

Making "Eco-Waves": Early Childhood Care and Education Sustainability Practices in Aotearoa New Zealand

Iris Duhn

Monash University
Melbourne, Australia

Jenny Ritchie

Victoria University of Wellington,
New Zealand

Citation: Duhn, Iris and Jenny Ritchie (2014). "Making 'Eco-Waves': Early Childhood Care and Education Sustainability Practices in Aotearoa New Zealand." *Children, Youth and Environments* 24(2): 123-145. Retrieved [date] from: <http://www.jstor.org/action/showPublication?journalCode=chilyoutenvi>.

Abstract

This article discusses aspects of a recent research project in New Zealand, which utilized ethnographic and narrative methodologies to explore the topic of sustainability within 10 early childhood care and education settings (Ritchie et al. 2010). A particular feature of note in the study was the integration of indigenous (Māori) perspectives within the sustainability programs of these settings. In this article we focus on the ways in which two particular early childhood care and education centers, one located in the largest city, Auckland, the other in Raglan, a small rural coastal town on the North Island, integrated early childhood goals with environmental education principles in teaching young children. The concept of "place" (Gruenewald 2003) informs our theoretical frame which supports analysis of the specific ways in which each center engaged with principles of sustainability in their practice. We further consider ways in which the sustainability projects generated waves of eco-awareness that "spilled over" into the children's and teachers' families and the wider communities by emphasizing children's contributions and initiatives in the process.

Keywords: sustainability, young children, indigenous knowledge, pedagogies of place, early childhood

Introduction

In this article, we continue the work of weaving across the findings of a two-year study that engaged with indigenous and Western knowledges and practices of care for self, other and the environment, completed in 2010 (Ritchie et al. 2010). The study was itself an extension of previous research that focused on the bicultural nature, politics and pedagogies that underpin early childhood education in Aotearoa New Zealand (Ritchie and Rau 2006; 2008). While the 2010 project explicitly emphasized its commitment to principles of ecological sustainability, it did so in the context of bicultural research and education practices. One of our assumptions as researchers was that the participating teachers, some of whom had been co-researchers in the two previous studies (Ritchie and Rau 2006; 2008), would find it relatively easy to see the interconnection between an indigenous orientation to care for the environment and for others, and Western notions of ecological sustainability. As it turned out, we had underestimated the complexities involved in creating "waves" that cross over perceived boundaries. This article focuses on the intersections of bicultural and ecological knowledges and practice that we suggest be conceptualized as "forces" or waves.

We use waves as a metaphor, derived from nature, for forces of change, and the term "eco-waves" to refer specifically to ecological changes generated in educational and community contexts. "Bicultural" refers to the representation of both Western and Māori perspectives. Due to the history of colonization in our country, whereby Māori knowledges have been excluded and devalued, the majority of teachers in New Zealand lack in-depth understanding of Māori perspectives. This is despite recent policy statements acknowledging Treaty of Waitangi obligations to include Māori understandings within educational curricula. For some educators, the strong commitment to bicultural practices seemed to take priority and initially there was a tangible sense of caution around the introduction of an additional "eco" focus to their practice.

From the outset we were concerned with not merely replicating Western concepts of sustainability but with beginning a conversation between *kaupapa* Māori (Māori knowledges and practices), and Western knowledges and practices. One of the pitfalls we were keen to avoid was re-colonizing indigenous knowledges by turning towards Māori ways of knowing/doing in times of crisis (Morton 2010) when politically, socially and culturally, indigenous knowledge continues to hold a marginalized position in New Zealand (Smith 1999/2012). The 1840 Treaty of Waitangi which led to British settlement of the country obliges settler descendants and other non-Māori living in New Zealand to honor and protect Māori knowledges. For early childhood education, this is made clear in the New Zealand early childhood curriculum, *Te Whāriki* (New Zealand Ministry of Education 1996). In order to develop a sense of the wider context, in the following section we provides a brief overview of some of the specificities that shape New Zealand's early years' educational environment before moving on to contextualize the study's purpose, design and research questions.

Background to the Study

New Zealand is a small Pacific country of approximately 4.4 million people, 15.4 percent of whom are Māori, the *tangata whenua* (indigenous people) (Statistics New Zealand 2012; 2013). New Zealand is often referred to either as Aotearoa, or Aotearoa New Zealand, in order to honor the first peoples of the nation. The country was colonized in the early 1800s by Great Britain, with devastating effects on Māori language, cultural practices, and well-being. Large tracts of Māori lands were alienated through legislative means, some of which resulted in extensive blocks of confiscations of land by the government. Māori children were for many years punished for speaking their language (Walker 2004). The majority of early childhood teachers in the country do not speak Māori as a first or second language, although the early childhood curriculum, *Te Whāriki: He whāriki mātauranga mō ngā mokopuna o Aotearoa* [The Woven Flax Mat: A Knowledge Framework for the Children of New Zealand] (New Zealand Ministry of Education 1996) requires that Māori language and cultural values be holistically included within early childhood care and education programs. The curriculum encourages teachers to promote respect for *Papatūānuku* (Earth Mother) and caring for the environment. However, due to the history of colonization, it has proved challenging for the majority of early childhood care and education teachers to deliver on the *kaupapa* Māori (Māori philosophy) aspirations of the curriculum document (Ritchie 2008).

