

Edited Proceedings of the  
**New Zealand Association  
for Environmental Education  
Biennial Conference 2016**

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*activate  
agitate  
advocate*

*Kia Kakama, Kia Ueue, Ka Kawau Maro e*



**Conference 2016 | 9-12 February**

University of Auckland, New Zealand

ISBN 978-0-473-39785-2

## Introduction

Welcome to this collection of papers based on presentations made at the NZAEE Conference and Research Symposium that were held in February 2016 in Auckland. All papers in these proceedings were double-blind peer reviewed, returned to their authors and then published in this volume. The editors would like to thank reviewers for their time and expertise and authors for their contributions.

The theme of the conference was *Activate, Agitate and Advocate – Kia Kakama, Kia Ueue, Ka Kawau Maro E* – and the following ten papers are presented around these words. The collection begins with papers grouped by the theme of *Activate* – education to help people become aware of and respond to environmental issues. Monica Green analyses children's ideas about the concept of sustainability through interviews and their artefacts in the form of models, poetry, writing and artworks. Next Paula Baird shares her intended research into how early childhood teachers foster a sense of 'place' in their pedagogy.

The second group of papers represent the theme of *Agitate* – education to develop strategies to enable people to take action in their lives. Firstly, Susan Wake and Qian Wang's paper explores a possible method for landscape architects to use when working on co-design school ground greening projects with schoolchildren. Next Amber Pierce presents her intended research that will explore student empowerment – the enablers and barriers encountered by secondary school student leaders as they enact a waste reduction programme in their schools. Rowan Brooks and Niki Harré follow with their examination of what supports young activists as they endeavour to make a difference to their world. Then, Rosy Wells and Niki Harré investigate the types of feelings experienced by secondary student environmental leaders as they developed critical consciousness of current environmental issues. The final paper in this group is written by a group of emerging researchers with the hashtag of #aaeeer – consisting of Blanche Higgins, Claudio Aguayo and Mark Boulet. Their paper is a critical reflection on their experiences of writing a collaborative paper using online tools that responded to a prior research symposium that was held in Australia two years ago. The influences of the process, medium and 'emerging' identity are explored.

The third group are positioned around the theme of *Advocate* – education that results in people taking action in order to maintain or improve the environment and/or society. Penny Clifflin provides an account of landscape architecture students' exploration of the potential for an arboretum and their designs to include that arboretum in the Urban Forest of Auckland. Next Margaret Carter and Hilary Whitehouse analyse their creation of a new Master's of Education programme, designed to prepare teachers for the challenges of teaching in the Anthropocene by attempting to close Stevenson's 'rhetoric/reality gap' in

education. This collection concludes with Anita Croft's discussion about how sustainability could be embedded into tertiary teacher education for early childhood education students.

This collection represents a small sample of the richness of both research and practice that was evident in the presentations during the conference and the preceding research symposium. We have enjoyed bringing these papers to you and believe they make thought-provoking and valuable contributions to on-going conversations within the environmental education/sustainability education field.

Sally Birdsall and Susan Wake  
Editors, 2016

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## Examining children's sustainability knowledge and perspectives: An Australian case study

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### Introduction

Sustainability has been identified as the reorientation of society that equips citizens with skills in critical thinking, problem solving, participatory decision-making and systemic thinking in order to address today's complex sustainability issues (Onwueme & Borsari, 2007; Sterling, 2012; Tilbury & Wortman, 2006). Similarly, Education for Sustainability (EfS) has been described a vital field that assists in "preparing children and young people in coping with, managing and shaping social, economic and ecological conditions characterised by change, uncertainty, risk and complexity" (Sterling, 2012, p. 9). Given the unpredictable and unstable future children stand to inherit (Irwin, 2010 as cited in Duhn, 2012a), children, including very young children who are capable of sophisticated thinking in relation to socio-environmental issues (Davis, 2005), must be part of the strategic planning and action required for achieving a more sustainable world (Sterling, 2010).

Described as a relatively new concept that is still 'finding itself' in terms of its establishment and practice (Kemmis & Mutton, 2012), sustainability is a mandated dimension of the Australian Curriculum (ACARA, 2015). As one of three cross curriculum priorities (CCP) in the Australian curriculum, sustainability is framed by three organising ideas: *Systems*, *Futures*, and *Worldviews* that are designed to "provide students with the tools and language to engage with and better understand their world at a range of levels" (ACARA, 2015, para 1). Despite these expectations, EfS has struggled to establish itself and maintain a profile in Australian schools (Evans, Whitehouse, & Gooch, 2012). Even though many educators endorse its value (Boon, 2011), sustainability remains ambiguous to many teachers who face considerable barriers and challenges around its conceptualisation and implementation (Dyment, Hill, & Emery, 2015). One of these barriers is often identified as an overly crowded curriculum where there is insufficient space to incorporate additional teaching and learning beyond the standard subjects of numeracy and literacy. Rather than view sustainability as just another issue to be added to an already overcrowded curriculum, it can, and needs to become an important and integrated "gateway to a different view of curriculum, of pedagogy, of organizational change, of policy, and particularly, of ethos" (Sterling, 2005, p. 233). While this study cannot testify to the full and effective enactment of these characteristics, it does shed important light on how sustainability-active pedagogies enable and strengthen children's sustainability knowledge.

## **The study**

The study took place in the Gippsland region of South-eastern Victoria, which has a number of identifiable sustainability and climate change challenges. Due to its geographical and demographical diversity, the region faces unique environmental, social, cultural and economic challenges that include rising sea levels, urban development, high unemployment and declining natural resources. The study builds on earlier research that investigated the location, nature and scope of sustainability initiatives (formal and informal) across the Gippsland region (Somerville & Green, 2013) which was followed by a subsequent study (in the same schools as the earlier 2013 study) that examined teachers' sustainability perspectives (Green & Somerville, 2014). Both studies were part of a longitudinal mapping exercise that generated unexamined accounts of sustainability practice in the region.

Given the deficient representation of children in wider sustainability discourse, including the distinct lack of empirical research about the ways children and young people produce and express sustainability knowledge (Horton, Hadfield-Hill, Christensen, & Kraftl, 2013; Somerville & Green, 2015), this study, the third in the trilogy, set out to examine children's sustainability knowledge and perspectives by asking the research question: *How do children come to know and understand sustainability in their everyday worlds?* It did this by recruiting 16 participants (10 girls and 6 boys aged 9-13 years) from six leading sustainability schools that showcased sustainability learning through their keynote presentations on waste and water management, kitchen gardening, energy audits, and school ground conservation, at a one-day Sustainable Schools Expo in Gippsland, attended by over 400 children and their teachers.

This paper briefly explores the study's methodological considerations, as well as some of the emergent findings. It concludes with the proposition that children's sustainability knowledge is produced through embodied sustainability-related experiences that predominantly occur in outside locations, through interactions and exchanges with the human and more than human world.

## **Methodology**

The study occurred across six individual school sites. Although separate in their own right, each of the schools were working parts within one "bounded system" (Flood cited by Stake, 1994, p. 436) or overall case study. In this research the case study was understood as both a process of inquiry about the case as it relates to children's sustainability perspectives, but also as a product of the inquiry (Stake, 1994).

