with the space.

Time in special places; time to appreciate nature, to slow down and be ‘in the moment’, to explore and discover; and time to nurture wonderment and awe, were all mentioned. These teachers appeared to be contrasting ‘slowed down’ time with the busy pace of life nowadays, especially for young children. They argued that there was space to play in the outdoors; space to be listened to and to be heard because there were fewer distractions and they [the adults] were more ‘present’ and ‘mindful’ in their relationships with children and nature [Focus groups and analysis from various site data]. Even in the outdoors, some teachers felt they had to resist busyness to reap the full benefits. One teacher explains

It’s really nice when you almost stay in one place, because the play changes. I said ‘we’re just going to play for a while, Sam, and just be here’. It was really interesting ... it gives them time to do things because if we race from one destination to another, or do too much walking, they haven’t got time to get involved in imaginary play. It chills everybody out, everybody gradually chills, and they let children take more risk, and they let them go that little bit further on their own. [Debbie, staff meeting transcript, 3 June]

Central to the teachers' agenda was their identified need to shape societal and government views through their practice in nature-based education. Children’s right to access the living world, and to learn to care for it, was keenly felt in the views of several teachers about what early childhood education should not look like. They were critical of some centre environments [and public spaces] calling them ‘concrete jungles’ [Julie S, IFG: 152], or referring to some ECE outdoor spaces as having ‘plastic fantastic in the playground’ [Annette, IFG: 177] or ‘plastic playgrounds’ [Lynley, IFG: 554–555]. One participant pointed out that the research sites involved in *The Ngahere Project* were all community-based non-profit services and that this was no coincidence. He suggested that ‘it’s clearly more costly to have grass or plants than astro turf and plastic’ [Peter, IFG: 347–348]. This critique led teachers in their rhetoric and in their practice to consider alternatives via education and supplementary/compensatory provision. “There are reasons why they don’t have any land. But they have to have another option ... we can show them another option and show them the value of it...” [Lynley: IFG, 357–359].

However, such investment priorities were not always shared. As one teacher explained, parents need to see the value of nature-based learning if they are to support it in ECE settings:

And that’s been a major pressure in a sense, of the funding for buses, because they, you know they think we’re funding all this money when it could be spent on equipment here. [Debbie, FFG: 273–276]

Here, teachers draw the important conclusion that investment in nature-based learning experiences is a community affair. The best interests of these Aotearoa New Zealand children cannot be thought about without also thinking about the best interests of the environment and those who occupy it (both in present and future generations). This view is consistent with Pramling Samuelsson & Wagner (2012) who argue on behalf of OMEP (Organisation Mondiale pour L’Education Préscolaire—World Organisation for Early Childhood Education) that

investments in early childhood development, education and care (ECDEC) lag far behind investments in other endeavours, including many with far less potential to contribute to the overall health of the planet and its people. (p. 342)

4.2.4 Place-responsiveness

Given the teachers’ agendas towards outdoor spaces it is unsurprising that data portrayed a strong relationship between the role of place, teaching and learning broadly, and nature and sustainability specifically. In the initial focus group discussion, six explicit references were made to ‘place’, while in the final focus group there were thirteen. The outdoor settings in this research were seen as ideal sites for supporting children’s affective and social learning (as opposed to a singular focus on cognitive learning). Children were seen to be stimulated in these settings where they had sensory access to the sights and sounds of nature.

Excerpts from Learning Story written by teachers at Papamoa Kindergarten

Cathie told me that you saw some moss at Brann's Farm. We were amazed to also find some bright green moss at our kindergarten. I said "I wonder why the moss grows on our trees?" You said "I think they are magical trees".



Photographs of Phil exploring the magical trees

Whilst 'magical thinking' does not appear in *Te Whāriki*, it did appear in the draft version (Ministry of Education, 1993). In this, and other scenarios in their research data, teachers at this kindergarten were seen to be encouraging working theories related to magical thinking alongside scientific knowledge despite Hedges (2003) call to avoid "magical thinking" in favour of science knowledge.

In their video diaries, reflections, stimulated recall interviews and Learning Stories, teachers often focussed on "the felt or embodied qualities of the experience[s]" (Wattchow & Brown, 2011, p. 47). Excerpts from Paengaroa Kindergarten data show children's varying embodied experiences as they responded to spaces which became places based on lived experiences there. The special place—the hill in the redwood forest at Brann's Farm—evoked different responses from several children in the same group.

G was right into that, she loved it, just really, let's relax, and let's look, and she was really interesting too, you know she loved laying there and she made lots of comments about, like the roof [forest canopy] and the leaves and the tree, the top of the trees ... and M was there with her mum. She found that really difficult to do, to actually just lay there, but she was quite happy to go hug the trees and do that sort of thing ... A just got to a whole different level of fun when he started rolling down the hill, and look it was like dominos, all these children started rolling down the hill, lots of them rolling and running. [Paengaroa Kindergarten, staff meeting notes, 3 June]

Notions of 'place-based' or 'place-responsive' education also featured in the informal and audio-taped dialogue at the evaluation phase meeting. Teachers noted the importance of place-based relationships, drawing on the socio-cultural notion of 'relationships with people, places and things' found in *Te Whāriki*. When talking about Brann's Farm, one teacher identified particular features that children related to through their embodied encounters with them:

This is the climbing tree and the tree we can swing on, and here's the muddy place and this is the bank we scramble down, and, and, that has been passed on. So it's not just about relationships within, just between the teachers or with the children, but also with the place. [Cathie, FFG: 11–14]

At Pukemokemoke too, children's knowing of the land and its features related to their lived, embodied experiences with place—the storytelling tree, the summit, the stepping stone, the troll bridge and the monster's tree (pictured below). This identification is consistent with 'the

octopus tree’, ‘the trampoline tree’ and ‘the swamp monster’ discussed by Waller (2006; 2007) and the metaphorical ‘resting tree’ noted by White (2009). As their familiarity with places increased through engagement with children’s personifications and other forms of magical, creative thinking, teachers became more place-responsive themselves.



Photograph sourced from The Monster’s tree Learning Story written by teachers at Campus Creche Preschool

Another teacher drew on notions of family and community—one of the four principles of *Te Whāriki*—in her discussion of place. She suggested that place-based relationships led to a sense of ownership; that children could feel this belonging based on locality and its location to them. Like teachers, children’s and their families’ familiarity with places can enhance their attachment and possibility of shared learning.

When it’s in your own place and it’s place-based the children have a greater ownership of it because it’s supported by whānau [family] and it’s supported by the surroundings that they live in, so when you go out into the community and do things, in the local community ... in the local area, it can be very empowering for children because they might, may or may not, but usually have some prior knowledge, some prior dispositions, some prior values and beliefs around it. So they can act on it a lot more, and they feel a lot more confident, because they are able to share what they know and they are able to pass on the stories from families and from history, so they already have that attachment to that area. [Julie D, FFG: 22–30]

In keeping with earlier suggestions, teachers at the final focus group also noted that these nature settings were ‘special places’ that children had visited with their teachers and peers and could take their families/whānau back to [Julie D, FFG: 26–30; Gill, FFG: 308–313]. Along with a sense of belonging, teachers at Paengaroa Kindergarten noted the importance of attachment to particular places or features of the environment, emanating from children’s secure relationships with teachers. In their discussions they identified that children initially attach themselves to teachers, staying close by them, on visits to Brann’s Farm or Suttons. However, over time as they become more familiar with the environment, they confidently explore further afield. Teachers saw children’s secure bond with them being responsible for this confidence and discussed a number of children as examples of these notions [Paengaroa Kindergarten staff meetings, transcripts and reflections]. These observations summon the child’s questions—Do you know me? Do you hear me? And am I safe here? as discussed by Carr et al., (2002).

Teachers were strong advocates for the notion that repeated visits to one location foster place-responsiveness in children, a point also explored by Wattchow & Brown (2011, p. 104). Teachers and children were working and learning in a variety of ways that responded to the peculiarities of the places they cared. They were attempting to create attachments with the land: their ECE environments, Mauao Base Track, Pukemokemoke, Brann’s Farm, Summerhill Farm, and the university campus in Hamilton (see 2.5.1–2.5.8 for descriptions). The physical features of the land appeared to hold significance for their teaching and learning, and repetitive sustained visits were seen as important, as one teacher explained:

I think for us it’s been mainly about building relationships with place, and the children have knowledge about different areas. [Cathie, FFG: 10–11]

One teacher advanced the view that children could have a more sophisticated relationship with nature than was accessible to them ‘within the centre gate’. Citing Frog boy, a well-coordinated physical child whom teachers described as having limited oral language, his teacher suggested that he had “blossomed” in the bush as there are many opportunities there for him to achieve, and to be a leader, based on his physical prowess. Teachers were surprised to see a completely different side of him on weekly visits to Pukemokemoke, suggesting that he excelled in the outdoors: “Back in the centre, the curriculum is fairly mundane for him, whereas in the forest he has all these opportunities” [Lynley, Campus Creche Preschool, Video diary, 06.07].

The depth of relationship, and sense of ownership, children can have with familiar environments was brought to mind during the research process in relation to the Rena maritime disaster that occurred towards the end of this study. Children from Papamoa, Paengaroa and Maungaarangi kindergartens were affected by this tragedy and its aftermath in their ‘backyards’. In many instances children’s, and teachers’, families and friends were involved in the clean-up including bird rescue efforts. The tragedy became a site for their learning based on some children’s intimate knowledge of the beach, the sea and sea-life that surrounded their setting (for further discussion see 5.3).

4.3 Saving children and the planet

A motivating feature for outdoor provision lay in teachers’ concern to promote healthy alternatives to the status quo which they saw as unacceptable for young children. One participant noted

We all know of examples where children are spending between 30, 40 and even 50 hours a week in tiny patches of astro-turfed areas and yeah we actually want to do something about that. [Kathryn, IFG: 253-255]

A rationale for outdoor experiences as more healthy for children was shared by other participants. Parent information offered to families/whānau of children attending the *Ngahere Explorers* excursions at Campus Creche Preschool included reference to “alarming childhood statistics in New Zealand in the 21st century including many children with behavioural as well as social skill problems and obesity concerns” (Campus Creche, 2010). This belief was shared by several participants, who suggested that this research project had a role to play in changing attitudes and types of provision,

We can start shifting the minds of other teachers who are perhaps [saying] what do we do? How do we go about these things? And then they’ll influence the centre that they’re in whether it be astro-turf or grass. [Tim, IFG: 385–387]

Alongside their mission of saving children from ill-health and obesity, saving the planet was also identified as a motivation for outdoor education and related ECEfS. Consistent with the claims of environmentalist Orr (2005), one teacher stressed the transformative potential of education in addressing a global crisis:

The globe is starting to identify its crisis so how are we going to shift this and, as educationalists, we know that education is one way we can do this. [Marion, IFG: 246–248]

Several teachers saw children as playing important roles in such transformation. There were anecdotal reports about children taking family members to specific nature contexts that they visited with peers and teachers as part of their ECE experience, places such as Pukemokemoke, Brann’s Farm and Mauao. One teacher described children as role models and teachers of their families/whānau and wider society.