A previous overview of international review of research in early childhood education about sustainability had identified a "research hole" and recommended participatory projects in early childhood services be undertaken (Davis 2009). Our own review of the literature similarly revealed a paucity of research in the area of sustainability in early childhood education in Aotearoa. Particularly noteworthy was the absence of Māori perspectives of care in relation to sustainability. Yet, it was evident from two previous projects (Ritchie and Rau 2006; 2008) that bicultural practices and pedagogies have a core emphasis on care for self and other.

Methodology

The purpose of our study was to illuminate ways in which early childhood educators enacted pedagogies that reflected both Western and Māori understandings of caring for self, others and the environment. We drew upon perspectives that honored pedagogies of place from both indigenous (Penetito 2009) and Western perspectives (Gruenewald 2003). As researchers, we worked closely with the teachers of 10 childcare centers and kindergartens across the North Island of New Zealand. The participating childcare services were selected on the basis of their interest in sustainability, their commitment to *te ao Māori* (a Māori worldview) and location. Around half of the services had already participated in previous studies focused on integrating Māori perspectives within early childhood practice. Our research design emphasized collaborative relationships between educators and researchers, based in recognition that knowledge is co-constructed in the process of "doing" research (Ritchie et al. 2013). The study was strategized as a series of case studies that would tell a story about the way in which kindergarten and childcare center communities engaged with the task of making principles of ecological sustainability visible within, and in some cases, beyond the boundaries of each

community. The two case studies reported in this article are of centers at which the two writers of this article were the research facilitators.

We framed the case studies around four key research questions focused on policies, practices, integration of Māori perspectives, and community engagement:

1. What philosophies and policies guide teachers/*whānau* (families) in their efforts to integrate issues of ecological sustainability into their current practices?
2. How are Māori ecological principles informing and enhancing a *kaupapa* of ecological sustainability, as articulated by teachers, *tamariki* (children) and *whānau*?
3. In what ways do teachers/*whānau* articulate and/or work with pedagogies that emphasize the interrelationships between an ethic of care for self, others and the environment in local contexts?
4. How do/can centers work with their local community in the process of producing ecologically sustainable practices?

The study was qualitative, employing ethnographic, narrative and *kaupapa* Māori methodologies (Bishop 2005; Clandinin 2007; Eisenhart 2001). Data were gathered through field notes, with the researchers making regular visits to centers over a period of a year, as well as interviewing some key staff and gathering pedagogical documentation which included children's art and narratives, "learning stories" (New Zealand Ministry of Education 2004; 2007; 2009) and photographs.

The significance of critical engagement with power relations throughout the project became obvious early on when we called an initial *hui* (a gathering or meeting, in this case a research meeting with all researchers and participants, total number of 40) on a *marae* (traditional Māori meeting place) to introduce the study. Many of the teachers who had volunteered to participate had been participants in at least one, in some cases, two previous studies which focused on indigenous knowledges and practices (Ritchie and Rau 2006; 2008). One of our assumptions was that these teachers would provide a critical mass of Māori and *Pākehā* (New Zealanders of European ancestry) teachers, some of whom had worked intensively with *kaupapa* Māori values and thus would be able to "translate" some of these values into the sustainability project. *Kaupapa* Māori principles such as *kaitiakitanga* (guardianship, care for others, including more-than-human others) contribute a powerful frame for analysis of ecological practices, and we (perhaps naively) assumed it would be self-evident to teachers who had been involved in the previous research projects that *kaupapa* Māori as a holistic understanding of ways of being, knowing and doing, and in particular of learning and teaching (New Zealand Ministry of Education 2009) "naturally" supports ecological sustainability in early childhood education.

As it turned out, during the initial *hui*, a teacher from one of the kindergartens where the staff had previously demonstrated a deep commitment to practice that enacted Māori values such as *whanaungatanga* (relationships) asked a question regarding one of the core research questions for the project that resonated for many of the teachers present.

The teacher asked, "Do we *have to* answer the question about Māori ecological principles?" This is indicative of the general insecurity of New Zealand teachers in relation to the delivery of Māori knowledges. The source of this insecurity lies in the historical power relations that have allowed settler descendants to grow up ignorant of Maori knowledges, since these have not been prioritized or valued in education settings. We (the researchers from the academy) responded with our view that all four research questions were to be considered and responded to by teachers from all participating early childhood centers. Our initial reaction was, despite its pre-emptive appearance, an attempt to deliver on the *kaupapa* Māori aspiration of a shared collective vision, or *kotahitanga*, which is achieved through consensus (Ritchie 1992) and was in alignment with the Māori expectations required in the early childhood curriculum, *Te Whāriki*. We then sought to provide additional supports regarding *te ao* Māori conceptualizations to the teachers via a project website and during our ongoing visits.

In the case studies that follow we argue that although teachers may have expressed their sense of trepidation regarding *kaupapa* Māori aspirations early in the process, teachers' practices demonstrate a deep commitment to *kaupapa* Māori values, specifically *whanaungatanga* (relationships) and *manaakitanga* (care) in accord with the aspirations of the early childhood curriculum, *Te Whāriki*. We suggest that both these principles were evident in children's engagement with sustainable practices, and in many cases children's actions at home generated change beyond the childcare center's gates.