### *Ontological and ethical considerations*

Given the centrality of children in the study, it was essential to acknowledge the ontologies of childhood that are so explicit in conducting empirical research with children and young people (for example Alderson, 1995; Barratt Hacking, Barratt, & Scott, 2007; Ellis, 2006). Once viewed as vulnerable and incompetent, the new social studies of childhood recognise children as actors in their own right who have diverse, divergent opinions, and established viewpoints about their everyday life worlds (Holloway & Valentine, 2000; Skivenes & Strandbu, 2006). This research sensibility underpins and informed previous research conducted with children (Green, 2011, 2013) and includes acknowledging the ethical implications of children as articulate beings who are capable of constructing their perspective of the world through unique 'ways of knowing', which are qualitatively different from those of adults (Prosser & Burke, 2008; Prout, 2005). As part of the study, ethics was gained from the affiliated University and Department of Education (Victoria), and involved seeking consent from the parents/guardians of all children participants as well as maintaining participant confidentiality by not returning interview transcriptions to participants, and using pseudonyms.

### *Methods*

The study analysed data derived from sustainability artefacts made by the children (an object of their choosing), which was part of a methodological approach to provide an open-ended activity that allowed them to communicate and explore any aspect of sustainability in which they were interested. As part of this process children engaged in arts-based practice and multi-modal representations that characterised their "ways of knowing, thinking and innovating" about sustainability (Ward, 2013, pp. 168, citing Wright, 2012), which included making models of buildings, gardens and the Earth, written poetry and stories, pictures and constructed car/engine-type artefacts. In honouring childhood onto-epistemologies, interviews commenced with an acknowledgement of the children's artefact, which afforded a degree of comfort and agency for them to speak on their terms. The artefacts proved to be an exceedingly effective aspect of the interview process that enabled a high level of engagement with interview questions that asked:

- What do you think sustainability is?
- Where do/can you see sustainability?
- How does sustainability impact people/the Earth?, and
- How do you build sustainability knowledge?

### *Analysis*

A thematic (O'Leary, 2014) and general inductive approach (Thomas, 2006) was used to analyse the transcribed interviews and sustainability artefacts. The first layer of data analysis was undertaken through making general impressions notes recorded throughout the initial reading process of the language-based interview transcriptions. The impressions

provided an overarching ‘storyline’ of participants’ practice and sequence of actions (Søndergaard, 2002, p. 191). The second layer of analysis involved reducing the data and sorting it into various themes or categories of understanding, which are discussed in the next section.

### Findings and Discussion

Sustainability in this study was portrayed and understood by children as an active, temporal and spatial concept, described by one child as “happening all around us”. Key among their perceptions of sustainability was a recognition of the connections between themselves, the ‘earth’, and other non-human species that make up the greater life force and larger system of life (Folke et al., 2011; Martusewicz, 2005). One child’s poem read:

E is for *earth*; it’s where we live  
We learn sustainability to help the whole *earth*  
We need to make the *earth* less gassy  
Sustainability means we have the ability to sustain the *earth*  
The *earth* keeps moving around so we can breathe  
Every animal has a purpose on the *earth*  
If we share knowledge, it’s going to help the *earth*

The significance of the Earth’s capacity to function and endure, the declining state of the planet, and the need to take action that ensured future planetary sustainability were issues of high priority for children, who highlighted the urgent need to maintain and preserve its health and well being. The imperative to sustain the Earth and its ongoing capacity to support *all* life forms permeated children’s perceptions of sustainability, as evidenced through the connections they made between the Earth’s vitality (e.g. ‘keeping the world healthy’) and its fundamental capacity to persist and withstand a range of current challenges (e.g. ‘keep the world going’). In light of these challenges, children expressed an unequivocal desire to protect their home, Planet Earth, which included shared concerns for planetary threats they described as “a big hole in the ozone layer”, “Earth becoming gassy”, “Earth being under a lot of pressure”, and “the Earth is getting hotter”.

Significantly, children made direct links between the Earth’s vulnerability and inconsiderate human action. In other words, they identified humans as one of the key barriers to the planet’s integrity, summed up by one child who lamented: “I don’t think there’s ever going to be a future because everyone’s ruining the Earth”. Correlations between the longevity and health of the planet and human behaviour was exemplified in one child’s poem that called for a greater level of consciousness within everyday living:

*We need to keep the planet clean so let’s all do our part*



*We can use less gasoline now that will be a start  
Instead of driving cars to school we could walk or ride  
And to really keep the planet cool we could dry our clothes outside  
This is our earth, our planet and home so let's all take a stand  
Please listen to my heartfelt poem and make these changes hand in hand* (Louise, 10 years old)

Humans and Earth as intrinsically linked was represented in an 'earth' artefact made from a large rubber ball glued with blue and green tissue paper symbolising ocean waters and land-based continents. Sticky-taped to the globe were photos of frogs, birds and gardens, and children learning in a classroom and outside in a school ground frog garden. A sign circling the lower section of the globe that read: 'SUSTAINABILITY: help us follow the right path', is in keeping with the levels of required care and consideration expressed by other children. Kara explained:

*This is earth. It's a globe of photos connected by this pathway where everything is connected. I think sustainability means keeping the world going, so going through all the steps and keeping it healthy. So we've got to do different things to keep it healthy so we can live in it. This globe is saying everything we do is going [to] keep our world healthy* (Kara, 10 years old)



**Figure 1:** Planet Earth: following the right path

The notion of connection and connectivity with the more than human world (Abram, 1996, 2010) that encompasses non-human, animate and inanimate entities alike, featured extensively in children's artefacts, and in the stories they told about their every day 'entanglements with living things' (Duhn, 2012b). Duhn's notion of 'entanglement' is valuable for honing in on, and appreciating the complex and intimate ways children engage and become entangled with the more than human world through sustainability activities such as gardening for example. This was exemplified from a miniature garden artefact one student made from a recycled tissue box filled with soil, a lettuce seedling and a watering system courtesy of a recycled bottle, which she explained as her "way of understanding sustainability". Her reference to soil, worms, plants, weeds, vegetables and other living matter illustrated her deep gardening knowledge. She also described a sustainability project that refurbished the school's dysfunctional frog bog, which helped her learn about sustainability. Due to children "mistreating and destroying" the school's original frog bog, she described how she and a small group of children from across year levels re-built the bog as part of a self-initiated action plan in weekly sustainability lessons:

*Our whole group was researching about the frog bog on like different plants. We cleaned it all up and we put new flowers in and we fixed up all the water, and then we went on an excursion to the wetlands and we asked if we could take home a big tub and we put some water and eggs in it. We put them in the pond and now there are frogs. I learnt more from actually rebuilding [the frog bog] than I would from just listening. I love that bog (Sarah, 11 years old)*

School gardens and school ground/locally based conservation work were two of many examples cited by children as important places where sustainability learning occurred. In these places, and through the exchanges/actions that occurred there, children developed ecological stewardship that taught them the importance of being kind and respecting those places. Embedded within their ecological knowledge were affective ways of knowing affiliated with emotion, care and love for the places they helped create and maintain. Many children made reference to the level of commitment they were prepared to devote to such places, with one student suggesting that: "things might just get worse if we don't. Like there'll be no land, no animals, not much trees, just all buildings and roads and cars".