I see by children taking their families there, the families will develop a bit of a love in their old age so we will become a community of people that want to preserve these places so that you are getting that total community involvement. [Annette, IFG: 205–208]

However, there appeared to be little recognition of the families'/whānau funds of knowledge that may have included engaging with nature and sustainable living. The connection with these is likely to be realised by further mediation of the child's experiences between home and the ECE setting (Moll, Amanti, Neff, & Gonzales, 1992) and a broadened approach to sustainability that does not rely solely on centre priorities alone (as was the case during the Rena disaster).

Throughout this discussion a strong political thrust was evident. Eight of the fourteen participants suggested, in various ways, that the teachers' role is to shift the thinking and actions of others [IFG—various]. One participant labelled it '*social engineering*' arguing its legitimacy based on existing social values and broader policy directions [Peter, IFG: 887]. This phenomenon is discussed by Dryzek (2005) who suggests that forms of coercion have the potential to be limiting, if promoted outside of a relationship with nature. It was interesting, therefore, to note a shift away from this orientation in the final focus group where teachers turned their attention onto themselves; *their* responsibilities and pedagogy in progressing the sustainability agenda (see 5.2).

4.4 Differing responses from children, families and teachers

Waite (2011) makes the claim that while children's rights and human rights are universal, not all children, or adults, respond to place in the same way. This was true for the participants in this study, according to the teachers. It may account, to some extent, for the diverse range of approaches to nature-based experiences across settings. For teachers, children's responses to learning 'beyond the gate' often appeared to be related to the strength of particular dispositions they possessed, for example resilience (Claxton & Carr, 2004); or their sense of agency, and their familiarity with particular places. The extent to which teachers were able to recognise children's priorities in the outdoors, and respond appropriately, varied according to their ability to 'see' what children were interested in, and the working theories they were exploring (we return to this point in the next chapter). For example, a cultural difference in encountering nature was identified by the translator employed part-time at Papamoa Kindergarten. She supported teachers to see, and hear, how a specific group of children coped with features of Brann's Farm, namely bridges and water. One teacher described how some children responded, emphasising their agency in the process:

Punjabi children, they'll quite often have a wee prayer before they cross the bridge so that that makes them safe, and that's just something that they just do innately and something they need to do and sometimes those environments are certainly new to them in lots of different ways and so that they adjust to the environment and know what keeps them, makes them feel good and safe and that's fine too. You know what you need to do. [Julie S, FFG, 186–190]

Not all parents or families/whānau shared the same high degree of support for nature-based learning. A teacher from the only rural setting in the project reported tensions between what teachers valued in terms of nature-based education and parental expectations:

We're in a rural community so we have children that are used to being in nature a lot, and they send them to us to 'learn.' I put that in inverted commas, and they don't see the adventure, the nature education as that learning experience that they send them to us for, when they can get it from within their home environment. [Debbie, FFG: 270–273].

Teachers also experienced nature-based curriculum experiences differently, seemingly related to their early experiences or socio-cultural backgrounds. Many teachers who actively engaged in the research identified that nature was an integral part of their growing up and were nostalgic about it. They believed in children's right to experience nature regularly as they did in childhood

We've all drawn on our own experiences as children to express what we are doing with children currently in our early childhood centres today and I think that that is a really strong point for families and community and society today in

valuing that that's childhood, and that nature is hand in hand with childhood experiences. [Julie D, IFG: 363–367]

And another teacher noted in a reflection:

It has always been a degree of nostalgia for me because more often than not our fondest memories of childhood are often in the context of being outside and exploring nature. [Debbie, Paengaroa Kindergarten, Reflective diary, 03.06]

However, not everyone felt the same. Colleagues did not always share this nostalgic view or commitment in relation to nature and play:

we do have quite a few teachers from other cultures [working in our centre] and you know, playing in mud, jumping over rocks, walking barefoot all summer, is just not something that they've been brought up in. [Lynley, FFG: 420–423]

Clearly, not everyone shared a passion for nature-based education as some of these quotes suggest. This diversity of responses challenges the notion expressed in the initial dialogue that, “everybody has an affinity with the land—settlers, tangata whenua, [and] the curriculum” [Lynley, IFG: 544–545]. Rather than universalising people's relationship, or affinity, with the land, Wattchow and Brown (2011) suggest that place and how individuals experience it is complex:

Our experience of place is always a combination of a specific physical location, our embodied encounter and the cultural ideas that influence the interpretations we make of the experience. (p. 47)

Waite, Evans, and Rogers (2011) also remind us that whilst places with their “cultural associations and functional features” offer learning opportunities, “they are not neutral spaces.” They emphasise that “we need to reflect on what the adults and children will bring to that place in terms of past experiences and social norms” (p. 62).

As discussed previously, teachers' feelings towards the environment are fundamental to their commitment (or otherwise) to nature-based education and education for sustainability. One teacher expressed her current and future goal; a goal seemingly shared by the other teachers present, as being to “grow that love of [nature] so we all want to care for it” [Debbie, FFG, 530]. This view is consistent with ‘building respectful relationships’ and ‘participating in communities of action’ pedagogies related to early childhood education for sustainability [ECEfS] according to Robinson & Vaealiki (2010, p. 178).

4.5 What about sustainability?

Many of the teachers in this study wanted to support children to become sustainability conscious now, and in the future. They identified one important path as being through an appreciation of nature and, by inference, taking children into the outdoors on a regular basis. This path relates to education *in* the environment and is one of three aspects of ECEfS discussed by Davis (1998; 2010; see 2.4). One teacher suggested that:

Our children have so much stimulation. There's the TV going at them all the time, computers in the classroom, all of these fantastic things they do but they don't often take the time to just slow down and look at the environment. [Lynley, IFG: 184–187]

Another teacher summed up the group's general feeling when she suggested that teachers should be promoting a loving relationship between children and nature—a concept some referred to as biophilia (see Wilson, 1984; Kellert & Wilson, 1993)

Taking [children] to natural settings, allowing them to see things that they are in awe of, and that they love. They will grow to understand why it is important that we protect these things and then, in future days, they will be the engineers of that too. [Cathie, IFG: 301–304]

In these discussions, teachers referred to education *in* the environment, in the present and the future. They did not specifically refer to the remaining two tenets of ECEfS as noted by Davis (1998; 2010)—that is, education *about* the environment and education *for* the environment. However, much of that data generated in response to site research questions explicitly foregrounded these approaches. For example, science-focussed learning that took place daily within and beyond the setting, such as: engagement with aspects of water conservation; gardening; making bird feeders; investigating moss, lichen and fungi; and discussions about evergreen and deciduous trees, are all *about* the environment. Enviro-schools kaupapa, keenly practised by several research sites, is comprised of collaborative problem solving, taking action, and indigenous ways of knowing (Eames et al., 2010). These approaches that are all aligned with education *for* the environment. This approach can be seen in the following Learning Story written by a teacher from Maunga-arangi Kindergarten.

Keeping our stream clean – Kaitiakitanga

Whaea Roxy 2 August 2011

We posed the question to our tamariki—Is our stream clean? Some children thought it was clean, others thought it was dirty. What makes our river dirty? Some children thought the mud and sand makes our river dirty. Somebody else said that things get washed into the river. Hmm, I wonder how we can find out if our stream is clean or dirty.

We called our friend Mātua Kevin at Environment Bay of Plenty. He said he could help us. He brought some special equipment to test the water with to see if it was clean or dirty. He took a sample of the water with him and will run some tests on it to see how clean it is. He also took the temperature of the water, and measured the oxygen level of the water. Mātua Kevin will call us next week to tell us the results of the test and what this means. Why is it important to keep our stream clean? Because this water flows out to the sea and we don't want our sea getting dirty. We also need to look after all water everywhere because it is one of our most precious resources. I wonder what we can do to keep the water clean. Who can help us to look after our stream? I hope we can continue this journey to keep our stream clean. I look forward to seeing what happens next.



*It is somewhat ironic that this discussion took place only two months before the Rena maritime disaster off the nearby coast (5 October 2012) <http://www.greenpeace.org/new-zealand/en/campaigns/climate-change/Rena-oil-spill/>

This learning story and the values inherent in it connect with both ECEfS education *for* the environment (Davis, 1998; 2009) and learning outcomes in *Te Whāriki* particularly in relation to the goal of Exploration. Learning Outcomes in this domain include that children will develop

- a relationship with the natural environment and a knowledge of their own place in the environment;
- respect and a developing sense of responsibility for the well-being of both the living and the non-living environment; and
- working theories about the living world and knowledge of how to care for it. (Ministry of Education, 1996, p. 90)

These connections—between sustainability, indigenous views of ecology and education curriculum for children—suggest that teachers were also committed to the notion of education *with* the environment, since the environment is regarded as a living entity by Māori as articulated in the initial focus group by one teacher:

In Aotearoa New Zealand we've got Māori language and culture, tikanga Māori that we can draw from. The iwi of the different areas, since coming here, have established a relationship with nature and have already got that ecological system in place where a self-sustaining system is in place ... in the last 2–300 years, maybe more than that. But it's shifted from being a sustainable community to one that we're not, so we don't look at in the same way and so when we put that stake—that Marion was saying—in the ground we are going “this is enough”. We've based our philosophy, the way we work, our practices, [at Maungaarangi] we can draw on indigenous sustainable practices from the past that has worked. So yeah we can draw on that history, we can draw on those stories, and we can draw on those legends that tell us how to be at one with nature. [Henare, IFG: 459–470]

Such practice connects with ongoing work by Ritchie (2010; 2011), Ritchie & Rau (2008) and Ritchie et al; (2010) who have written extensively on this topic. Similarly, in the current study there was an enthusiastic view of sustainability and its location within nature-based education:

[T]he robust dialogue [we had had] around how we find solutions to navigate a new pathway forward for our teachers and for our communities and ... the energy that this research project has brought to teams is really, really affirming, that by engaging in research in this way is beneficial for all ... from a management perspective I want to find ways to enable that we get this information out to others so that ... those ‘green patches of quilting’ start to connect together so that we get a broader, much broader commitment to some of these concepts. [Marion, FFG: 519–526]

This reference to a ‘patchwork quilt’ metaphor is from Davis, Elliot, & Early Childhood Australia (2003). In this conception, nature-based education was seen as a means of promoting sustainable practices in, about, for, and with the environment so that others would see their relevance. The emphasis in the dialogue signalled a clear shift from wanting to change the thinking and actions of others towards individual and ECE setting accountability. The challenges this posed for those who share in this commitment and the notion of biophilia that is “the innate tendency to focus on life and lifelike processes” (Wilson, 1984, p. 1) were also summoned within this discourse [Fiona, IFG: 706–708; Tim, IFG: 815–817]. We pick up this theme in the chapter that follows.