In the remaining sections, we focus on two of the ten centers, Raglan Childcare and Education Centre in a small coastal community on the North Island, and Collectively Kids, a small urban childcare center in Auckland, to further explore the phenomenon of "waves." The following question guides our exploration: in what ways were children in the two centers engaged in generating *kaupapa* Māori sustainability "eco-waves"?

Raglan Childcare and Education Centre

The Raglan Childcare and Education Centre is located in the small coastal town of Raglan, which has an estimated population of 3,400. It is small enough to have a strong sense of community, with one school, two childcare centers, a kindergarten and a *kōhanga reo* (Māori immersion early childhood service) located within the township. The Raglan community comprises an interesting and lively mixture of people, with a strong local Māori voice as well as a high percentage of surfers, artists and musicians. It is also a "transition town," which is part of an international network of community-based initiatives that focus on community-based responses to "the environmental, economic and social challenges arising from climate change, resource depletion and an economy based on growth" (Transition Towns Aotearoa New Zealand 2013). Another interesting contextual factor is that Raglan has pioneered community-driven recycling by taking over responsibility for dealing with the town's waste; since the project began in 2000 75 percent of what was previously sent to landfill is now diverted (Xtreme Waste 2014). Raglan is also the home of a widely recognized national initiative, Enviroschools, an educational trust

that "supports children and young people to be active citizens, contributing to ecological regeneration and the creation of healthy, resilient and sustainable communities" (Enviroschools/Kura Taiao 2014) that now operates within 860 early childhood centers and schools nationally (34 percent of the total 2,500 schools).

Supporting Sustainability in Raglan

Given this context, it is not surprising that there was a high degree of synergy between the early childhood center and the wider Raglan community on the sustainability theme of the research project, that of "caring for ourselves, others and the environment." On the first day that a researcher (Jenny) arrived to gather field notes of the morning's activities, the book that was being used at early morning and pre-lunch circle times was *George Saves the World by Lunchtime* (Readman 2007), which the teachers had recently spotted at the local Trade Aid¹ shop. During one of the readings of the story that morning, a boy poked his head out from the nearby washroom to point out that another child was wasting water, saying "We can't waste our Raglan water." In discussions that morning, one of the staff reported that:

We do quite a lot anyway. We recycle here and the children separate food scraps and rubbish at the kai [food] table. We ask parents to bring in recycled goods, natural resources, shells, bits of driftwood and stuff. We've been doing some gardening. [Teacher] H. has organized a permaculture garden and we've been getting food out of it and she's been sending seedlings home with the children. The children have been watering and weeding it. We've had a visit to the recycling center (see Figure 1) and seen the worm-farm. C. [another teacher] works at Xtreme Waste and she brings in second-hand toys for us to use.

¹ Trade-Aid is a New Zealand fair trade organization (Trade Aid 2014).

Figure 1. Raglan Childcare and Education Centre visits Xtreme Waste

This staff member further reported that after teachers had returned from the preliminary collective research *hui*, they had assessed what they were already doing in relation to sustainability, and discussed further possibilities. These included linking up with local artists that use recycled materials in their work, and preparing an entry for the forthcoming Raglan "Artowear" event, which features wearable art made from recycled materials (Ritchie 2010). They had also picked up ideas that had been shared at the *hui* by other teachers, such as the notion of "litterless lunchboxes."

Subsequently, plans for the Artowear costumes were drawn up by the children and displayed on a wall. After the Artowear show, the display was expanded to include photos of the children taken during the show wearing the costumes they had designed and made (see Figures 2-5). Resonance with the chosen theme of "Gifts of Papatūānuku" (Earth Mother) can be seen in the use of *harakeke* (flax), feathers, *tī rākau* (cabbage) tree leaves, shells, and clay beads that the children shaped themselves.