Their inter-relations with, and awareness of the diverse life forms which they suggested need our protection were described by several children as the web of life, a term which advances ecological literacy by examining concepts of biodiversity, interdependence, food webs and communities that underpin the health and longevity of the planet (Barlow & Stone, 2005; Capra, 2005; Orr, 1992, 2004). Knowledge of, and the impact of maintaining biodiversity and resilience was revealed through the Web of Life game:

*Someone brings in a scarf and everyone picks up a piece of the scarf, so it's like a web. And then everyone gets assigned a certain animal, so you're a frog, you're an insect or a bird. So then all the birds go extinct, and everyone who's a bird has to drop it. And then they see how it's like, so birds eat worms, so all the worms have to drop theirs, and they go extinct. And then everyone eventually drops the scarf and it's on the ground. We're like, so the web of life is dead. And that's it. Everyone's gone because one thing died (Janine, 11 years)*

Similarly, an older student Jane explored the idea of an ecological web as part of a sustainability lesson she planned for her younger peers. Rather than “telling kids information through technology”, she referred to the importance of going outside to observe things rather than ‘hearing it from someone or seeing it on a screen’. Using a wetland environment as an example, Jane explained the significance of real world encounters that she hoped would bring her students into the heart of experiential learning:

*This is this frog, this is a bird, and this is what they do, and this is how their life cycle works ... they eat this and this eats them, and this is their life cycle. You can say this is not just a frog - this is the Green Tree frog. And you educate them and then they know this affects the frogs, or this affects the birds. In my primary school we had a thing called Frog Census and once a month one of our teachers who was like a frog expert would take us to the wetland and we'd walk around at night with torches and we'd pick up frogs and it was amazing. (Jane, 12 years)*

The example provided here, and in other scenarios described by children, are brief portrayals of experiences that enabled children to grasp, and engage with the concept of sustainability.

### **Conclusion: contribution to research field**

This paper focused on an analysis of children's perceptions of sustainability. At a time when children's views of sustainability are under-researched and generally absent in the wider literature, the sustainability perspectives of children suggest that as a consequence of their involvement in school-based sustainability, children are capable of developing opinions and ideas about what sustainability is, including how they and the greater Earth are impacted by its application or lack thereof. These findings point towards the significance of field-based learning (Ballantyne, Anderson, & Packer, 2010) and environmental experiences that occur in school grounds (Malone & Tranter, 2003), as well as other nearby locations that include farms and local parks that strengthen children's perceptions of sustainability and foreground their connections to local places. As a consequence, they understand themselves as co-inhabitants who exist side by side in bio-centric (empathetic), as opposed to anthropocentric (human-dominated) ways.

Children's capacity to develop a sense of care and a deep connection with the natural world informed and underpinned their broader views about the state of the Earth. Unlike the actions of many people which have consequences they often do not see and of which they remain blissfully unaware (Comber, 2012), the children in this study seemed to be highly attuned to the impact of human behavior (good and bad) on the planet. While further research is required to harness children's involvement in and perceptions of sustainability discourse (e.g. practice and policy), the study contends that children's active and embodied involvement through curriculum and pedagogy influences their capacity to deduce what sustainability means, to draw correlations to a planet under duress, and to take action for planetary integrity and longevity.

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## **Fostering responsive and reciprocal relationships between children and place in early childhood education**

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### **The changing relationship between people and 'place'**

People are currently living in a world where over 57% of the population reside within an urban environment (International Organisation for Migration, 2015), often in communities that are multi-cultural. Urbanisation, migration, and globalisation are all impacting on an individual's perception of their 'place' (Stevenson, 2011). With people migrating and repositioning themselves in different physical places, their sense of place shifts and evolves (Lin & Barton, 2010). Technology advances are also influencing 'place' as humans interact with places in which they haven't even lived (Stevenson, 2011). As a result of increasing urbanisation and migration, humans' interactions with the Earth are diminishing with the relationship at a critical point of the Earth's ability to sustain itself and all that lives on it. Nelson, Cassell and Arnold (2013) put forward that "in real sense, the current crisis of environmental degradation, is a crisis in the value systems of societies in which it occurs" (p. 4).

### **Establishing a definition of 'place'**

Defining the concept of 'place' has been problematic as it has been studied from a variety of disciplines such as environmental psychology, critical theory, anthropology, and cultural geography (Kudryavtsev, Stedman & Krasny, 2012), and as a consequence given multiple definitions and interpretations. However, once these varying definitions were analysed it was highlighted that they all contained interrelated concepts that emerge from what individuals receive from and give to a particular place (Ardoin, 2006, 2009; Dentzau, 2014; Kudryavtsev et al., 2012; Stevenson, 2011). People construct their meaning of a 'place' in a highly contextualised, personal way (Lim & Barton, 2010). It is how a person interacts with and within a place that makes 'place' situational and personal to each individual (Dentzau, 2014). Similarly, 'place' is always evolving as social, political, cultural and emotional forces, be it positive or negative, influence an individual's perceptions and actions within a place (Lim & Barton, 2010; Wakeman, 2013). In this way, place becomes a lived entity that shapes and is shaped by the people who have a relationship with it (van Eijck, 2010).

In order to take these many factors into account when researching people's concept of 'place', Ardoin, Schuh and Gould (2012) developed a four dimensional framework for analysing an individual's sense of place. Their holistic approach acknowledges the interconnectedness of four dimensions: biophysical, social-cultural, psychological, and



political economic elements. It is the individual's interaction with each dimension, either positively or negatively, that influences their relationship with a place.

### **Education and 'place'**

UNESCO's Director General Koïchiro Matsuura views education to be "one of the most powerful instruments we have for bringing about the changes required to achieve sustainable development" (United Nations Educational, Scientific and Cultural Organisation, 2015). However, as Gruenewald (2003) argues, it is educational curricula that increasingly omit the places where we live and places that our lives affect that is influencing humans' growing disconnection with nature and place. *Te Whāriki* (Ministry of Education, 1996), New Zealand's early childhood curriculum, has a guiding principle that addresses this problem as it acknowledges that "children learn through responsive and reciprocal relationships with people, places and things" (p. 14). While there has been much research around people's relationships with each other and the benefits of developing a positive relationship with place (Duhn, 2012; Ritchie, 2012), there seems to be limited research that explores early childhood educators' lived experiences and how they incorporate place into their curriculum.

Gruenewald (2003) justifies places as pedagogical because what people know is shaped by the kind of places they experience while participating with the phenomenal, ecological and cultural world. A recent development in education has been the notion of place-based education, which has evolved from a variety of pedagogical approaches, the most influential being environmental education (Smith & Sobel, 2010). Local communities and environments become the starting point or focus for teaching, with the aim of understanding and improving human and environment relations (Bartholomaeus, 2013; Mannion, Fenwick & Lynch, 2013). A place-based curriculum is viewed as an interdisciplinary programme that inspires children to take social and ecological action through inquiry, collaboration and problem-solving skills (Smith & Sobel, 2010; Wakeman, 2015). Learning outcomes for children include:

- becoming stewards of the environment quality (Gruenewald 2008; Smith & Sobel, 2010);
- developing a sense of affiliation to a place (Smith & Sobel, 2010; van Eijck, 2010);
- developing a sense of agency from real world problem-solving (Smith & Sobel, 2010); and
- developing greater respect for different cultures and worldviews as multicultural and multigenerational knowledge is shared about a place (Smith & Sobel, 2010).