4.6 Summary

“There are places to love, let's look after them, and how do we look after them?” [Cathie, FFG: 539–541]. In posing this question, teachers implicated themselves as guardians or kaitiaki of the environment (Pere, 1991, 1998; See also Eames et al., 2010; O'Connor, 2011) both within and beyond the ECE setting gate. In their provision and practice of nature-based education, teachers sought to honour the curriculum, and give effect to the third aspect of ECEfS—education ‘for’ the environment (Davis, 2010; Davis, Elliott, & Early Childhood Australia, 2003). As signatories to the *Treaty of Waitangi* with its explicit principle of protection, teachers located this work through engagement with the living earth as a cornerstone of ethics, sustainability and rights discourses. In doing so, they reconciled their obligations to sustainability through regular nature-based experiences.

Yet, as the quote at the outset of this chapter suggested, “you don't have to do it our way, you don't have to do it this way or this way, you can do it your own way and it will be your own” [Tim, IFG: 750–752]. Teachers in each setting responded to their obligations in different ways. Some discovered that the natural resources they provided within the ECE setting were equally significant to their sustainability agenda as were their trips to the bush. Others recognised the principal role of culture in the process. This is consistent with the vision of *Te Whāriki*, with its broad non-prescriptive framework, that “acknowledges that the relationships and the environments that children experience have a direct impact on their learning and development” (Ministry of Education, 1996, p. 7).

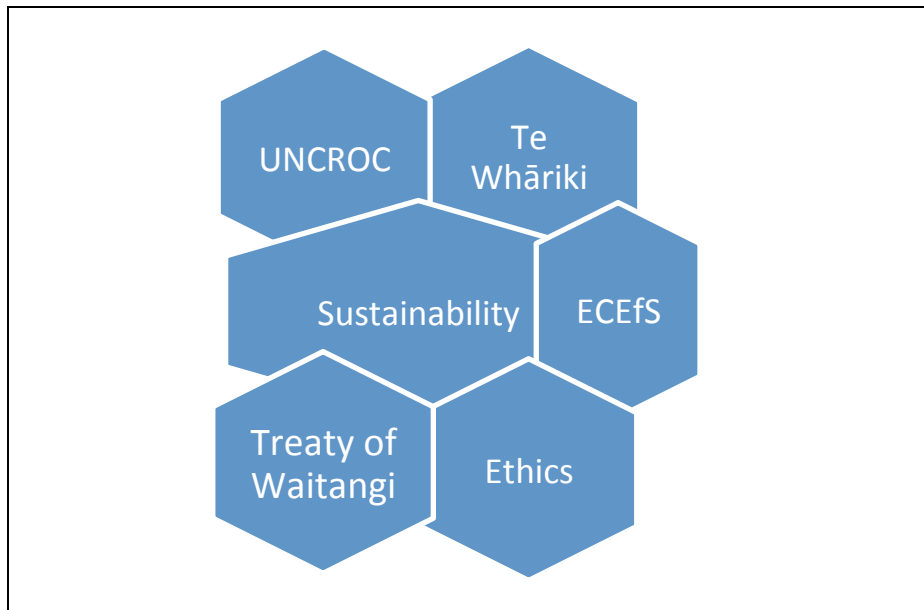


Figure 3: Sustainable ECE provision: Interrelated documents, principles and concepts

This diversity of nature based education provision is consistent with the early childhood curriculum:

[It] has been envisaged as a whāriki, or mat, woven from the principles, strands, and goals ... the whāriki concept recognises the diversity of ECE in Aotearoa New Zealand. Different programmes, philosophies, structures, and environments will contribute to the distinctive patterns of the whāriki. (Ministry of Education, 1996, p. 11)

As this chapter has highlighted, nature-based learning looks different in diverse settings dependent on a range of factors including: who teachers are and where they come from; how they understand and implement their pedagogical obligations under *Te Whāriki*, the *Treaty of Waitangi*, UNCROC, ECEfS and Enviroschools kaupapa (where applicable); the specific physical locations they inhabit or visit, each with their own cultural associations, and functional features; and what adults and children bring to those places in terms of past experiences, dispositions, interests, attitudes, social norms, cultural ideas and interpretations.

However, the provision of nature-based education is not just about places and things. It is also about people and pedagogy. Obviously, a range of challenges and provocations surrounding effective engagement with nature existed previously, or surfaced for many of the teachers in this study. Many teachers held firm beliefs about the value of experiences beyond the gate but had not specifically examined their practice in relation to these objectives. In the chapter that follows, we present the challenges and provocations that arose when these were examined in terms of teacher pedagogy, and its impact on children’s learning in the outdoors—both of which became central to the teachers’ agenda through the action research process.

CHAPTER 5: PEDAGOGICAL ISSUES AND PROVOCATIONS IN NATURE

Having explored the provision of nature-based ECE and its relationship to sustainability in the previous chapter, the section that follows explores associated aspects of teacher practice. The pedagogical provocations that arose in each setting are explored in light of the teachers' identified commitment to five cornerstones of sustainable practice—*Te Whāriki*, the *Treaty of Waitangi*, UNCROC, ECEfS, and Ethics alongside their own beliefs and contexts for learning. We were interested to understand the kinds of challenges teachers experienced enacting curriculum outdoors alongside a commitment to sustainability. Our inquiries were located within the everyday realities of centre life as teachers worked towards their sustainability agenda(s). The centrality of relationships in *Te Whāriki* presented an important place to examine the experiences that took place beyond the gate between teachers and children; children and peers; and the environment and children. We sought to understand how these relationships acted as sites for learning and teaching, by exploring “connections between activities, people, places and things” (Martin & Rose, 2007).

Therefore, our second overarching question asked: *What are some of the pedagogical issues and provocations teachers face in this domain?*

Through this investigation we sought to identify *shifts* across the action research process (evident in discussions across focus groups held during the reconnaissance and evaluation stages [IFG and FFG]) and *issues, problems* or *provocations* that arose through the action research process (Table 1 and Figure 2) in, across, and between sites. We conclude this section by suggesting that pedagogies in the outdoors are a fuller representation of the tenets of *Te Whāriki* rather than ‘new’ pedagogies.

5.0 Pedagogy in the outdoors

Pedagogy is variously described as the “science” (Loughran, 2010) or “uncertain art” (White, 2011) of teaching and learning. Pedagogy is not referred to by name in *Te Whāriki* but, in the English version particularly, orients towards constructivist, pragmatist and sociocultural approaches to learning as a basis for ECE practice. These approaches privilege transformative approaches to education, with an emphasis on discovery through experience—a central tenet of experiential learning discussed earlier. Yet within *Te Whāriki* (especially the Te Reo Māori version) status is also given to the mystery, wonder and unknowability of the learner (White & Mika, in press). In the recently developed national curriculum *Belonging, being & becoming: Early Years Learning Framework for Australia*, ‘pedagogy’ has been defined as: “early childhood educators’ professional practice, especially those aspects that involve building and nurturing relationships, curriculum decision-making, teaching and learning” (Australian Government Department of Education, Employment and Workplace, 2009, pp. 9 & 46). Seen in this light it might also be appropriate to describe pedagogy as a process of making decisions about what to do and how to do it.

Teachers in this study took their pedagogical responsibilities seriously. Aotearoa New Zealand ECE settings are clearly situated within a teaching and learning framework which foregrounds pedagogies based on principles of Family and Community, Empowerment, Holistic development, and Relationships; and the strands of Exploration, Communication, Well-being, Belonging and Contribution. *Te Whāriki* states, “The direction and speed of learning and growing will often fluctuate from day to day, according to where the child is and the people they are with” (Ministry of Education, 1996, p. 21). Teachers held differing views on the role that they could or should (or should not) play in nature settings with these principles in mind. While most teachers were able to articulate a philosophy of teaching that was consistent with

their practice in the outdoors, there were significant challenges for them in reconciling these ideals within everyday practice. It was clear that each setting, and each teacher within that setting, had to work out their priorities based on the context, the child and the provocations that both offered in the outdoors, moment-by-moment. When these priorities were shared by others, teachers felt more able to achieve their sustainability goals:

With our teaching team it's been made a lot easier, I think, with all of us supporting the same kaupapa ... as long as they've got two people in your centre with an interest or passion for nature it makes it a lot easier for that to grow in the centre. [Henare, IFG: 923–927]

Environments play a vital role in relationships with people, places and things (Kelly & Jurisich, 2010) which lie at the heart of learning through the ECE curriculum. However, it is important to note that *Te Whāriki* is a framework and not a prescriptive document. Teachers are charged with responsibility for bringing the curriculum principles and strands to life in their practice. This is true for any educational setting in New Zealand and the related sites in which learning takes place. It means that teachers need to draw on their expert knowledge of the individual child, child development, the curriculum, the regulatory environment and the natural environment simultaneously, to uphold their pedagogical obligations. There is no 'recipe' beyond the values and principles that underpin teachers' practice, and the extent to which these represent ethical choice versus dogma, for all involved.

A number of pedagogies are identified in the literature related to education and education in nature environments: 'Māori pedagogies' (Hemara, 2000), 'play-based and playful pedagogies', 'alternative pedagogies' 'stimulating contingent pedagogies' (see Waite, 2011), 'the pedagogic garden' (Harding, 2005), and 'a relational pedagogy' (Brownlee & Berthelson, 2006; Fraser et al., 2007: see also Rule, 2012). In specific literature related to education for sustainability we find 'place-based' or 'place-responsive pedagogy' (Everett et al., 2009; Wattchow & Brown, 2011); 'pedagogies of ECEfs', 'emerging pedagogies' and 'new or reinvigorated pedagogies' (Robinson & Vaealiki, 2010). Meanwhile teachers, management and researchers before, during and (as a result of their reading) after the research processes found synergy with pedagogies that prioritised relationships with other (nature and child). These include 'a pedagogy of listening' (Rinaldi, 2001, 2006; Sandvik, 2009), 'a pedagogy of listening and seeing' and 'a pedagogy of risk and opportunity' (Kelly & White, 2012), 'dialogic pedagogy' (Hardy, 2006; White & Peters, 2011), and critical pedagogy (Giroux, 1988). Teachers came to realise that all of these pedagogies can be found in a richer theorisation of *Te Whāriki* that was provoked through a focus on teaching and learning possibilities in nature-based settings where sustainability is being enacted.

5.1 A paradigm shift?

During the initial focus group (IFG), it was evident that teachers held diverse views about their pedagogical roles in the outdoors. A senior teacher explained that, "those are really big challenges for us because there's a range of understanding or expectations about what that might look like" [Marion, FFG: 335–336]. From the research outset, one of the major challenges teachers presented was in their conceptualisation of pedagogies in the outdoors and their relationship to the early childhood curriculum. Questions about the extent to which nature-based education represented a paradigm shift were raised early in the discussion. Some participants (consistent with Wattchow & Brown, 2011; and some contributors to Waite, 2011) proposed that pedagogies in the outdoors differed to those within the ECE setting gate. They suggested a shift in mind-set was required akin to the "new or reinvigorated pedagogies" discussed by Robinson & Vaealiki (2010, p. 178). Others viewed pedagogies in these contexts as a deeper and richer fulfilment of the goals of *Te Whāriki* and associated practices already known to teachers:

If we're talking about teachers who are responsive and teaching to *Te Whāriki*, then they need to be able to make sure children can explore different interesting areas to them and, if we have an ECE centre that doesn't have natural areas for the child, then we need to think about the reasons for that. [Amy, IFG: 61–65]

Still others perceived the use of nature-based pedagogies as “going back to what we used to value” [Julie D, IFG: 587] and “back as part of that connectedness with nature” [Debbie, IFG: 592–593].