Figure 2. Plan for Gifts of Papatūānuku costume



Figures 3 and 4. Children's designs for Raglan Artowear Wearable Art Show

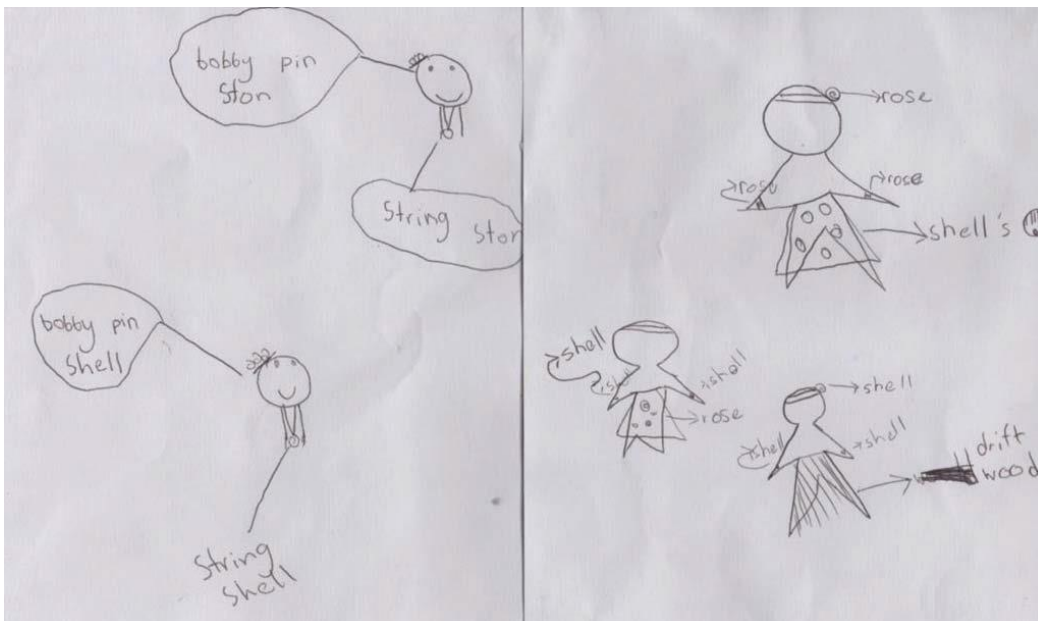


Figure 5. Raglan Childcare and Education Centre at Raglan Artowear Show: Gifts of Papatūānuku, 2008



The children's designs reflect an integrated awareness of *te ao Māori* principles and in the use of natural materials sourced from the community.

OOOBY Gardening

A gardening project at Raglan Childcare and Education Centre also gained considerable momentum over the course of the study. The compost that teacher H. had obtained from Xtreme Waste for the permaculture gardens she was establishing at the center had generated a range of self-seeded tomato seedlings. Some of these H. and the children carefully potted into recycled yogurt containers and these and lettuce seedlings were sent home with the children. In due course, the fully grown lettuces and other produce was being returned to the center (Figure 6). Rich discussions resulted, as noted on one visit:

At news-time L. has brought lettuces to share. These were from seedlings from childcare. M. (teacher) asks her how they grow so beautifully? Where were they growing? How did she look after it? Did she remember to put them in a warm spot and water them? Other children also share their stories about their own lettuce-growing endeavors. Children use L.'s lettuce leaves in sandwiches at morning-tea time.

Figure 6. Lettuces at Raglan Childcare and Education Centre

In November, the beginning of summer in Aotearoa New Zealand, the center gardens were lush with strawberries, amply nourished with the permaculture techniques (layers of pig poo, straw and compost):

Now H. assists children, one after the other, to plant tomatoes, corn and kumara (sweet potato/yam) seedlings amongst the strawberry plants, occasionally finding the surprise taonga (treasure) of a ripe strawberry as they thread through the strawberry foliage in search of a planting spot (November 21, 2008).

A reciprocal cycle of shared produce, consistent with the Māori value of *manaakitanga* (caring, generosity) became evident as the summer progressed, with an "OOOBY" (out of our own backyard) bowl prominently positioned on the kitchen counter. Teacher P. described what happened:

During the week of 16 February, I noticed an ad in the Waiheke local newspaper about a new initiative on the island to bring together people interested in growing and eating out of our own back yards (OOOBY Store). We have been harvesting tomatoes and cape gooseberries from our own garden here at Raglan Childcare. I introduced an OOOBY bowl to see if parents wanted to join in and contribute from home. Over the next month we received some yummy fruit and vegetables. A memorable-sized watermelon from E.'s family was shared upstairs with under-twos and downstairs with over-twos. An enormous marrow [squash] was carved into a whale. The OOOBY bowl has sparked off different activities like juicing and experimenting with taste and color. Making our own tomato sandwiches at

kai time, cooking and eating sweetcorn. Tasting and identifying new things like pepino from M.'s garden. At mat-time we sat in a circle and passed different fruit around for everyone to hold, touch and smell. We cut a marrow open to look at the seeds inside, and we tasted the yummy plums and apples and peaches from R.'s orchard (March 15, 2009).

Figure 7. OOOBY bowl



Figures 8. Sharing corn from the OOOBY bowl



Juicing, and making soups, jams and chutneys followed, with excess being sent home with children to be enjoyed by the wider collective of center families. In addition to participating in this reciprocal cycling of food and produce between home and center, children were observed to instigate caring for center pets, managing recycling after meals, and tending to gardens on a daily basis.

Well-Being in the Wider World

During the course of the project, the center received a visit from M., a teacher from Kenya. In preparation for the visit, the teachers encouraged the children to prepare some questions for M. These included: Where is Kenya? How do you get from Kenya to New Zealand? What do the people eat in Kenya? What animals are there? The teachers reported that once M. arrived,

M. told them about all the different wild animals to be found in Kenya, then S. asked, 'Are the children scared?' M. said they are not because the wild animals do not live in the town. M. sang a song to us in Swahili and we sang back to her. [Children] M., S. and K. did a haka [Māori dance] for her. We learned that people in Kenya are just like us—they eat the same sorts of food, their bodies are like ours but their skin is darker (Figure 9). They are poorer than us so we are going to collect our old shoes, clothes and books to send to the Kenyan children.

The teachers identified learning outcomes including: children learn about people and cultures that are different from their own; children learn about ways that they can help others; and children have opportunities to learn about languages. The teachers planned to "continue to foster children's understanding of the wider world and ways in which they can contribute to the well-being of others." In follow-up to this visit the teachers and children organized a collection from within their center and wider Raglan community of used books, clothing and toys and with M. arranged for these to be transported to her village in Kenya.