All these outcomes can positively affect a child's sense of place, as place-based educators give epistemic worth to personal and emotional attachment to the local environment (Wakeman, 2015).

### **Critical pedagogy of place as a place-based education**

As discussed above, place-based education encourages children to take social and ecological action in their local places while learning about their local community. This can affect their sense of place. But, without critical analysis of the dimensions that influence one's sense of place, teachers and educators may be unintentionally perpetuating the social and environmental inequalities that already exist in the local place (van Eijck, 2010; Wakeman, 2015). By neglecting place completely, it becomes part of the hidden curriculum that teaches children that we live independent of place (Gruenewald, 2003; Stevenson, 2012). Therefore, this hidden curriculum has potential to become a critical concept (Kilberry, 2004).

For that reason, place needs to be analysed at the social, political cultural and ecological level in order to identify what social and environmental equality looks like from the perspective of different groups (Wakeman, 2012). Consequently, by incorporating a critical pedagogy of place into place-based education, the power in education can be identified, examined and eventually problem solved.

Gruenewald (2003; 2008) has developed four questions to enable educators to incorporate the theory of critical pedagogy of place into their practice:

- What is happening here?
- What happened here?
- What should happen here?
- What needs to be transformed, conserved, restored, or created in this place?

Wakeman (2015) propose three more questions be used to identify the power within their practice:

- Who am I in this place?
- Whose voices do I hear?
- Who speaks for this place?

In this way a critical pedagogy of place within place-based education can challenge current teaching practices, assumptions and outcomes that exist within an educational setting. It can highlight dominant discourses and reveal the influences of power in places (Wakeman, 2015). As a result, educators can become aware of how power influences individuals' understandings, relationships with place and the way they make sense of the world around

them. These can all influence a child's sense of place and place-based education (van Eijck, 2010).

### **Analysis of *Te Whāriki* for potential of place-based education and critical pedagogy of place**

New Zealand's early childhood education curriculum document *Te Whāriki* (Ministry of Education [MoE], 1996) was created twenty years ago based on a sociocultural paradigm. As such, it is reflective of both Western and Māori perspectives. It is a document that can be interpreted in many ways and thus fits within the variety of educational contexts present in New Zealand, allowing each community to weave its own curriculum (Ritchie, Lockie & Rau, 2011). Bolstad (2015) identifies *Te Whāriki* (MoE, 1996) as having a strong synergy with Education for Sustainability. However, because of its interpretive nature, there is variability in practices and approaches.

Given the importance of taking a critical pedagogy of place within place based education, an analysis of the scope for *Te Whāriki* (MoE, 1996) being a place-based curriculum reveals that it has potential. With Relationships, one of the four principles (p. 14), developing a responsive and reciprocal relationship with place is integrated throughout the document, woven within the strands and learning outcomes, e.g.: "The curriculum is provided by the people, places, and things in the child's environment" (p. 11); and "Children develop a relationship with the natural environment and a knowledge of their own place in the environment" (p. 90). In addition, the holistic nature of *Te Whāriki* (MoE, 1996) enables children to build on their knowledge, skills and attributes as they learn about their local community place and how they relate to it. , e.g.: "There are opportunities for finding out about places of importance in the community" (p. 57); and. "Children develop a sense of "who they are", their place in the wider world of relationships, and the ways in which these are valued" (p. 68).

Table 1 identifies the relationship between *Te Whāriki* (MoE, 1996) and place-based education learning outcomes for children. The third column shows how these learning outcomes can affect an individual's sense of place in terms of Ardoin et al.'s (2012) dimensions of place. These dimensions are included because *Te Whāriki* (MoE, 1996) and place-based education have the potential to strengthen a person's relationship with place.

Table 1

Similarities between *Te Whāriki* (MoE, 1996), place-based education and relationship with Ardoin et al.'s (2012) dimensions of place

Te Whāriki learning outcomes relevant to relationships with place	Place-based Education learning outcomes	Ardoin's dimensions of place
<b>Well-being:</b> Respect and understand the reasons for rules about harming others and the environment	Stewards of the environment quality in respective communities.	Political Economic Sociocultural
<b>Belonging:</b> Respect for Papatuanuku, and knowledge of the physical and spiritual significance to the local area.	Developing a sense of affiliation with the places.	Psychological Biophysical
<b>Contribution:</b> Children develop a sense of who they are, their place in the wider world of relationships	Understanding of themselves, roles and positions in context of social and natural world.	Sociocultural Biophysical
<b>Communication:</b> Cultural stories and literature valued by their community.	Sharing and respecting multicultural and multigenerational knowledge.	Sociocultural
<b>Exploration:</b> Children develop respect and responsibility for well-being of living and non-living environment.	Increased engagement with local place through a love of the place.	Psychological Biophysical

### The proposed research

Given that *Te Whāriki* (MoE, 1996) has the potential to be viewed as a place-based curriculum, there is space for exploring how it can be enacted by educators with the aim of children becoming more connected to place, while responsive relationships with place are fostered. Because of the interpretive nature of *Te Whāriki* (MoE, 1996), educators might be unintentionally ignoring the value of children learning through responsive and reciprocal relationships with place. In addition, educators' own values and perceptions of place have potential to influence their professional practice. Given that a critical pedagogy of place challenges educators to consider the connection between the kind of education available and the places we populate (Lyle, 2015) and that place-based research has highlighted the gap around the values and lived experiences of educators (Ardoin, 2015; Gruenewald, 2008; Mannion et al., 2013), there is value in exploring how New Zealand early childhood educators incorporate *Te Whāriki* (MoE, 1996) and a place-based approach into their learning programmes (Judson, 2006; Nespor, 2008).

This research aims to explore how early childhood educators foster responsive and reciprocal relationships between children and place and will be guided by two research questions:

What are educators' perceptions of place?

How are these incorporated into an early childhood centre's learning environment?

It will be an interpretive study that will use individual semi-structured interviews with 4 – 6 early childhood educators and observations of their learning environments in order to generate a rich data set. Ardoin et al.'s (2012) theoretical framework will guide the analysis of the data generated through the four dimensions of place. It is hoped that this analysis will illustrate these educators' values and lived experiences. The place-based framework was chosen because of the strong synergy between *Te Whāriki* (MoE, 1996), and place-based education. It is hoped that this exploration will unravel teachers' beliefs about place and examine how they believe they are fostering a responsive and reciprocal relationship between young children and place.

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## **Developing a co-design method for school ground greening**

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### **Introduction**

It is widely asserted that if school grounds are developed as ecologically diverse and environmentally stimulating places that encourage student engagement and learning, they can contribute to children demonstrating, what researchers such as Chawla and Cushing (2007) have termed, pro-environmental behaviour (Danks, 2014; Williams & Brown, 2012). School ground greening (SGG) is the general term used for the transformation of school grounds from asphalt, concrete and grass to spaces that invite children to explore and experiment (Dyment, 2005), and a significant rationale for its current popularity is the potential for developing positive environmental values and attitudes as a result of these nature encounters (Williams & Brown, 2012). Expanding the learning potential further, a growing number of researchers propose that if children participate in the design of these environments, it can foster creativity and imagination, develop communication and thinking skills, engender ownership of the space, promote sharing and increase community belonging (Christidou, Tsevreini, Epitropou, & Kittas, 2013; Green, 2014; Wake & Eames, 2013).