By the final focus group, however, there was agreement that nature-based pedagogies were totally aligned to the “innovative open-ended early childhood curriculum” [Amy, IFG: 532]. Another teacher suggested that nature-based pedagogies and the curriculum were reconciled due to the natural alignment between sustainable principles, the curriculum and indigenous approaches to land. In this way, they described their pedagogy as “more of a context shift because we’re still working with *Te Whāriki*” [Peter, IFG: 573–574]. As one teacher explained “It [nature-based education] supports our beautiful curriculum” [Cathie, IFG: 798]. Nature-based education provided additional avenues for teachers to deepen their understanding of *Te Whāriki* and its relationship to a Māori worldview, theories of learning and children’s rights discourse. This finding supports Knight’s (2009) view that

The listening-and-observing approach exemplified by Reggio Emilia and Te Whāriki demonstrates a difference in paradigms ... many theorists and practitioners in the early years sector are embracing the paradigm shift from starting with a curriculum to starting with a child’s interests and concerns. (p. 67)

5.2 The role of the teacher

While teachers agreed that nature-based education did not represent a paradigm shift for them, they identified many issues and provocations in their teaching practice as a result of the research. The extent to which practices altered in outdoor experiences focussed around teachers’ views of the outdoors, and the extent to which they needed to intervene, or step back, as a result. These shifts were signalled early in the research process:

It’s something that’s evolving and I think like ... if the teacher stands back and is there for the interaction compared with the interaction of us always going in there and questioning the children and perhaps over-questioning. Where do we draw the line of actually standing back instead of going in there to take it further? I think that’s something we have to be aware of in terms of our roles, that they could change, evolve, through this [research] process. [Debbie, IFG: 164–170]

Much of the teachers’ deliberations were focussed around how they saw their role in relation to their pedagogical responsibilities. For instance, the extent to which teachers felt they could ‘stand back’ and support outdoor experiential learning without intervening was dependent on the extent to which they saw they could uphold children’s safety and, thus, accept learning as uncertain, fluid and unpredictable. Other teachers’ levels of intervention were determined by their beliefs about liberating others towards sustainability goals. One teacher described her role as “putting a stake in the ground and saying ‘these are important issues for societies to be educated about’” (Marion, IFG: 233–235)—a belief that she and her colleagues actively promoted through their teaching practice in the outdoors. These deliberations are connected with *adult responsibilities in management, organisation, and practice* spelled out in *Te Whāriki*, “Adults need to know how to support and extend children’s play without interrupting or dominating the activity and should avoid unnecessary intervention” (Ministry of Education, 1996, p. 83).

Hence, according to their beliefs, teachers’ pedagogical roles in the outdoors could be expressed as a continuum bounded by passive teaching strategies at one end and active teaching strategies at the other. Figure 4 presents some of these teaching strategies on a continuum of passive or active intervention, based on the teachers’ descriptions of their roles in nature settings. These roles are explored in the sections that follow.

Figure 4: A continuum of pedagogical roles in nature-based ECE

Passive	Active
<i>Exposing nature (provision of experiences)</i>	<i>Examining nature (co-construction of learning within experiences)</i>
<i>Undirected exploration and engagement</i>	<i>Transmitting knowledge</i>
<i>Intentionally standing back</i>	<i>Intentionally moving in</i>
<i>Modelling engagement with nature</i>	<i>Problem posing</i>
<i>Observing</i>	<i>Mediating, instructing, intervening, transmitting</i>
<i>Silent or embodied dialogues</i>	<i>Verbal dialogue</i>

The research also revealed a range of associated factors that impacted on the type of pedagogies used. Many of these active pedagogical roles are identified by McNaughton and Williams (2009) as ‘community building’ strategies. Issues such as: teachers’ knowledge of (and familiarity with) the environment and the children; teachers working individually, and/or collectively as a team; and their interpretations of the curriculum; all significantly influenced their choice of teaching strategies. These findings support the views of Moss and Petrie (2002) that no pedagogy is ever value free or neutral. Nor does pedagogy occur without careful consideration of the child as partner in the process (White, 2009). What seemed unique to these Aotearoa New Zealand nature-based contexts was that the environment was a central, living, aspect of the curriculum, offering challenges and opportunities to teachers and children alike. As Waite, Evans, & Rogers (2011) state “the mutual influence of place, child and others offers a powerful mediation arena for innovative pedagogical approaches” (p. 62). Some of these approaches were previously known to teachers while others were discovered, re-discovered or re-conceptualised through the action research process.

5.3 Practices affirmed

The research process confirmed a number of the pedagogical strategies teachers were already using in the outdoors. These focussed mainly on familiar pedagogical approaches associated with sustainability agendas for children based on Enviroschools (Eames et al., 2010) and kaupapa Māori perspectives (Ka’ai & Higgins, 2004; Colbung et al., 2007). For example the research question at Maungaarangi Kindergarten focussed specifically on what local tikanga Māori could teach them about engaging with nature. As alluded to in the previous chapter, five pou or core principles are at the heart this kindergarten’s pedagogy—including their philosophy, planning and assessment. Seven local pūrākau exemplify the morals and values related to these pou or principles such as manaakitanga, or caring for ourselves, each other and the environment, fundamental to their curriculum, along with aroha, whānaungatanga and wairuatanga, or love, kinship and spiritual connectedness (Ka’ai & Higgins, 2004). These values were enacted through repeated telling of the pūrākau, followed by modelling, encouragement and praise by teachers when children applied this knowledge to real life contexts or in play.

Significant events in the Māori calendar, for example *Matariki*, the Māori New Year, were also prioritised and celebrated. Teachers worked with children and families/whānau to harvest

vegetables from their garden—a traditional practice at this time of year. Having a special feast for families/whānau further reinforced connections between children’s cultural and horticultural knowledge and principles of sustainability. Valued learning was identified in their assessment documentation which took the form of ‘*Learning Stories*’ (Carr, 2001; Carr & Lee, 2012). Teachers believed this kaupapa would become embedded in children’s everyday experience at play through this promotion. They actively ‘taught’ (transmitted) Māori knowledge through consistently and deliberately making connections to kaitiakitanga and manaakitanga, protecting and caring for the natural environment. In this way they saw that children would come to fully appreciate these values.

Parents too came to recognise and appreciate the valuable real-life learning based on *Te Ao Māori* or a Māori world view (Ka’ai & Higgins, 2004) visible throughout the kindergarten curriculum ‘experiences, activities and events’. One teacher explained how the children’s response to the Rena disaster⁶ was borne out of their understandings of tikanga Māori and related responses to tragedy. The following dialogue at the final focus group five weeks after the Rena catastrophe conveys her belief that their pedagogical interventions, now conceived as a form of problem posing, had led children to develop empathy for others and a desire to care for them in times of tragedy and loss:

We spoke to the children about it and said ‘You know, what can we do to help?’ and the first thing they said was ‘kai’. And so they went home to their whānau and said ‘we need kai for the Rena workers’ and before you knew it, the whole kitchen was filled. And that’s, you know, that’s their language, that’s what they give. And I think, you know, the fact that we’ve concentrated on local Māori myths and legends and things that whānau had knowledge of, it’s made the learning more real to them [the families/whānau] and they can relate more to what we’re doing’ [Fiona, FFG: 128–132]



Children’s responses to Rena maritime disaster—Maungaarangi Kindergarten documentation

5.4 Shifts in practice

While some of the teachers’ pedagogical priorities were consolidated across the research process, they faced significant challenges and provocations during their experiences beyond the gate. Many were associated with their personal (individual) and professional (team) philosophy of teaching and learning, their ‘image’ of the child, and their developing capacity to see the learning potential in everyday experiences from multiple perspectives. Approaching experiences with a commitment to listening and seeing, enabled the teachers to learn more about themselves and others, and to revisit their priorities for teaching and learning, as the examples discussed here show. Consequently, some teachers recognised and reported shifts after in-depth scrutiny of their own practice. In doing so they became more aware of the impact of their practice on

⁶ Worst environmental disaster in New Zealand maritime history. Cargo ship hit reef off coast of Tauranga on 5 October 2011 and began leaking oil, which was to have major impact on beaches and sea for months, and on shellfish beds for years.

others, and the environment. From the research outset teachers identified that shifts may be warranted.

We want teachers who support children through that process and who allow them and actually encourage them to become advocates ... how you can work through some of those [many] issues and that pedagogical shifting of teaching style. [Amy, IFG: 413–419]

5.4.1 Noticing and recognising learning

Specified outcomes for children in Aotearoa New Zealand early childhood education contemporary discourse are typically located within the realm of dispositional theory (Carr, 2001). ‘Knowledge, skills and attitudes’ are conceptualised as dispositions. Working theories are mentioned but unlike dispositions, they have only recently been the subject of an extensive research project, namely the Teaching and Learning Research Initiative project *Moments of wonder, everyday events: Children’s working theories in action* (Davis & Peters, 2011). Hedges & Jones (2012) described working theories as “the neglected sibling of Te Whāriki’s learning outcomes” (p. 34). In *The Ngahere Project*, a number of teachers sought to investigate specific aspects of children’s learning in their site-specific research questions. While dispositions were widely used across all research sites, working theories were not explicitly profiled, with the exception of Papamoa Kindergarten.

The dispositions most keenly described by teachers across most research sites were those associated with ‘taking an interest’, ‘taking responsibility’ and ‘sharing insights with others’. These dispositions were often based on prior knowledge that enabled children to “share what they know and they are able to pass on from the stories of families and their history, so they already have that attachment to that area” [Julie D, FFG: 28–30]. This re-telling of stories from home connects with families’ funds of knowledge (Moll et al., 1992). Teachers concluded that they had little need to ‘educate’ children to care for the environment. Rather, they suggested that when children were granted time and space to engage in the outdoors they already possessed these dispositions.

Campus Creche Preschool trips to Pukemokemoke were characterised by pedagogy that actively utilised pūrākau, as did Maungaarangi Kindergarten, focussed on care for each other and the environment. Here teachers were intentional in their teaching which was targeted towards the explicit learning outcomes of the *Ngahere Explorers* programme and what was valued in the bush setting (Campus Creche, 2010). These teachers confronted children with physical challenges such as crossing streams, climbing the hill (and sliding down again), and tramping to the mountain summit with a view to strengthening their resilience—a key disposition they associated with engagement with nature.