The examples provided above illustrate the rich ways in which the teachers, children and families interacted to support the "eco-wave" of education about sustainability, caring for themselves, others and the environment both in the immediate early childhood setting and the wider township, and even extending more broadly into international awareness.

Figure 9. Children at Raglan Childcare and Education Centre compare feet with M. from Kenya



Collectively Kids Point Chevalier, Auckland

Collectively Kids is a small privately owned childcare center in one of Auckland's older western suburbs, Point Chevalier. Auckland is New Zealand's largest city, with a population of 1.5 million. Historically, Point Chevalier has been a working-class suburb (Cooper 2009), but sharply increasing property prices have over the past few years begun to markedly change the suburb's profile. Collectively Kids has a particular commitment to inclusive education (Duhn, Bachmann and Harris 2010) and subsidizes places for children from families who cannot afford childcare and children who have special needs (including refugee children and children with severe physical disabilities). Many of the parents of children that belong to the Collectively Kids community are highly educated professionals. Some of the parents work in creative arenas, among them a documentary film maker, journalists, published writers and academics. Many families are *Pākehā* (of European ancestry), some are Asian, a few are Māori, and some are multi-ethnic. The families are reasonably representative of Point Chevalier's current population. Like Raglan, many of the residents of Point Chevalier have "green-minded tendencies" as seen in the local "Transition Town" community group (Transition Towns Aotearoa New Zealand 2014). Collectively Kids is an active member of this group.

For the Collectively Kids teachers, the challenge of interconnecting *kaupapa* Māori with sustainability arose early on in the project. Self-consciously aware of the *Pākehā* majority in Collectively Kids' center community, teachers did not want to

overstep what they perceived as sensitive cultural boundaries. However, while there was hesitation at the start, towards the end of the project, Marina, one of the educators, was able to make the following comment:

I think that there is a natural Māori kaupapa around the sustainability project at C[ollectively] K[ids]. We don't only educate children about... manaakitanga (care of the land) but also whakawhanaungatanga (care for the people), teaching children about other people around the world, and cause and effect. When educating children about... manaakitanga there is a sense of governorship we are advocating for which also helps us uphold the Māori treaty principles.

This comment is significant because it illustrates an emerging confidence in boundary-crossing. One of the core principles of creating eco-waves at Collectively Kids was the sustained engagement with the "outside" world, both on a local and global scale. These eco-waves, like real waves, worked by transferring energy in the form of intentions, ideas, desires and practices across space and matter. This took many forms and because it was integrated in a deep manner across the curriculum, children's learning "naturally" flowed between home, community and Collectively Kids. The following is an example of the wave-like effect of practice change across the Collectively Kids community. One of the educators reported:

World Environment Day last year was celebrated with walks including to our local creek and a focus leading up to the day where parents were encouraged to look at alternative methods of transportation so some of the photos here are of carpooling and kids coming on bikes and public transport to Kindy [kindergarten]. And we've made links with the local transition town's network and so we are getting information from them and passing that on to parents about topics of interest and talks such as the Western Highway Development and cycle advocacy and things like that.

Many of the children insisted that they biked or walked to Collectively Kids, and this enthusiasm for different ways of getting around led to sustained exploration of mobility as part of the curriculum. It included long walks to the beach and taking the bus together to experience life in the city. Children reportedly challenged their parents to leave the car at home which in turn required that families worked together to organize shared walking schedules.

Figure 10. Children at Collectively Kids learning at the local beach



Figure 11. Children at Collectively Kids using public transport



Global/Local Waves

Recycling was a topic that was engaged with in learning settings across the wider project. Collectively Kids decided to act on their concern over global warming by revisiting their existing recycling practices with the children as a starting point for action. Recycling is an issue for ecologically-minded practice because many children in childcare bring elaborately packaged lunches, and packaging is not always easy to dispose of as plastic containers do not lend themselves to composting. The idea was to integrate recycling into daily pedagogical practices. By doing something on a regular basis and building it into the daily rhythms of the center, children had time

to get used to new ways of doing things. Initially, they began to sort their leftovers into compostable, recyclable and non-recyclable piles and began to take interest in the processes of disposal. The connection between composting and leftover food was an interesting one, and the children could begin to see how one was connected to the other.

The pedagogy of place with which the teachers worked had a strong emphasis on doing/acting and on building up intensities around actions. The plastic recycling left everyone feeling rather flat. The children started to ask questions, wondering where the rubbish went and what happened to the recycled piles of plastic. Children noticed that the leftover food went into the compost and turned into soil, but the plastic did not seem to do anything—it just disappeared. Instead of sitting down with the children at mat-time (circle time) to talk about plastic rubbish and the difficulty of re-using plastic effectively, educators and children began to use plastic more consciously. It became a resource to be used in the center or to be taken home to be reused. Someone came up with the idea that the center might take part in the nationwide *Junk to Green Funk* competition, organized by Trade Aid. The competition provided the opportunity to build relationships between the wider community and children, teachers and parents. The paralysis of the global meta-narrative of plastic was shaken off by a joyful and vigorous engagement with the project. Instead of sending plastic off to an unknown destination, plastic was redirected to the center and collected by the children.