The research outlined in this paper is part of a Masters in Landscape Architecture focusing on the role landscape architects (LAs) in New Zealand could play in assisting schools with greening projects in a way that benefits both. Greening schools advocate Sharon Danks (2014) outlined the increasing interest and opportunity for involvement of American LAs in SGG in a recent article written for the American Association of Landscape Architects. This interest is also evidenced by the work of The Trust for Public Land in New York City, a USA-wide not-for-profit that protects land for people's use ([www.tpl.org](http://www.tpl.org)). According to their website, in New York City precious land is tied up in asphalt-covered school yards, which the Trust works with school communities to change through a participatory design approach that includes the school and community, while focusing on green infrastructure design solutions such as planting to increase ecosystem services (e.g. shading, cleansing, animal habitats) and decrease pollution. In the UK, Learning Through Landscapes is a charitable trust that connects schools with LAs who can assist with a re-design process ([www.ltl.org.uk](http://www.ltl.org.uk)). There are no comparable organisations in New Zealand, although the schools-based environmental education programme of the Toimata Foundation (Enviroschools) is empathetic with a participatory design process as indicated by their aspiring to David Driskell's "shared decision-making" (2002, p. 6) between all participants



(e.g. adults and children) and their action learning cycle that is iterative and encourages reflection (The Enviroschools Foundation, 2008). However, this is general rather than design-specific, and while LAs in NZ often have a role in creating outdoor learning environments and in advocating both for human and environmental values through their work ([www.nzila.org](http://www.nzila.org)), they are not trained educators and have to juggle social with economic imperatives. This predicates a need for a process that is reciprocally beneficial and efficiently devised, while still focusing on the process, an importance identified by others (Somerville & Green, 2015; Wake & Eames, 2013).

The aim of this research project by design is therefore to propose, with rationales, a suitable participatory design method for LAs to use with schools and test it through a real design process with school children. This paper outlines the development of the method, focusing on the principles and benefits of co-design. Parnell (2014) defines architectural co-design with children as them working directly and collaboratively with designers to contribute and make decisions within the design process, rather than a purely consultancy role. This kind of spatial advocacy is known to be empowering.

### **Background and rationale**

The identification of reciprocal beneficial outcomes from a co-design process is a strong rationale for its importance both pedagogically for teachers and students, and professionally for designers. Improved design ideas, learning better how to design with/for children and generating a positive profile to potential clients have been cited as possible outcomes for designers (Parnell, Cave, & Torrington, 2008; Patsarika, 2014; Wake & Eames, 2013), while unleashing children's creativity (children as natural designers with knowledge of their environments), developing valuable skills, increased ownership of the space and empowerment due to feeling control over learning have been cited as outcomes for students (Green, 2014; Sorrell & Sorrell, 2005; Wake, 2010). Set against this is the fact that LAs in NZ are typically not involved in SGG projects, usually for reasons of economy due to school ground projects requiring private fundraising, rather than being funded through the Ministry of Education. Instead, teachers or parent groups often assume the role of design/construction/maintenance although they may not be fully aware of the knowledge and commitment required. The result can be over-burdening, disillusionment, over-reliance on one person for continuation, or simply not taking full advantage of what SGG could offer as a learning tool and a valuable ecological and social resource for schools and communities (Passy, 2014).

The theory of participation has now been well described, following the drafting of the United Nations Convention on the Rights of the Child (UNCROC) in 1989. In this regard researchers emphasise the importance of being clear with children about the limits of their

participation (Hill, 2006) and focusing on the participatory learning process rather than on the project outcome (Somerville & Green, 2015; Wake & Eames, 2013).

Malone and Hartung (2010) maintain that children's participation is frequently recognized only in an adult-centric structure and therefore does not challenge dominant hegemonies, such as many adults believing children are not capable or should not be asked to assume adult decision-making responsibilities. It is therefore important to distinguish between consultation and co-design with children. Parnell (2014) defines consultation as a "...structured process enabling different parties to express their views on a proposal ... denotes commitment to take on board participants' views ... and provide feedback" (para. 18), while "in co-design processes, users take an active, hands-on role in the design of the major spaces, working directly and collaboratively with the design team to develop designs" (para. 15).

### **Developing a method**

As pointed out by others such as Green (2014), co-design examples with children are not common within academic literature and are often scant in providing details on methods used. For the research project being outlined in this paper it is also clear that the importance of focusing on process will need to be balanced by the limitations of time and with regard to the distinction between consultation and co-design. Both Somerville and Green (2015) and Wake (2010) describe exemplary co-design projects that are long term and on-going. While laudable, such an open-ended project is not practical in all situations. The following represents a distillation of examples that have been found from within literature or practice, which may be useful in informing the method for this research project.

In looking for suitable case studies, Iltus and Hart's (1995) useful description of how to manage participatory planning of recreational spaces with children recommends child-guided walkabouts, photos, models and drawings. They emphasize the importance of children annotating these to give clear evidence of their meaning. A number of researchers use design charrettes (Rottle & Johnson, 2007) or visioning (Sanoff, 2001), both of which are group activities used in design disciplines to develop multiple design ideas and solutions in a short time. Rottle and Johnson (2007) clearly describe a three-stage design charrette process used with senior students designing a public park to be an outdoor learning laboratory – a one hour ideas session (creating posters of ideas for park elements in facilitated groups) followed by a one hour model-making session (same facilitated groups) showing spatial arrangement of park elements and habitats, and finally, a brief reflection session where students gave feedback on the learning they gained from the project, using postcards. Incorporated within their method was use of a conceptual content cognitive

map called 3CM (Kearney & Kaplan, 1997; Micic, 2001; both cited in Johnson & Rottle, 2007, p. 488), which focuses on participants' ownership of ideas that serve as a cognitive map of their understanding of issues. In identifying concepts perceived to be important and then organising them, as per the research of Kearney and Kaplan (1997), Johnson and Rottle invited participants to collect ideas individually on sticky notes and arrange these collectively into a map of themes. The best ideas were translated into the group poster. Kearney and Kaplan (1997) point out that the method is simple, highly valid and is useful in offering an approach that is between qualitative and quantitative.

Wake and Cha (2012) used a modification of Rottle and Johnson's method in that students created models (within groups) of elements they would like to see included in a hypothetical sustainability education theme park. These ideas were interpreted by the designer into a concept design to which the students gave feedback. One drawback they noted was the tendency for children to be led by any examples provided to 'whet their appetites'. Practitioners reinforce this anecdotally, and one recommends: "never give children catalogues of play equipment and ask them what they want – the result will be a shopping list" (Fiona Robbé, Landscape Architect, Sydney, pers. comm. 26/11/15).