Photographs sourced from Learning Stories written by teachers at Campus Creche Preschool

Initially the teachers were more likely to see behaviours and traits rather than, as their research question identified, children’s dispositions—skills, knowledge and attitudes to learning. These were more difficult for teachers to recognise based on their initial understandings, for example,

that “Children will gain positive dispositions and attitudes for investigating interests...” (Campus Creche, 2010). These teachers questioned whether they knew enough about dispositions and about what they were really looking for? We note that following the research project they embarked on whole-centre professional development around assessment and dispositional learning. The idea that children will develop dispositions from nature-based experiences, and this questioning, coupled with earlier suggestions by other teachers that children already possessed certain dispositions, are noteworthy. They are indicative of the variable understandings ECE teachers have of dispositions generally. It was useful for us to return to Claxton & Carr (2004) who offer helpful advice that teachers should look at dispositions as verbs with qualifying adverbs, rather than nouns or “things to be acquired”. They argue that “One does not ‘acquire a disposition’, one ‘becomes more or less disposed’ to respond in such-and-such a way”. They suggest that instead teachers should be “charting their potential or possible direction of growth [as this will provide] some guidance about what we do that strengthens or weakens them” (p. 88). Hence, teachers saw that children from the *Ngahere Explorers* engaged in dispositions more or less “frequently, or appropriately, or skilfully” (p. 89) and that the strength of these tendencies changed over time through the nature-based programme they created within and beyond the gate.

Further analysis of Campus Creche Preschool Learning Stories (research data) revealed the primacy they gave to resilience and two other key dispositions: imagination via storytelling, and reciprocity seen in the “shared responsibility, communicating ideas and valuing being and becoming a group member” (Carr et al., 2009, p. 24). Through the research process these teachers identified dispositions in the outdoor environment that they had not recognised within their centre setting. They also realised the limitations they had previously placed on children who revealed themselves differently in the outdoor environment. Teachers were challenged by their own role in the complex task of noticing learning. They also realised the importance of upholding a shared approach across the teaching—even with those who did not share in the outdoor experience:

We may not even have noticed it ... and it may appear on our bit of paper that we've written down that this child has not made any [progress] but actually they've internalised something amazing. And unless we ask the right questions or listen carefully enough, we're not going to know ... we really need to pose those questions and listen. [Lynley, FFG: 44–47]

In a traditional educational sense, many learning outcomes throughout the research could be seen as less than tangible because they often related to affective rather than cognitive learning. Outcomes for children were conveyed in “the joy, awe and wonder in faces” [Marion, IFG: 875]; evidence of children’s “connectedness with nature” [Debbie, IFG: 592–593]; as “another alternative to relaxation” [Lynley, IFG: 192–193]; an opportunity to claim “the luxury of time to enjoy the place we’re at” [Julie S, FFG:493–494] and engage in an “almost spiritual” [Lynley, IFG: 189] experience with no objective in mind that one teacher described as “being at one with nature” [Henare, IFG,470]. The outdoor setting, it seemed, offered a hiatus in the busy-ness of life and gave children—and teachers—an opportunity to pause. As one teacher explained “there’s huge personal learning in silence” [Kathryn: IFG: 322–323]. Teachers often described the related outcome as a kind of biophilia, or love of nature, arguing that this could only be achieved when adults shared in this sense of wonder:

Starting with knowledge, you have to gain the knowledge, then you develop your values, you gain respect pertaining to what you are interested in and then with those three things you are able to instil the biophilia, the love of life, into the children you work with. [Tim, FFG: 816–819]

These are the ‘soft’ skills or hard to evaluate outcomes of nature-based education that Knight (n.d.a) reported grappling with as she sought to show the lasting benefits of Forest School (kindergarten) on children at primary school. That is not to say that there are not sound educational benefits to be realised from Forest School and related nature-based education; rather that the search goes on for a measure of outcomes or impact, that is acceptable to policy makers and others oriented to discrete academic or cognitive skills.

5.4.2 A pedagogy of opportunity versus risk

Consistent with the international literature on risk in outdoor ECE (Ball, Gill, & Spiegel, 2009; see also Cameron, 2005; Huggins & Wickett, 2011; Sandseter, 2009, 2010; Stephenson, 2003; Tovey, 2007; Waite, 2011), the teachers in this study were frequently confronted by their response to safety as an important component of their pedagogy in experiences beyond the gate. The special places they visited: local neighbourhoods, Brann's Farm, Mauao Base Track, Summerhill Farm and the university campus were outdoor environments full of opportunity—but also full of risk. Teachers were challenged to see children as competent and capable (an aspiration of *Te Whāriki*) while not losing sight of their vulnerability (and in response to ECE regulatory accountabilities). This tension was magnified at Campus Creche Teenies in their work with toddlers beyond the gate. Teachers sought to understand this dualism by exploring the professional judgments they made during regular outings to the university campus.

In recognising this tension they bridged a complex pedagogical space that they came to see as 'an opportunity space' for teachers and children alike, a concept explored by Dysthe (2011). Teachers shared legitimate concerns regarding their response to the ECE Regulations (Ministry of Education, 2009) and the capacity for toddlers to be safe in unknown landscapes that were not designed for children of this age. Their weekly video diaries revealed a range of complex issues each teacher faced on their encounters beyond the gate. These included the extent to which teachers were familiar with each child and their capabilities or preferences, teachers' capacity to tolerate surprise and uncertainty, the trust that teachers placed in one another to "watch my back" and, above all, an ability to advocate for the rights of toddlers to explore the wider world. Such advocacy was seen in instances such as supporting a toddler to linger in a puddle on a rainy day as one teacher described:

At the time it was cold and wet but I could see that he was really enjoying the experience. It was a good teaching moment because I could see he was going from one end of the puddle to the other and there wasn't a lot of water. I was like, 'well, what does it feel like'. And we were exploring things like 'Oh it's quite sticky'. As the water was slowly creeping up his legs, it was great time to compare level of splashes as the water disappeared. He was lovin' it. [Mel, Campus Creche Teenies, Video diary, 12.06]

Teachers' advocacy on behalf of children could also be seen during outings when they reminded other adults to view toddlers as people rather than 'cute' objects for adult entertainment such as when university students and staff stopped to engage with and comment on the toddlers within the university grounds [Campus Creche Teenies, Video diaries—various].

Aspects of intervention or non-intervention during outings were associated with size and movement in situations such as crossing the road and determining whose hand would need to be held at any particular moment. In all cases teachers juggled time with space—making decisions to linger in places that attracted the toddlers' attention rather than emphasising the destination whilst maintaining rosters and timetables. As one teacher explained "Actually it's the process rather than the destination with these young children" [Amy, Campus Creche Teenies, Video diary, 24.07]. Through their reflections, teachers came to recognise that the distinction between risk and opportunity was largely determined by: their own attitudes about the environment, toddlers' developmental capabilities, and trust of each member of the team. This became central to their pedagogy and led them to interpret the rules (regulations) in a manner that responded to them creatively and did not limit opportunities. What constituted risk—for whom, by whom—became an important aspect of their practice. For example, one teacher described her anxieties when toddlers ventured close to the duck pond on the university campus:

In a semi-selfish sort of way I really didn't want to jump in the water! I was prepared to pull her back in time so that I didn't get wet. [Mel, Campus Creche Teenies, Video diary, 12.06]

The centrality of trust, one of the seven principles of Forest Kindergarten according to Knight (2009; see 2.2.2), was also an important component of pedagogy for teachers involved in Campus Creche Preschool's *Ngahere Explorers* programme. Unlike other settings involved in

the research, not all Preschool staff participated in the nature-based learning at Pukemokemoke. Only two out of six teachers took part in the data generation phase of the research. This was because their specific programme only required two teachers to accompany seven children on their weekly excursions to Pukemokemoke and the teachers who regularly led these trips were those who were passionate about nature-based education, the bush and this research.

In this setting, and at Paengaroa Kindergarten, several teachers saw specific skills being necessary for teachers to achieve the educational aspirations they had for outdoor learning (akin to trained staff criteria discussed by Knight, 2009). In several reflections, one teacher highlighted her extensive bushcraft knowledge and the necessity of safety issues in the ‘wild’. In one entry, she reflected that the day was calm and risk-free except for the children who were inappropriately clothed for the cold and wet day (also akin to Forest School criteria—see 2.2.2). She identified that there were things she might do differently, recording that “when a teacher is focused on a learning experience they can become inadvertently unfocussed on the total environment”. She noticed a “near hypothermic child” [Unnamed, Paengaroa Kindergarten, Reflective diary, 17.06] another teacher had failed to notice, suggesting that “more than one set of eyes keeps the children safe”. This perceived tension between education and care may have related to a practice where teachers (and parent helpers) leading or following small groups of children split off from the main group. Issues such as this required ongoing dialogue and common understandings among teachers about group supervision. Such dialogue was critical to teachers’ pedagogy as they negotiated their way through difficult and challenging encounters in the outdoors.

In teachers’ reflections, the importance of communication, knowing the environment and the approach (and associated attitude) of each member of the team during outdoor experiences was reiterated. At the end of the research process, one teacher noted:

You don’t always reach a consensus but we’ve learnt a lot about working with each other and how to manage working with each other. Because we don’t always go out with the same people either, so if you know that you’re going out there with a teacher who, you know, has identified, say health and safety or hazards as something that is very important in her belief around nature education, then we support that. We’re aware of that and we support that with other aspects of teachers’ values and beliefs that come through that we need to know, we have to know, and then we trust each other to support each other. [Julie D, FFG: 230–237]

Meanwhile, a senior teacher reminded us all of the ongoing challenges in the provision of nature-based education:

We have debates around challenges around how we support teachers in regard to their pedagogy, their understanding. Equipping them for being teachers, for being facilitators in that nature-based environment, and acknowledging also that those nature-based environments are varied and so the equipping is perhaps needing to be varied depending on what those experiences those teachers are having. [Marion, FFG: 331–335]

These examples from the data highlight the importance of professional relationships within the teaching team related to encounters beyond the ECE gate. Each foregrounds the importance of relationships that involve high levels of trust: trusting the environment and the opportunities provided; trusting each other (including parent helpers); communication about expectations and assumptions; and knowledge of the environment itself. Teachers argued that knowing each teacher’s skill-set and priorities for children’s learning contributed to the levels of confidence within the team. They also support their capacity to enact the pedagogical strategies they believed to be important in these uncertain environments:

[Teachers] have the shift into thinking, believing and knowing that there actually is huge learning on the other side of the gate and having that faith and that trust in taking those teaching skills and abilities into the wider context, into the wider environment and having that shift in their own teaching practice. [Kathryn, IFG: 70–84]

5.4.3 Children as curriculum leaders

In addition to trust within teaching teams and trusting the environment during outdoor experiences, a third and often confronting aspect of trust for the teachers was their ability to allow children to lead their own learning. Again we see another connection to a Forest School principle, this time that learning is play-based and as far as possible child-initiated and child-led (Knight, 2009, pp. 15-17; see 2.2.2). Through their positive engagement with nature, teachers came to describe children as curriculum leaders and strong advocates for the environment. The research process enabled teachers to develop a heightened appreciation of the children's leadership potential in the outdoors, citing numerous examples of this in their discoveries. The learning power of young children was brought to mind for teachers when they were able to reflect on the data. They recognised, for example, the way children responded, generally with ease and without complaint, to physical challenges such as walks up (Pukemokemoke) or around a mountain (Mauao). Teachers found that children frequently revealed complex and creative meaning-making in nature spaces when teachers were more attuned to children's priorities. One of numerous examples was evident in a child's discovery of coloured slime through the camera lens—variously described as “red like a fire engine”, “pumpkin” and “put the chilli sauce inta cup” [Barbie, home-based ECE: Stimulated recall interview, 28.06].