For weeks, the center was abuzz with plastic curtain-making, which involved sorting plastic, deciding on design, threading, punching holes, forming and disbanding teams, talking about and researching where the plastic comes from and where it ends up, and eventually sending the curtain off as a competition entry. Children went home to their parents to talk about plastic recycling, and parents with their children and other family members could go on to the Trade Aid website (<http://www.tradeaid.org.nz/>) to see the entries. In the process of doing so, they had the opportunity to talk, read and see more of Trade Aid's work with communities worldwide. Trade Aid became a permanent aspect of weekly center and home routines when a roster for ordering goods was organized and run by parents. Children, teachers and families are now part of a global network of production and consumption that disrupts the discourse of hyper-consumption by valuing small-scale production and by becoming aware of the preciousness of resources that are used to produce, to consume, and, in the case of some of the Trade Aid communities, to survive.

Adults and children were engaged in conversations that continuously crossed from the global to the local, and in the process created a sense of belonging to "place." "Place" involved the early childcare center, but also the *Junk to Green Funk* curtain entry, the website, lots of plastic containers and learning about rubbish. Children from this center were observed to be actively engaged in advocacy, such as writing letters to the local store asking the management to enlarge the front door to enable the center pram to fit in so that the older children could take babies with them when they went to shop there for supplies.

Through the Trade Aid focus, localized sensitivities regarding "place" were extended also to awareness of other families in faraway places, where children had to work hard to survive. The local and the global, adults and children, consumers and producers, the childcare center and families' homes became entangled in a complex geo-political encounter. This encounter sits alongside family shopping outings to the mall where differences become entrenched again in opposition to each other, or where they become invisible; hyper-consumerism depends on discourses that create the illusion of smoothness, both in relation to consumption and production (Harvey 1998).

Building Eco-Waves with the Very Young

For the teachers, paying attention to children's agency had a powerful transformative effect on their knowledge about children's abilities. However, very young children's agency which is often overlooked or misunderstood (Bradley et al. 2012). With a commitment to inclusive practice, the teachers discussed how to include their youngest learners in the project. A decision was made to not distinguish pedagogical approaches by age but instead to change pedagogy and curriculum holistically within the center. Within the babies' room, this included encouragement for children to get involved with the care of plants, both inside and outside (Figure 12). The assumption was that babies would not *really* be able to take on responsibilities of care, however, by watching older children and teachers care for plants they may learn to develop a caring attitude towards plants.

Figure 12. Caring for plants at Collectively Kids



One of the surprising moments in the project happened when teachers realized that they had underestimated their toddlers' ability to care over prolonged periods of time and in different places. Children demonstrated caring attitudes for plants and animals, not only in the center/kindergarten but also at home. A teacher reported:

M. one day brought hyacinth bulbs in jars of water thinking it would be a two-minute wonder, but the interest from one child in particular was immense. And the interest was sustained until the bulbs flowered. This particular child followed his interest at home by planting and growing his hyacinth. His parents documented his interest in gardening and nature and many photographic updates were brought into the center to be shared.

A teacher reported further evidence of the eco-wave in action:

the younger children now compost all their food scraps. We're got a small bin on the kai table and they do this independently. The composting of food scraps has taught the children how much food is being wasted. And one child, while spending time in the over-two area, noticed the large compost bins in the garden and insisted that his parents buy one for [their family]. This was a child who had just turned two years of age, being an advocate for sustainability and having his thoughts and opinions listened to by adults.

Caring for self, others and the environment by infants and toddlers rippled out into the home through teachers' communication and agency as well as children's practices of care. Teachers noted that this was not a one-way street, as parents' reported back about their changing practices as home:

The documentation from home also included regular updates in [the children's] portfolios about what the family was doing at home. We've now got the Infant and Toddler room with about 80 percent recycled, reused toys and a choice of holistic play items that changes and grows with donations from parents.

Many of the parents reflected on their changed practices at home on their "comments from home" sheet. The comment from parent A. is a typical example of the ripple effect of the eco-waves:

I am admiring and appreciate the effort that is going into recycling, gardening and environmental awareness. This is important, educational and real. It is great to see and think what the children are learning, also it is encouraging—and the eco-store order [one of the initiatives was bulk ordering and making this available to parents] is a time and cost saver.

With the specific focus on agency for all children, teachers paid particular attention to how the youngest children expressed their care for self, others and the environment in daily center encounters:

Caring for each other, their little acts of kindness, helping, having high expectations of social conscience. One of the children, just over one, for example got a tissue for one of her friends when she was asked by an adult for help. It took her a while to process and act on the request and the piece of tissue she got from the box was tiny, but the event was huge.

Concluding Thoughts

Previous research has demonstrated that "positive and frequent experiences in nature during childhood influence... environmental concern among adults regardless of their cultural background or racial and socioeconomic status" (Strife and Downey 2009, 109). Childhood places have been identified as formative in establishing dispositions of environmental ethics (Chawla 1999), and sensitivity towards the environment deepens through participation (Chawla 2007). These experiences can generate a sense of "connectedness to nature, caring for nature, and commitment to protect nature" (Schultz 2002, as cited in Cheng-Hsuan and Monroe 2012, 34). As the urgency of the climate crisis becomes increasingly evident, the significance of the role of education in enhancing within young children dispositions to care for our planet is highlighted (UNESCO 2012).