Robbé herself uses a variation of Driskell's (2002) Gulliver's Mapping method, which is a community participation process that employs huge scale photographic maps of the area being designed. Participants add their stories, memories and opinions about the site as 'footprints' in the form of photos and sticky notes. As the designer (specialising in children's environments), Robbé collates this information into reports for the client in order to encourage them to include ideas from this community participation within the design. This method was recently modified for use in a 'Child Friendly Audit' of Freyburg Square in the Auckland Central Business District. Auckland Council and researchers from Massey University's Whariki Research Centre led the project, which was underpinned by Auckland City Council's policy of 'putting children and young people first' (Auckland Council, 2014), the Waitemata Local Board's intention to become a UNICEF accredited 'Child Friendly City' (UNICEF New Zealand, 2016), and concerns about children's diminishing outdoor activity and independent mobility (Witten, Kearns, Carroll, Asiasiga, & Tava'e, 2013).

The Freyburg Square project gave a group of 11 children aged 7-13 years the opportunity to express their views on the square from a youth perspective (Auckland Design Office, 2015), since it is intended to make the space more appealing to younger people. The Auckland Design Manual Blog (Auckland Design Office, 2015) explains that three workshops were run, the first giving the participants the opportunity to explore and photograph the space and comment on what worked for them and what didn't. The second workshop refined this information with participants choosing three photographs to annotate, followed by further

group discussion. The third workshop presented the draft plan prepared by the design office (who had received a detailed report on the findings), showing how they had responded to the information from the children's input. Also included in this session was an invitation to the children to provide reflective feedback on how they found the process, which evidenced a useful and positive experience for all parties (Penelope Carroll, Researcher, pers. comm. 17/11/15). This process concurs with findings discussed earlier about the reciprocal benefits of co-design for both children and practitioners.

### **Discussion and conclusion**

The projects discussed in the previous section all offer something of value to the development of a co-design method that will be tested in a school ground greening project within a New Zealand primary school by a Masters in Landscape Architecture student. In order to keep the process simple and low in required resources, it has been decided not to get children to take photographs. Therefore, the method outlined by Rottle and Johnson (2007) offers simplicity and an iterative process that we believe should be well fitted for a project undertaken by a LA who will be giving up paid working time to travel to the school and work with students in a 'pro bono' project. This method also has the advantage of incorporating a version of Kearney and Kaplan's (1997) 3CM method, which provides another perspective on how the students manage the 'ideas phase' of the design by organising the ideas into themes. Informed by other literature and examples, it has been decided to modify the method slightly to incorporate other researchers' and practitioners' methods. For example, the Gulliver's Mapping exercise used by Fiona Robb as more of a consultation than a co-design process, is rich in encouraging stories of a place or space, so the project under discussion will use large scale maps (traced off aerial photos) of the site as the base when students are creating their models during the second charrette.

The process used in the Freyburg Square included an evaluation by the children of how they found the process, so this will be included since the concept of including student voice throughout the process is very important. Equally, learning about landscape design and the environment is a key outcome from the project so this final evaluation will also ask the students (via postcards) what they have learnt from being part of the project. This will be similar to Johnson and Rottle's third workshop/charrette.

It is intended to run four workshops – the first being the visit to the site followed by scoping of ideas (poster session). The second will focus on construction of models, the third will present the design and ask students for critique and the fourth will present the final design and ask for evaluation of the process and the learning. It is estimated that the first two workshops will take 2-3 hours and the final two about 1-1.5 hours. There will be an

introductory powerpoint shown in the first workshop, to outline the brief and introduce some landscape design principles, while being careful not to suggest too much to students. In conclusion, this paper has established a rationale for the research aim of involving students in a co-design process with a landscape architect to effect school ground greening projects within their school grounds that increase student exploration and learning, and build biodiversity within the school. The co-design process aims to build ownership and develop design skills that could see students more engaged in environmental issues within their schools. Reciprocal benefits for landscape architects include potential skills in working with children and understanding their needs better, plus promoting their discipline more widely. Developing a method to trial within a school has therefore been the focus of this paper.

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## **Empowered youth: Agents of pro-environmental behavioural change in secondary schools**

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### **Aim**

The purpose of the research proposed in this paper is to explore in-depth the successes and challenges of student-led waste reduction initiatives in secondary schools, evaluate the processes of change that result from these initiatives, and how various groups within the school respond to the initiatives. Young people are becoming more aware and active in environmental campaigns around the world. However, there is little understanding of what students know about environmental issues in their own school, specifically waste systems and waste reduction practices.

In addition, this study intends to identify and analyse major enablers and barriers students face throughout the process of enacting long-term pro-environmental behavioural change in their school. Potential issues may include students engaging with the school's management hierarchy, the potential for champions within the staff and faculty that may assist the students, or access to people, information and platforms that students may wish to use in their campaign for change.

Finally, this study will look at what, if any, behavioural change has occurred as a result of the student-led initiative. The results of this study could be used by other researchers and facilitators to help guide schools and young people that are attempting similar change initiatives in their schools.

Possible research questions are:

- What are environmental council students' perceptions and understandings of waste and waste reduction practices within their school?
- What are major enablers and barriers to enacting a waste reduction initiative?
- How do environmental council students seek to enact change to waste reduction practices within their school?

### **Background**

New Zealand's current government has identified schools as critical to achieving New Zealand's waste reduction goals (Auckland Council, 2011; MfE, 2011). Schools, like other public institutions, send a considerable amount of waste to landfill each year and have been



targeted as organizations that would benefit from waste reduction initiatives (Wastewise Programme, 2015). Also, schools are seen as a means of shaping the nation's youth into environmentally aware and responsible citizens (MfE, 2011). Similar foci can be found at the international level, for example in the aims of the United Nations Decade for Sustainable Development (UN DESD). Aims of the UN DESD include transforming existing education to address sustainability and increasing public consciousness and understanding of the social, economic and environmental consequences of development policies (United Nations Educational Scientific and Cultural Organization, 2004). However, there appears to be limited research examining what New Zealand students understand about waste reduction practices, both at the regional level in the form of collection stations or curb-side collections, and within their own schools.

There are limited data describing how much waste schools send to landfill each year. Despite many programmes around the world conducting waste audits in schools, most of these programmes do not keep records of the waste audit results (Borato, 8 August 2015; Hayward, 11 August 2015). However, data from 16 Auckland secondary schools' first waste audits conducted between 2009 and 2015 show on average each school sent 84.79 kg of rubbish to landfill a day, or 16.110 tonnes per school per year. With 344 secondary schools in New Zealand, they are clearly important institutions to target with waste reduction initiatives (Ministry of Education [MOE], 2015).

Another reason governments and waste management organisations have targeted schools is the large amount of people schools can reach with waste reduction initiatives. Auckland alone has over 536,000 children and young people living within the city limits (Auckland Council, 2012). In addition to the direct contact environmental education (EE) on topics such as waste can have with students, several studies indicate that immediate family members of students engaged in EE show positive pro-environmental behavioural change (Damerell, Howe, & Milner-Gulland, 2013; Duvall & Zint, 2007). A report by the New Zealand Parliamentary Commissioner for the Environment (PCE) (2004) describes how learning "is a process that influences the ways people think, feel and act" (p. 14). In this way schools have an important role to play in facilitating pro-environmental behavioural change, specifically around waste disposal practices. However, there is limited information about what students know about waste systems in their school and how they can lead meaningful behavioural change initiatives in their school.