Photograph taken by Coco, home-based ECE Kimi Haere, 28.06

Facilitating children's engagement with the natural environment therefore became a critical part of teachers' pedagogy—ranging from the simple exposure of “being out in the rain, being out in the mud, being wet” [Amy, IFG: 427] to visiting large, potentially unpredictable spaces like Summerhill Farm or the university campus with exploration in mind. One teacher reported that on a visit to Brann's Farm she had supported a child to go exploring by himself, saying only:

If you can't see me, you need to turn round and come back'. So he headed off. Then the other two said 'Oh, can we go too?' and I said 'Absolutely'. So they ventured off over the fence by themselves and up the hill, then they came back, and then they went again, then they came back.... [Debbie, Paengaroa Kindergarten staff meeting transcript, 01.07]



Photograph sourced from file collection at Paengaroa Kindergarten

The teacher recognised that she did not do so without relinquishing power and control over the situation. She later described the internal turmoil she experienced in this moment as a turning point in her professional journey. As Hydon (2007, cited in Robinson & Vaealiki, 2010) suggests, such moments represent ethical encounters that are “a way of travelling” (p. 7) in outdoor education. Experiences of this nature also caused teachers to think creatively about the environments, the challenges, and the kind of equipment that was offered inside the gate. At Papamoa Kindergarten, a commitment to democratic processes saw children’s desires for features akin to Brann’s Farm incorporated into the design for the renewed outdoor environment. Children were joyous when their requests for a stream (water that you can climb in), a humpy bridge and rocks were implemented [Gill, Papamoa Kindergarten, initial analysis notes].

In several research sites, teachers were replacing traditional climbing boxes with pine logs or manuka. Teachers also recognised that open-ended materials offered children a different means of creative engagement because “out in those spaces they are away from our traditional tools and they can use only what they find in the environment. And that takes a certain shift in the children’s thinking and adaptability” [Annette, IFG: 8–11]. Another teacher argued for consistency between the experiences and resources available within and beyond the gate:

We need to ensure the kindergarten environment offers the same opportunities and reflects the same activities as we would outside the gate. For example our paints [need] to be made from natural resources ... tools available so that children can build with natural resources ... regular fires and cooking so that it lessens the risk. [Debbie, Paengaroa Kindergarten, Reflective diary, 03.06]



Photograph sourced from file collection at Papamoa Kindergarten

Several examples of children using sticks and other natural resources in dynamic ways to represent their discoveries were evident in the data.



*(L) Waybig recreates spiders’ webs, Papamoa Kindergarten photograph sourced from Learning Story
(R) A fairy grotto made of branches, photograph taken by Coco [home-based ECE Kimi Haere, 07.07]*

These discoveries are significant from a sociocultural standpoint. Vygotsky (1978) used the example of a stick to explain his idea that there are cultural parameters surrounding the way objects might be used. When rules are suspended, however, it becomes possible, through the imagination, for a stick to become a web or a fairy grotto (or in Vygotsky's case, a horse). Through such means, the child can alter the meaning without changing reality. Vygotsky proposes that such imaginative encounters are possible in play. These findings suggest that there are multiple opportunities for such play to take place in outdoor spaces. We are also reminded by Carr et al. (2009), that imagination is one of the three significant learning dispositions for young children to develop in social contexts and that it relates to 'learning to imagine alternatives' as discussed above. In suspending the serious reality of ECE centre life, nature offered an outlet for imagination as well as for physicality when children were free to explore without adult intervention.

5.4.3.1 Children teaching families/whānau

Another outcome of the study was the extent to which children's discoveries in nature influenced their families/whānau. As children in these settings became more enthusiastic about their outdoor experiences, so too did their parents:

They've wanted to know what their children were going home raving about that Brann's Farm place. They all wanted to come and actually, it really helps them to see how important this is for their children, especially with National Standards and they know where their children are going to and they can see that this is so important in their children's lives and if they want to could [come too]. Other teachers write diaries of where we've been and parents have started doing that too. And they'd write the most—of the things they value for their children—while they're out in that space. [Gill, FFG: 285–291]

Teachers from all research sites described significant shifts in parental attitudes to their nature-based outings (with the exception of some parents at the rural kindergarten). In the main, it would seem parents moved from anxieties about safety to recognition of the significance of nature-based experiences for their child's learning. Others looked to children, rather than families/whānau and communities, as protagonists playing leading roles, in sustainability. This was, in no small part, due to the advocacy of teachers. One manager explained "the dad hadn't really engaged with the kindergarten up until now and he said "Oh those gardens over there—who looks after them?" and I said "It's the children—he was amazed" [Peter, IFG: 137–139]. This advocacy role for children, and encouraging their responsible engagement with nature in partnership with families/whānau, was seen as a significant role of the teacher, as one explained:

And so that's how we are linking that with the families and the children. That's because there are places to love. Let's look after them, and how do we look after them? And so for me that's suggesting how to be judicious about that, how to make good judgements and that. [Cathie, FFG: 538-541].

5.5 Nature as mediator

Teachers saw nature-based environments as key mediators in children's experience as a means of transferring knowledge. The landscapes, their seasons and associated characteristics, for example evergreen and deciduous trees, brought discoveries in the outdoors to bear on serious educational priorities. Often these priorities needed little or no promotion—speaking for themselves through daily changes in the weather, temperature and appearance. Teachers saw their role as working *with* nature in ways that enhanced respect for *Papatūānuku* (mother earth). Data showed teachers working with children to establish and model protocols that exemplified respect for the environment, such as gaining permission from local iwi or Department of Conservation Te Papa Atawhai before entering the environment; or *kaitiakitanga* (guardianship) through lived experiences with conservation.

Teachers, children and families/whānau came to appreciate more fully the provocations the natural world offered—in many cases a great deal more than any resources they could purchase to promote learning. Spatial, emotional, spiritual and naturalistic intelligences (Gardner, 1998) could all be seen to be stimulated through the arts and the environment. In a book chapter entitled *Artfully caring for the environment* (Kelly, in press) the mediation role of nature in children’s learning is highlighted. Examples of children’s fascination with places and things in the natural environment are described, including examples from *The Ngahere Project* data. These examples include land art or ephemeral art involving children re-presenting collected natural materials on-site or back at the ECE setting. Other examples include natural materials being collected to be reused or recycled in collages (see Ben Ten example), charcoal from previous fires at Brann’s Farm used for drawing on sketchpads provided outdoors, and leaves sewn into leaf blankets back at the ECE setting, and composted after use.

Adults came to appreciate the complexity of what was taking place for the child by sharing in the experience and recognising its significance for learning including transference of knowledge:

I think that they can see from one context to another. How [do] we observe that? If I take back to some of the messages that children might get from nature, and the learning that you have around conserving water or protecting creatures in the sea. Then something might happen in the community, like the Rena, and [then you see] how they play those things out in your context and weave all those things together. And that to stand back as a teacher and work out that they transfer all that knowledge and [have] brought it together in a really sophisticated way. [Julie S, FFG: 112–118]

Another example of nature as a mediator of knowledge can be seen during photo generation and stimulated recall interviews with children from the home-based ECE research site. Two children photographed the same dead rat on the pathway during separate outings. Unsurprisingly, the rat was at varying stages of its decomposition in the children’s photographs. Each child talked about the significance of their photographs in different ways. When interviewed by the home-based educator, Barbie, a three and a half year old girl was seemingly making connections with the tragic Christchurch earthquake that killed many people and was widely reported in the media around this time.

Trudie: *When you took a photo of the dead rat, what were you thinking about, Barbie?*



Barbie: *I was thinking about at Christchurch we should go, at Christchurch with the little mouse...*

Trudie: *You think the mouse should be at Christchurch? Why do you think that, Barbie?*

Barbie: *Cause, at Christchurch... everyone is dead at Christchurch.*

*Barbie’s photograph of the rat from home-based ECE Kimi Haere
and excerpt from interview transcript 23.06*

A fortnight later, in another stimulated recall interview Barbie continued to explore working theories about the dead rat. She had photographed it again and when asked what she was thinking this time as she took the photograph, she suggested “He’s lost, he’s ... think he’s in heaven” and later “I could put it into Jesus’ cross” [Barbie, home-based ECE interview transcript, 7 July].

Meanwhile, Ben 10, aged four years ten months, emphasised the physical features of the rat as it decomposed. He had photographed the rat four times on the latest *Kimi Haere* and his interest, when interviewed, centred on the cause of death. He suggested that ‘bikes runned over it ... and it got squashed’ [Ben 10, h-based ECE interview transcript, 7 July] rather than referring to any current event or religious connection as Barbie had.

Clark (2007), Einarsdóttir (2007) and White (2011) all argue that adult interpretations and meaning-making processes must take place in collaboration with the child and *their* world. This position recognises that the child has legitimate experience and associated theorisations of the world that are unique to them even though the landscapes or subjects of their working theories may be shared. Appreciating this in any educational context assists teachers to gain an enriched, rather than assumed, understanding of the tacit knowledge that the child brings to their experiences (Richards, 2009).

Throughout the analysis stage of the research, the notion that children have mysterious encounters with nature, generating complex theories and creative approaches that are not necessarily known to the adult, was constantly reinforced for teachers. They came to appreciate that their interpretations often proved to be misguided when children were leading their learning. Opportunities for teachers to recognise, and value, peer co-operative learning were also heightened in nature education as children worked together to solve numerous physical and conceptual challenges. As one teacher explained: “They are actually becoming bastions of their own learning than us, bouncing more ideas off each other than using the teacher” [Amy, FFG: 614–616]. This was the case for toddlers as much as for older children, and was evident for teachers across all research sites as they came to ‘see’ more.

5.6 Recognising more

Foregrounding listening and seeing approaches in the methodology meant that teachers were able to confront many of their assumptions about children’s learning. By viewing experiences from children’s perspectives, they saw, and heard anew, evidence of children’s capacities to learn in diverse ways. In several incidents, these revelations shifted teachers from scaffolding to co-constructing learning with young children. Their respect for children’s complex discoveries deepened. Teachers at Papamoa Kindergarten, for example, discovered their potential to step back and observe more often in their investigations with children rather than intervening and/or instantly providing answers. They reflected on the notion of ‘hijacking’ suggested by Peters & Davis (2011) in their work investigating children’s working theories. These authors noticed “how easy it was for adults to assume knowledge of the child’s interest and meaning and hijack the direction of the activity or conversation” (p. 12), thus disrupting their working theories.

Such insights provided many provocations for teachers in their interpretations of their role, causing them to develop their own question, “Am I using my power to hijack the direction of children’s working theories?” [Papamoa Kindergarten, initial analysis notes] as the following example shows:

Teacher (T) discovers olives on the ground...

Child: They're beans.

T: Beans on an olive tree?

Do you think? ... Am I hijacking? [Said to a teacher nearby]

Child: Those are olives. They have to be ripe to eat. The purple ones are.