The examples from the two early childhood care and education centers offered in this paper illustrate the powerful potential of early learning settings to instil within even the very youngest children dispositions and ethics of caring for one another and for their environment. The skills of the teachers were evident in both settings, as they wove themes of sustainability and *kaupapa* Māori values into the daily program, inviting families' participation in everyday practices as well as more long-term projects. "Eco-waves" of *kaupapa* Māori-informed sustainability practices of caring for human and environmental "others" flowed back and forth, with children often seen to be maintaining the momentum and intensity of concerns. External organizations such as a local wearable art show and a national fair trade organization were utilized as particular wider foci that gave priority to ethics and practices of sustainability. Children demonstrated their awareness at various sites of endeavor: intimate levels of caring for one another; community advocacy; and internationally through engagement with the fair trade organization Trade Aid and in supporting children and families in Kenya. As one of the teachers in the project wrote: "By giving the young learners of our society ecological strategies in a realistic context, we are laying the foundations for a generation of earth users who know to care" (as cited in Ritchie et al. 2010, 57).

A general finding of the study is that in almost all cases Māori values were intrinsically connected to place-based practices. Particularly evident throughout the study were the Māori values of *whanaungatanga* (relationships), *manaakitanga*, and *aroha*—concepts focused on the reciprocal nurturance and wellbeing of others including beyond-human others. These values imply hospitality, kindness and respect, along with the responsibility to uphold *whakapapa* (kinship) obligations (Ritchie et al. 2010). Kinship, in a Māori context, positions humans as fellow descendants of the original parents *Ranginui* (Sky Father) and *Papatūānuku* (Earth Mother), alongside other members of this *whakapapa* (genealogy): the trees, plants, insects and birds. Another finding is that "place" did not end at the kindergarten or childcare center gate but rather became a wave-like movement which carried *kaupapa* Māori sustainability practices into the wider communities. Often, children were the ones who created eco-waves and intensified sustainability practices in their families as well as in their communities. Children in this study were observed to care deeply about others, including human others in other places, and non-human others, including plants and animals. Rather than assuming that

young children are mainly focused on themselves, it seems to us that the capacity for empathy and care for others among these very young people is one of the most hopeful and powerful findings of the study.

Iris Duhn lectures in the Faculty of Education at Monash University, Australia. Her teaching and research focuses on critical childhood studies, with particular focus on globalization and ecological sustainability. Her publications and research projects contribute a critical childhood studies' perspective to early childhood education in Australia and internationally.

Jenny Ritchie has a background as a child-care educator and kindergarten teacher, followed by 25 years' experience in early childhood teacher education. She lectures at Victoria University of Wellington, New Zealand. Her teaching, research, and writing have focused on supporting early childhood educators and teacher educators to enhance their praxis in terms of cultural, environmental and social justice issues.

Acknowledgements

We deeply appreciate the work of all the teachers, children and families in the centers who participated in our study, our co-directors Janita Craw and Cheryl Rau, and the New Zealand Teaching and Learning Research Initiative for their funding.

References

Bishop, Russell (2005). "Freeing Ourselves from Neocolonial Domination in Research: A Kaupapa Māori Approach to Creating Knowledge." In Denzin, N.K. and Y.S. Lincoln, eds. *The Sage Handbook of Qualitative Research, 3rd ed.* Thousand Oaks, California: Sage, 109-164.

Bradley, Ben, Jennifer Sumsion, Tina Stratigos, and Sheena Elwick (2012). "Baby Events: Assembling Descriptions of Infants in Family Day Care." *Contemporary Issues in Early Childhood* 13(2): 141-153.

Chawla, Louise (2007). "Childhood Experiences Associated with Care for the Natural World: A Theoretical Framework for Empirical Results." *Children, Youth and Environments* 17(4): 144-170. Available from: <http://www.jstor.org/action/showPublication?journalCode=chilyoutenvi>.

Chawla, Louise (1999). "Life Paths into Effective Environmental Action." *Journal of Environmental Education* 31(1): 15-26.

Cheng-Hsuan, Judith, and Martha C. Monroe (2012). "Connection to Nature: Children's Affective Attitude toward Nature." *Environment and Behavior* 44(1): 31-49.

Clandinin, D. Jean, ed. (2007). *Handbook of Narrative Inquiry. Mapping a Methodology*. Thousand Oaks, California: Sage.

Cooper, Annabel (2009). "Point Chev Boys and the Landscapes of Suburban Memory: Autobiographies of Auckland Childhoods. *Gender, Place & Culture: A Journal of Feminist Geography* 16(2): 121-138.

Davis, J. (2009). "Revealing the Research 'Hole' of Early Childhood Education for Sustainability: A Preliminary Survey of the Literature." *Environmental Education Research* 15(2): 227-241.

Duhn, Iris, Marina Bachmann and Kate Harris (2010). "Becoming Ecologically Sustainable in Early Childhood Education." *Early Childhood Folio* 14(1): 2-7.

Eisenhart, M. (2001). "Educational Ethnography Past, Present, and Future: Ideas to Think With." *Educational Researcher* 30(8): 16-27.

Enviroschools/Kura Taiao (2014). *The Enviroschools Foundation*. Available from: <http://www.enviroschools.org.nz/>.