### **Empowering students to promote change**

The United Nations Convention on the Rights of the Child (1998) suggests that children have the right to voice their opinions and participate in decision-making processes when the situation is important to them. This report claims that adults need to provide a safe place

for a child to give his/her opinion, give the opinion weight, and have a voice in a transparent decision-making process. Many school administrators and teachers are seeing the value in students voicing their opinions and participating in and leading actions within the school (Rinaldi, 2006; Toshalis & Nakkula, 2012). While a growing number of educators and researchers believe children and young adults have the power to create positive and lasting change, the scope of how, when and to what extent has been left to adults to interpret (McQuillan, 2005; Seidman, 2012; Walton, Helferty, & Clarke, 2009).

### **Definitions of student empowerment**

There are many terms being used to describe the inclusive role of students in a school's decision-making processes. The simplistic term 'student voice' has been a favourite among researchers and school administration alike (Taylor & Robinson, 2009). However, focusing on the actual 'voice', meaning what students have to say about what is going on in their school, is to neglect the power students have to enquire, create and act of their own passions and ideas for the benefit of the school and wider community (Rudduck & Fielding, 2006). Adding to the complexity, and further dashing the usefulness of a simple term, is the expanding forums students can use to express themselves. For example, Waller (2011) highlights the growing importance of social networking in schools, providing ways for students to participate above and beyond traditional face-to-face discourse. As new forums for expression arise so does the prevalence of multiple voices, such as the difference between public and private voice, or the voice for friends compared to that used with teachers (Quiroz, 2001). Beane and Apple (1995) offer another critique of the term 'student voice', the possibility of schools highlighting only the prevalent 'voices' within a student body, explaining "many schools silence the voices of those outside the dominant culture" (p. 15). Therefore, the term 'student voice', while a very important part of an inclusive school, seemingly puts limits on what is expected and valued from the students.

Considering the focus on this study the researcher will be using the term 'student empowerment', when students believe in their own capacity to act effectively (Duhon-Haynes, 1996). McQuillan (2005) describes 'student empowerment' as having three dimensions: academic, political and social.

### **Theories explaining student empowerment**

Many theories have emerged about the best way to promote student empowerment in schools. Four popular theories: the democratic, action competence, enlightenment and empowerment rationale, offer different roles for both students and adults, as well as limitations on how and what type of participation students play in the decision-making process.

The democratic theory values students as part of a whole. Students are encouraged to voice ideas and preferences to be evaluated by peers and faculty, mimicking the larger democratic processes of Western nations (James, 2006). Action competence theory builds upon the democratic theory, adding that students need to follow through with their ideas and take action (Holdsworth, 2000; Jensen & Schnack, 1997). The final two theories value allowing students to make meaningful choices in their lives, but differ in the types of roles of adults play in the decision-making process (Weiler, 2008). I intend to use the four theories as a framework to analyse how students engage with adults and peers to encourage pro-environmental behavioural change. Being able to analyse the successes and challenges experienced by student leaders will give insight into how to support future students attempting to make lasting change in their schools.

Each theory of student empowerment has suggested roles for both adults and students, and advocates when and how students should participate. These roles have the opportunity to allow students to create change within their school. However, while all the above theories focus on empowering students, each offers limitations as to what type of access to the decision-making process is 'good' for students, adults, and the school as a whole. This study will use aspects of all four theories to analyse how three schools are allowing, supporting and hindering students in leading pro-environmental behavioural change initiatives within their schools.

## **Research design**

The proposed study is designed to enable an in-depth exploration of the successes and challenges of student-led waste reduction initiatives in secondary schools. The processes of change involved when various groups within the school respond to the initiatives will also be investigated. I view human behaviour in line with the qualitative approach to research: lively, situational, communal, and personal (Lichtman, 2012). The qualitative approach looks to analyse a 'dynamic reality', it thus supports the understanding that participants are in a constant state of evolution throughout the study (Anderson, 2006). The research requires an empathetic focus, and will follow a naturalistic approach (Sarantakos, 2012). However, quantitative data in the form of waste audit figures will also be collected and analysed. The data generated will allow for a comprehensive analysis to identify characteristics of relationships within the school between the members of the environmental council and staff, as well as how people and actions influence/change others' behaviours.

A multiple case study approach will be used in this study. Case studies seek to analyse a single occurrence against the background context (Lamnek, 1995). In educational research case studies can explore “content-specific educational situations” and allow the researcher to develop generalizations from the generated data (Kyburz-Graber, 2004, p. 53). In the case of the proposed research, three case studies will be constructed about students who participate in environmental councils and other key staff in three New Zealand secondary schools as they plan, act and reflect on a waste reduction initiative in their schools. A case study approach will allow the researcher to analyse “real-life situation[s] in all its complexity, exploring it as close to the people concerned as possible, describing the situation in as much detail as possible” (Kyburz-Graber, 2004, p. 54).

The thematic analysis framework developed by Braun and Clarke (2006) will be used to analyse the data generated in this study. A thematic analysis framework looks to identify, analyse and report patterns/themes that are found in the data, organising these findings in a manner that allows for “rich” detail (Braun & Clarke, 2006, p. 79). In addition, Braun and Clarke argue that for studies that have multiple focus group discussions and semi-structured interviews, as is the case in this proposed research, the flexibility of the thematic approach allows for “searching across data sets” (2006, p. 86).

The researcher will follow six steps: becoming acquainted with the data, initial coding, identifying themes, aligning coding with themes, defining and naming themes, and reporting the findings (Braun & Clarke, 2006). This thematic analysis framework will enable me to identify themes by both inductive and deductive methods, using the qualitative and quantitative data that I intend to gather in the study.

### **Possible contribution to research field**

The overall aim of the proposed research is to explore in-depth the successes and challenges of student-led waste reduction initiatives in secondary schools, and evaluate the change processes regarding how various groups within the school respond to the initiatives. It is hoped that the data may show that behavioural change has occurred as a result of the student-led initiative, as well as actions and relationships students take to succeed in facilitating lasting school change. Another key assumption of this research is that the findings could be used to assist students, school administrators and outside organisations in supporting future student-led change initiatives in schools.

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## **Accepting activism: The experiences of young adult activists in Aotearoa/New Zealand**

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### **Aim**

To strengthen our response to current environmental and social issues we need to understand what aids people to persistently take action. The current study involved interviews with six young adults from Aotearoa/New Zealand who self-identified as activists, to explore what supported their activism.

### **Rationale**

Activism is an attempt to make change by disruptive and creative approaches that challenge social and environmental problems. It is therefore a key component in the shaping of democratic societies towards the values most people share, such as social equity and flourishing ecosystems (Harré, Madden, Brooks, & Goodman, submitted). The present study involved interviews with six self-identified activists from Aotearoa/New Zealand in their mid-twenties to early thirties to examine what supported their activism.

Our study assumes that activism toward social transformation springs from critical consciousness, a way of seeing the world that critiques current power dynamics and questions the discourses that normalise these (Freire, 1970). As indicated by a recent review, critical consciousness is comprised of a cycle of awareness, reflection, political efficacy and action (Watts, Diemer, & Voight, 2011). This cycle is often started by an experience of deep personal significance that leads to the person concerned feeling they must take action (Fisher, 2016; Holeman, 2007; Kovan & Dirkx, 2003; Stuart, 2013). All going well (enough), such action can prompt experiences of belonging, hope, efficacy and integrity (Gilster, 2012; Harré, Tepavac, & Bullen, 2009). These experiences then prompt further action, the content of which changes as the activist's life circumstances change (Chatterton & Pickerill, 2010; Fisher, 2016).