T: Look what's inside!

Child: It's the juicy stuff!

T: Feel it! Smell it!

Child: Look it has a bean inside it!



*Photograph of children picking up olives from Learning Story
written by teachers at Papamoa Kindergarten*

These insights were also evident within the kindergarten gate when teachers analysed their inquiries with children. During the research, teachers realised the important cues children were offering them which sometimes went unrecognised at the time. During a videotaped group-time discussion following a regular visit to Brann's Farm, children were describing a fantail they had seen. In response to a teacher's question "how did you know it was a fantail?" a verbally articulate boy stated "cos it has a feather on its bum". Watching the video later, teachers identified for the first time, two girls who were non-verbally communicating their ideas about fantails. They were using their hands to illustrate the span of the bird's tail. The teachers realised that because of their focus on children's oral descriptions they had omitted seeing and hearing the body language descriptions of others. This was a graphic reminder of the notion that in order to listen, we also have to *see* in work with the very young (Johansson & White, 2011).



*(L) Papamoa Kindergarten video still shot—Girl depicting fantail with hands
(R) Fantail, pīwakawaka or pīwaiwaka showing span of tail feathers*

Papamoa teachers concluded that they were privileging certain ways of seeing and hearing children and their meaning-making about outdoor experiences. As one of the teachers explained:

I think we need to be really mindful, actually, that children's learning is not always verbalised ... quite often we convince those children who aren't able to articulate their thinking or their working theories that we're not paying attention to the many different ways that they make meaning. [Gill, FFG: 106–109]

Similarly one of the teachers at Paengaroa Kindergarten expressed her surprise at the more sophisticated theories she recognised in children's thinking that were now available to her in the outdoor environment:

I notice a lot more when you're there, when you're out there. I notice things about the children that I hadn't noticed before. And I don't know whether it's because they hadn't had that opportunity before, but it's just that there's so much going on around that it's really hard to listen deeply and to really observe and listen to what they're saying.... [Julie D, FFG: 99–102]

Another example of such a shift was also evident in the home-based ECE setting where adults realised how differently each child 'saw' the nature-based settings and how unique their interpretations of what appeared to be an identical outdoor experience were. The children's photographs and follow-up conversations about their significance revealed some remarkable insights, as the following data suggests:

Educator: So the first photo you took today...
Barbie: Is Nana.
Educator: Is Nana. And she's got a big smile, she was so happy to see you. Now, have a look through some of the other photos...
Barbie: Nana's tooth is gone.
Educator: Her other tooth is gone? Is it? She's lost some teeth?

After further investigation, teachers discovered that Barbie's nana had recently gained new dentures, hence Barbie's interest. Nana's surprise arrival on the Mauao Base Track during this *Kimi Haere* prompted Barbie's photograph. The stimulated recall interview and photograph afforded a chance for her to highlight its significance and her associated theorising. Many of Barbie's photographs featured people alongside the landscape, whilst for other children this was not the case.

For example Coco, aged three and a half, consistently took photographs of the environment that illustrated her complex 'seeing'. During analysis the home-based educator, coordinators and lead researchers all identified that Coco's photographs evidenced a highly sophisticated 'aesthetic' well beyond her age, and her ability to verbalise [possibly due to the interview setting] her unique ways of seeing. Clark (2007) argues that the child's personal photography raises the status of young children's image making to enable them to enter adult debates. This was certainly the case as adults discussed the extent of Coco's (and other children's) seeing and meaning making.

Both of these examples could be seen to involve disruption of children’s working theories through unintentional hijacking by the educator. She possibly assumed “knowledge of [Barbie and Coco’s] interests and meaning and hijack[ed] the direction of the activity or conversation” (Peters & Davis, 2011, p. 12). As we saw earlier, even experienced and qualified teachers at Papamoa Kindergarten found themselves unwittingly hijacking children’s working theories, until they reflected on discussions with children, becoming aware of their power and ability to dominate children’s thinking and theorising with their agendas.

Educator: Is there something about that picture that you’d like them to see?
 Coco: The purple.
 Educator: Purple! Where’s the purple? How did that purple get there I wonder? Where’s that purple coming from?
 Coco: Maybe from the sun.
 Educator: I think you’re right! That looks like the sun shining through the trees! So you’ve held your camera up towards the sun, and we’re looking at the tree with the sun behind it. The light’s coming through... Do you remember looking at that tree with the sun coming through?
 Coco: Yup.
 Educator: You do? And what were you thinking when you, when you took that picture?
 Coco: Um, a tree with the sun.



Coco’s photographs taken on Mauao Base Track during home-based ECE Kimi Haere 28.06 and related excerpt from interview transcript about photo on left

An increasingly prominent feature of teacher pedagogy was collaborative inquiries about children’s interests as in the case of Barbie’s nana’s teeth, Coco’s aesthetic, Ben 10’s interest in emergent literacy and numeracy and Scooby Doo’s focus on the many and varied patterns of nature and people she saw there. Pedagogy based on collaborative inquiries reflects the sociocultural nature of curriculum that is personally and culturally relevant (Elkonin, 2005). The meaning and relevance of what children saw via the camera was highlighted through joint discussions between the child and educator. Conversations with their families/whānau often enhanced the educator’s and coordinators’ understandings. For example, by sharing Coco’s photographs with her family, teachers learnt that they often watched the sun rise from their family boat during fishing trips. Coco’s appreciation of the landscape was clearly informed by such experiences. These adults recognised that children can offer them remarkable insights into their thinking through visual and aural cues if their eyes and ears are attuned. And yet, adults recognised that these children’s thinking often exceeded ‘adult ways of knowing’ (White, 2009). While nature-based experiences beyond the gate are common in ECE, we were reminded that children often come to these encounters with knowledge of their own based on prior experience and their families’ funds of knowledge (Moll et al., 1992).

These insights caused several shifts in practice. For example, the educator and coordinators from the home-based ECE setting revised their assessment practices. They moved from taking photographs and writing learning stories based on *their* interpretations of children's interests to working alongside children to discover *children's* priorities. They signalled an intention to discontinue 'project approaches' to children's learning because they recognised the personal, subtle and nuanced encounters children were constantly having in nature-based settings. As a coordinator explained:

Now it's very child-focussed, it's from the child's perspective. It's not what her [the educator's] perspective of their learning is, she's taking the time to actually ask further, deeper, more intentional questions of children and ... giving them the camera again in different contexts to take their own photos of what is important to them. [Kathryn, FFG: 58–62]

Here there was a marked shift in thinking about learning as outcomes-based, scientific forms of inquiry to an experience of 'being' in the outdoors. Thus, teachers came to appreciate that what can be seen, and therefore valued, is seldom removed from one's direct and indirect experience. When the wider world is welcomed as a legitimate learning context, and children's perspectives are genuinely sought, opportunities for discovery and awe are greatly increased—for teacher and learner alike.

Teachers' discoveries presented them with opportunities to view learning in a much broader way, and in doing so revise their pedagogical strategies. For example the teachers at Papamoa Kindergarten revised their philosophy to include "embracing uncertainty" in an attempt to respond more appropriately to children's thinking and theorising. They sought to pay careful attention to children's multiple perspectives; the multi-modal ways they portrayed their theorising; being 'present' and 'mindful' as teachers; and the 'teacher power' that they, as adults, wielded in the learning environment [Papamoa Kindergarten, initial analysis notes]. They recognised multiple approaches to discovery and the importance of not intervening too quickly. They also realised the significant role they played in problem posing or learning from and with the child (and the repertoire of possibilities this offered them).

In the outdoors, the environment itself played a much larger role and opened up rich possibilities for children to explore their own priorities rather than those of the teachers. This is consistent with Orr (2005) who suggests that "the place itself becomes an agent in the curriculum" (p. 97). With this insight, teachers began to question their strategies, moving beyond a focus on verbally questioning children about their discoveries, to closer observation of subtle acts that revealed important clues about children's working theories and dispositions. This is the "listening-and-observing approach exemplified by Reggio Emilia and Te Whāriki" (Knight, 2009, p. 67). These pedagogical strategies became primary sites for investigation rather than those that teachers assumed were important to everyone based on their own priorities. As a result, teachers engaged more deeply in discussions about their practice and its significance for learning in the outdoors.

And so it's dialoguing together, it's about relationships, isn't it?—with children, with teachers, with management, with whānau and with educators. I'm not suggesting that doesn't happen but that's where the dialogue is needed, we all need to be on the journey together. [Julie S, FFG: 451–453]

Summary

Teachers suggested that sustained, prolonged, shared experiences with nature would assist children to "grow to understand why it is important that we protect these things and then in future days they will be the engineers of that too" [Cathie, IFG: 304–306]. The findings from this study suggest that this is a very real possibility in developing and maintaining nature-based learning environments that are committed to sustainability. They also suggest that the contexts which support such outcomes alter pedagogies in ways that are consistent with the early childhood curriculum, children's rights agendas and kaupapa Māori notions of the living earth. Play-based and playful pedagogies (Waite, 2011); pedagogies of seeing (White, 2009); and

listening (Rinaldi, 2001, 2006); and pedagogies of relationships, sometimes known as ‘relational pedagogy’ (Brownlee & Berthelsen, 2006; Fraser et al., 2007; Rule, 2012) are fundamental to these approaches.

A cautionary note is added by Dahlbeck (2012) who argues that sustainability cannot be forced on learners as a set of prescribed learning outcomes or ecological programmes that force or coerce children, families/whānau to care. Rather it is through affective engagement with the environment, and caring adults and peers, that sustainability is gaining a place in these Aotearoa New Zealand ECE settings. Our findings suggest that this is the case for children, as well as teachers, communities, and the environment itself. Where adults share a delight of nature and its potential for learning in dynamic embodied ways, and are willing to do so with a listening ear and open eyes, there is every possibility that sustainable practices will thrive. However, as teachers and managers in this research project came to appreciate, this is an “evolution rather than a revolution” [Peter, IFG: 602] in the context of early years—one that requires careful and honest dialogue about what learning is valued and how teachers will work to support this in the outdoors.

CHAPTER 6: CONCLUSION

The Ngahere Project took 33 ECE teachers across six sites and four management representatives on an action research examination of their practice in nature-based education. From the outset, each site upheld a commitment to sustainability and so the research asked two central questions. The first “what might nature-based learning look like in diverse Aotearoa New Zealand ECE services that are committed to sustainability?” invited participants to explore the nature of provision through field work at each site and focus group interviews. The types of programmes offered and their relationships to sustainability goals were at the centre of this inquiry. The second question asked “what are some of the pedagogical issues and provocations teachers face in this domain?” Here, teachers examined their practice and the decisions they made before, during and after encounters with nature within and beyond the ECE setting gate. There were also considerable opportunities for participants to see and hear children’s perspectives through the methodology employed to generate data. A mosaic approach comprised of both innovative and familiar research methods was adopted in order to capture the diversity of design. Taken together, these approaches provided a rich set of data for analysis.