Gruenewald, David (2003). "The Best of Both Worlds: A Critical Pedagogy of Place." *Educational Researcher* 32(4): 3-12.

Harvey, David (1998). *The Condition of Postmodernity*. Oxford: Blackwell.

New Zealand Ministry of Education. (2009). *Te Whatu Pōkeka. Kaupapa Māori Assessment for Learning: Early Childhood Exemplars*. Wellington Learning Media. Available from: <http://www.educate.ece.govt.nz/~media/Educate/Files/Reference%20Downloads/TeWhatuPokeka.pdf>.

----- (2004, 2007, 2009). *Kei Tua o te Pae. Assessment for Learning: Early Childhood Exemplars*. Wellington: Learning Media.

----- (1996). *Te Whāriki. He whāriki mātauranga mō ngā mokopuna o Aotearoa: Early Childhood Curriculum Wellington: Learning Media*. Available from: <http://www.educate.ece.govt.nz/~media/Educate/Files/Reference%20Downloads/whariki.pdf>.

Penetito, Wally (2009). "Place-Based Education: Catering for Curriculum, Culture and Community." *New Zealand Annual Review of Education* 18: 5-29.

Readman, Jo (2007). *George Saves the World by Lunchtime*. London: Eden Project Children's Books/Random House.

Ritchie, James Ernest (1992). *Becoming Bicultural*. Wellington, NZ: Huia Publications.

Ritchie, Jenny (2010). "Wearable Art from Recycled and Natural Materials." Raglan Childcare and Education Centre. *ecARTnz*(3): 10-11. Available from: http://www.elp.co.nz/ecARTnz/ecARTnz_issue_13.pdf.

----- (2008). "Honouring Māori Subjectivities within Early Childhood Education in Aotearoa." *Contemporary Issues in Early Childhood* 9(3): 202-210.

Ritchie, Jenny, Janita Crow, Cheryl Rau, and Iris Duhn (2013). "Ko koe ki tēnā, ko ahau ki tēnei kīwai o te kete: Exploring Collaboration across a Range of Recent Early Childhood Studies." In Duncan, J. and L. Connor, eds. *Research Partnerships in Early Childhood Education: Teachers and Researchers in Collaboration*. New York: Palgrave Macmillan, 93-113.

Ritchie, Jenny, Iris Duhn, Cheryl Rau, and Janita Crow (2010). *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*. Teaching Learning Research Institute/New Zealand Centre for Educational Research. Available from: <http://www.tlri.org.nz/tlri-research/research-completed/ece-sector/titiro-whakamuri-hoki-whakamua-we-are-future-present-and>.

Ritchie, Jenny and Cheryl Rau (2008). *Te Puawaitanga - Partnerships with tamariki and whānau in Bicultural Early Childhood Care and Education*. Final Report to the Teaching Learning Initiative. Wellington, NZ: Teaching Learning Research Institute/New Zealand Centre for Educational Research. Available from: <http://www.tlri.org.nz/tlri-research/research-completed/ece-sector/te-puawaitanga-partnerships-tamariki-and-wh%C4%81nau>.

----- (2006). *Whakawhanaungatanga. Partnerships in Bicultural Development in Early Childhood Education*. Final Report to the Teaching and Learning Research Initiative. Wellington, NZ: Teaching Learning Research Institute/New Zealand Centre for Educational Research. Available from: <http://www.tlri.org.nz/tlri-research/research-completed/ece-sector/whakawhanaungatanga%E2%80%94partnerships-bicultural-development>.

Smith, Linda Tuhiwai (1999/2012). *Decolonizing Methodologies: Research and Indigenous Peoples*. London and Dunedin: Zed Books Ltd and University of Otago Press.

Statistics New Zealand-Tatauranga Aotearoa (2013). "Population Clock." Wellington: Statistics New Zealand. Available from: http://www.stats.govt.nz/tools_and_services/population_clock.aspx.

----- (2012). "Māori Population Grows and More Live Longer." Wellington: Statistics New Zealand. Available from: http://www.stats.govt.nz/tools_and_services/media-centre/additional-releases/maori-population-estimates-15-nov-2012.aspx.

Strife, Susan and Liam Downey (2009). "Childhood Development and Access to Nature: A New Direction for Environmental Inequality Research." *Organization and Environment* 22(1): 99-122.

Trade Aid (2013). *Trade Aid. Improving the Lives of the World's Most Disadvantaged*. Christchurch: Trade Aid. Available from: <http://www.tradeaid.org.nz/index.php/page/aboutus>.

Transition Towns Aotearoa New Zealand (2014). *Kia ora! Transition Towns New Zealand*. Retrieved from <http://www.transitiontowns.org.nz/>.

UNESCO (2012). *Shaping the Education of Tomorrow: 2012 Report on the UN Decade of Education for Sustainable Development, Abridged*. Paris: UNESCO. Available from: <http://unesdoc.unesco.org/images/0021/002166/216606e.pdf>.

Walker, Ranginui (2004). *Ka Whawhai Tonu Matou. Struggle without End, Rev. ed.* Auckland: Penguin.

Xtreme Waste (2014) *Thinking beyond the Bin*. Available from: <http://www.xtremewaste.org.nz/about/>.