6.1 Synthesis of findings

While some of the teachers in this study were inspired by international programmes such as Forest School, they were adamant that nature-based learning in Aotearoa New Zealand was unique. They celebrated this uniqueness and identified features of provision characterised by easy access to large spaces, water and bush. Sustainability principles were allied with a strong commitment to tikanga Māori based on a worldview of nature or Papatūānuku as a living entity. This was evident across all sites; reinforced by community elders who were interviewed; and evident in regular protocols and practices that supported children’s awareness of caring for the environment. A dynamic relationship between people and land was forged and maintained through events such as harvesting, story-telling or responding to need (not least the Rena disaster that took place towards the end of this project). In this way, nature-based learning can be seen as a reciprocal process with an agenda that is led by the events of nature as much as the people who seek to promote and protect it.

Teachers were also highly influenced by UNCROC, ECEfS and EnviroSchools’ kaupapa (where applicable). Commitment to these documents created an even stronger conviction to ensure children had ready access to nature. Teachers frequently raised ethical principles associated with these documents, principles and concepts in their practice, recognising the importance of their own actions as much as those of others. Hence, there was a strong emphasis on modelling caring relationships with the environment and paying careful attention to the lessons offered by nature herself. Yet, the teachers’ approaches did not merely echo those of international ECEfS literature by any means. While education “in”, “about” and “for” the environment was generally evident, what was more significant for these Aotearoa New Zealand settings appeared to be education “with” the environment. Here the living nature of the environment, channelled from indigenous principles, set the scene for a dialogic relationship to exist between teacher-nature-child, with nature itself as a central mediating influence. Not only did this occur for teachers and children in their encounters with nature but, as children shared their enjoyment and associated commitment to these experiences, families/whānau began to get involved too.

The diverse range of provision, as teachers in each setting sought to respond to their sustainability agenda, was a strong feature of the research. In some settings, all of the children went to one special place on a regular basis, while others visited different spaces from time to time. All teachers were involved in nature-based experiences in some sites, whereas in others only interested teachers took part, particularly in the research. For some settings, nature-based learning was identified as an integral part of the programme within the gate. For others, the opportunity for children to go into large or wild spaces beyond the gate was paramount. Where some settings drove many miles to reach preferred sites, others simply stepped outside their

back door. Therefore, learning contexts were focussed around equipment used, protocols employed, spaces utilised and their perceived potential for learning about nature and sustainability. It was clear that, for these ECE settings, nature-based learning looks different in diverse settings, dependent on a range of factors. Several of these factors were identified by teachers as they explored their provision. They included the beliefs of teachers involved, their backgrounds and experience, relationships within the teaching team, support from the community, and the approaches they felt they could take to challenge and risk.

Despite all these differences, each site shared similar priorities for children's learning. Participants were keen to implement their pedagogical obligations in relation to *Te Whāriki*, and its relationship to the *Treaty of Waitangi*. Nature was granted legitimacy in the curriculum through principles, strands and practices that foregrounded "people, places and things". Teachers deepened their appreciation of the holistic principles of the curriculum through an examination of an array of pedagogies in nature-based learning experiences. They described their response as less of a paradigm shift than a fuller realisation of curriculum aspirations. In doing so they claimed central tenets of *Te Whāriki* that uphold what is known, as well as what might be unknown about children and their learning. Children's embodied experiences in nature, and their relationship to children's social lives, were thus valued as highly as their physical or cognitive experiences. Play and creativity was seen as vital for children and teachers alike.

Teachers employed pedagogies that privileged children's perspectives on their learning. A range of approaches were utilised according to the situation, the child, the context and the teacher's recognition of the significance of the experience. The listening and seeing approach utilised in this project raised teachers' awareness in this regard. They came to appreciate the importance of time and space in their practice, suggesting that nature-based experiences created more scope for them to pause, to ponder, and even to be silent, in the presence of the child. Teachers suggested that they recognised more about children—that their awareness of children's unique dispositions, skills, traits and qualities was heightened—in nature because they were less distracted. They claimed that children's multi-modal literacies or languages of communication were encouraged by nature-based experiences ranging from the weaving of spider webs, or using hands to make a fantail's tail or whale's spout, to photographing the horizon or the sun shining through the trees as an aesthetic experience. These languages brought rich depth to learning experiences and were more evident firstly outdoors and then back in the ECE centre. Greater recognition of them was facilitated by the research processes as teachers collected and revisited visual research data in the form of video and photographic material.

While the participants celebrated many aspects of their practice and deepened others, they continue to be challenged in the provision of nature-based learning. A significant aspect of challenge was evident across several sites in their response to risk. Teachers grappled with the dualism they faced in considering the competent and capable child of *Te Whāriki* and the vulnerable child who faced dangers in their encounters with nature. For these teachers, the degree to which this dualism could be reconciled lay in their ability to embrace risk as opportunity. This required careful planning, knowledge of the environment, knowledge of each child and trust in each member of the teaching team. Careful negotiation and dialogue took place around this topic in tandem with teachers' awareness and creative application of the ECE Regulations which also guided their practice. Participants concluded by suggesting that nature-based education must be approached with careful dialogue and constant decision-making. It does not occur on a mere whim or well-meaning intention but instead, as the research has highlighted, requires stable structures, solid pedagogical understanding and strategic support to realise its potential in promoting sustainability.

Figure 5: Nature-based learning in Aotearoa New Zealand

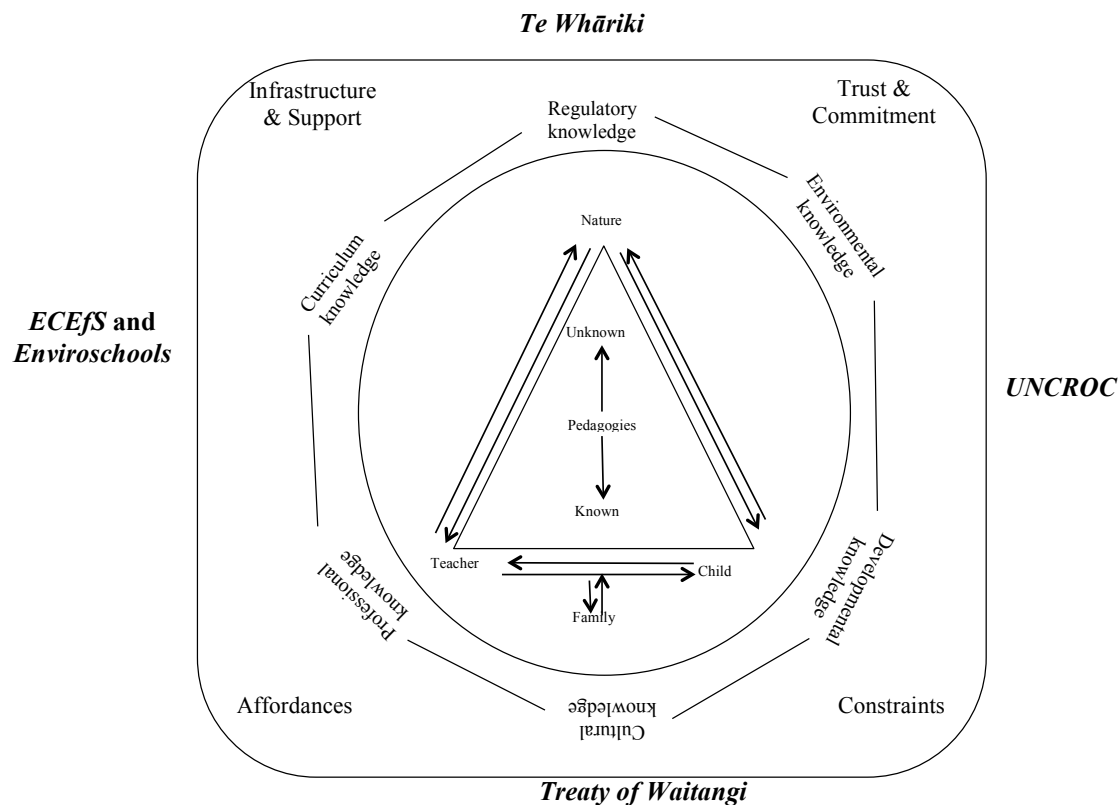


Figure 5 summarises the findings of *The Ngahere Project*, highlighting the significant factors that contribute to nature-based learning that is committed to sustainability. These are based on the discoveries of teachers and management representatives in relationship with children, families/whānau and, of course, nature itself.

6.2 Future directions for research, policy and practice

The findings of *The Ngahere Project* signal several future directions for research, policy and practice. There are significant aspects of future research that this project has evoked in relation to sustainability and its relationship to nature-based learning. For example, little was heard from teachers and parents who were not committed to sustainability within this project, as they did not choose to participate in focus groups or were silent within the field work. It would be useful to understand their perspectives of the experiences offered. Similarly, as the teachers discovered themselves, there was a tendency for some perspectives to be heard more than others in work with young children. We recognise that children from diverse cultural and linguistic backgrounds for example, are not visible in the findings. We are also mindful that gender differences are likely in nature settings. They were not examined in this research. Hinted at, but not fully addressed, are also socio-economic differences that influence the nature of provision and pedagogy. The kinds of investment that is given to nature-based provision versus demands for ‘academic standards’ that hover uneasily around contemporary ECE is worthy of further exploration. As mentioned, neither environments nor curriculum are value-free or neutral. Hence, what do teachers and management representatives consider is negotiable? And where do parents contribute to these discussions? Does teachers’ power sharing extend to them? Future research in these areas would benefit from more intense scrutiny of each site and the distinct and diverse factors within. This includes children; parents and whānau and community; as well as teachers and management. It is their perspectives that so richly inform the complexity of the topic. *The Ngahere Project* is merely a beginning in this regard.

Central to this research has been the support offered to us all by the employing organisations. From a policy point of view it is important to note that what was possible for these teachers is

clearly linked to the operational acumen of management. Teachers were supported to take risks, make judgments and try out new ideas throughout the action research initial cycle, and beyond. Time and resources granted to teachers which enabled them to step outside of busy centre life were vital to their capacity to reflect on practice (provision and pedagogy) and consider its implications for children's learning. Underpinned by vision, philosophy and associated policies that made this possible, management acted as a mediator between the expectations of the state (that is, ECE Regulations and Criteria) and the realities of centre life. Support of this nature highlights the point made by the participants early in the research process that a serious commitment to nature-based ECE that is committed to sustainability represents an investment, a priority, and involves making strategic choices.

Such commitment is not only the responsibility of organisations. The kinds of programmes offered to the children and families/whānau of *The Ngahere Project* do not exist for all children in Aotearoa New Zealand. Were it not for personal and professional ethical, financial and philosophical commitments on the part of all involved in this project, it is unlikely that these nature-based experiences would exist. A national commitment is also needed for such ideals to be realised in all ECE sites. Based on the experience on this study, such commitment should take the form of professional development programmes, targeted funding, mentoring, and increased recognition of the additional support that is needed. We are not suggesting that ECE services should be coerced into nature-based provision. Instead they should be exposed to the possibilities for practice and pedagogy; and the associated benefits for children and community—both now and in the future. Sustainability is on the ECE agenda so, in the spirit of *Te Whāriki*, it is a case of claiming this potential for the benefit of all.

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