While positive experiences may be important in motivating continued activism, many activists continue to be engaged in the face of significant adversity and challenge; leading in some cases to feelings of overwhelming exhaustion and despair (Kovan & Dirkx, 2003; Murray & Ziegler, 2015). Previous research has found that the strategies used by activists when faced with such challenges include altering one's approach (Beauchamp, 2009; Brown & Pickerill, 2009), making time for personally nourishing self-care activities (Chase, 2014; Kovan & Dirkx, 2003), and spiritual practices that connect a reverence for the unfolding of

life with the need to make change in the world (Coder, 2012; Sheridan, 2012).

In light of the findings from previous studies, the research question that drove this study was: *What supports young adults in Aotearoa/New Zealand to do activism as an ongoing part of their lives?*

### **Research design**

Participants were recruited by advertising on Facebook and through the first author's personal networks. Three women and three men were interviewed, five of whom were in their mid-twenties, and one in their early thirties. The participants had been variously involved in issues relating to environmental exploitation, climate change, globalization, community building, social justice, workers' rights and sustainable land use. In the findings below they have been given aliases. They were first asked about how activism shaped their lives, followed by questions on the tensions this produced, and their experiences responding to these.

The analysis was based on the six step process outlined in Clarke and Braun (2013). This involved the first author systematically identifying themes related to the research question. Emphasis was placed on the participants' theories about activism as well as their experiences of it, with the assumption that they had thought in considerable detail about what they did and why they did it (see Barker & Cox, 2002).

### **Findings**

One overarching theme and four main themes were identified. These are discussed in turn.

#### *As it is*

We titled the overarching theme *As it is*, to reflect how the participants considered activism as essential to their lives, despite the tensions involved. As Alex said:

*I would even lean to more towards I'm wasting my life and the world is never going to change, but what the fuck else am I going to do.*

For all the interviewees, activism began early, either at secondary school or at university. In many cases their political engagement led to feeling distanced from others or unable to enjoy 'normal' activities. For example, Jess talked of going to university and feeling different from her fellow students:

*Even though I was doing environmental science I didn't feel like there were many, if any, people in my classes who were like me.*



In the context of travelling, Siobhan described how she wasn't able to just "have a nice time" even though that is "usually what you're trying to do while travelling" because of her desire to be politically engaged. Rosa also travelled but found ways to integrate her activism when teaching English overseas by weaving in material "about the environment, or about climate change". The overall picture therefore, was of committed young adults who were trying to balance their activism with their desire to live well. The other four themes tease this out further.

### *Change everything?*

The theme *Change everything?* reflected participants' efforts to negotiate effective activism with the rest of their lives. Recognising that there is no one solution, strategy was seen as essential, even in some cases, when it involved taking advantage of social norms that the interviewees wanted challenged. For example, Mathew discussed maintaining a tidy appearance for the sake of appearing credible, even though he'd like to "put the piercings back in" and grow his hair "forever". Another example was given by Jess, who talked about putting off buying a smart phone because of what she knows about suicides in factories, and the process of mining minerals in Africa. However, she had just got one because:

*... me not having a smartphone, maybe isn't going to change the smartphone industry in the end and isn't going to affect anyone as much as me being successful is going to ...*

Other examples along similar lines included driving in order to be more effective as a union organiser, completing a university degree despite knowing degrees create an elitist form of expertise, and deliberately appearing as a tidy white man in order to gain media sympathy. As such, participants acknowledged they couldn't change everything themselves, so compromised where it enabled their contribution.

### *Follow your heart*

*Follow your heart* describes how participants' energy for activism could be both nourished and drained by their circumstances, and it was important to seek situations that felt good for both themselves and their activism. For example, Rosa chose not to go to university when she recognised that it was not the right place for her as someone who wanted to work toward social change. She explains:

*I think I came to uni for one week from the west and I just had to sit in the traffic, and I remember just sitting there and thinking, I can't do this.*

It was not just within conventional institutions that the interviewees sometimes felt stifled. All the participants described frustrations with the hierarchy, inertia, and lack of imagination in some established activist organisations; and all tried to distance themselves from these

situations. They also found themselves unwilling to do some activist work despite recognising it as necessary. For example, Siobhan and Rosa left jobs as fundraisers for a large environmental organisation because they did not feel comfortable with raising money as a course of action.

Another element of this theme was the motivation gained from working on issues that had immediacy and presence. For example, Siobhan's motivation to continue campaigning against deep-sea oil was buoyed by joining a flotilla that witnessed the drilling ship. As she explains, it was:

*... kind of a relief to put a face to the enemy you've been fighting, so it's not just an imaginary thing you've been fighting that may come one day. But it's like a real huge machine that is really coming to cause chaos.*

Other interviewees talked about working to their strengths. Matthew discussed being able to provide media sound bites; Alex talked about being good at making plans, so taking that initiative within his union work. Conversely, the interviewees also discussed avoiding situations that undermined their sense of efficacy. For example, Oscar talked about avoiding arguing with people he knows who "are like actively involved with National Party and stuff like that." As he explained, this was partly due to a dislike of conflict, but also due to the drain it placed on his energy.

So the theme of *Follow your heart* captured a flexibility in the activists' lives and approaches. While remaining committed to activism and being strategic, they also followed more emotional cues that directed them toward and away from certain situations.

#### *A hard rain ('s a-gonna fall)*

*A hard rain* captured participants' recognition that with commitment to activism can come heavy emotions and a susceptibility to burnout, which required them to cultivate personal resilience. As part of this, all participants talked of the need to take deliberate breaks from active engagement. Some described taking evenings or weekends off, while Rosa experienced months of burnout and Mathew had a break of several years after being particularly affected by two years of forest activism.

Some of the interviewees described how going through difficult times has taught them how to deal with the emotional experiences that come with activism. For example, Alex described how his attitude has changed from "yelling and getting angry at injustice to laughing at it." Rosa talked of learning to honour her grief and coming to see that going into "dark places" is part of doing activism.

Participants also talked of the need to balance personal wellbeing with action. Methods for this included spending time with friends and family who don't do activism, making a point of not talking about activism with friends who do, spending time in nature, playing board games for a weekend, or, in Matthew's case, knitting. Matthew explained:

*It seems kind of self-indulgent, and I'm almost kind of laughing at myself for it. But, actually doing some knitting is really helpful. And it doesn't have to be knitting, but just doing something. Something completely unrelated.*

In summary *A hard rain* is about both accepting that difficult experiences come with activism and that doing other things for a time is good, and can be necessary.

### *A beginner's mind*

The theme of *A beginner's mind* captured the participants' willingness to constantly learn, leading to a cycle of action, reflection, learning and then application of insights to further action. Experimenting with new approaches was also considered by some as an important source of learning. Alex described how he was part of a university group that decided to "re-infuse the idea of politics through the university," through "fun and disruptive actions". These activities helped them realise a multitude of ways that their group could have been more strategic and thus more successful. Nevertheless, without the initial actions, this learning could not have taken place.

Some interviewees found further sources of learning from formal settings. Alex and Oscar both pursued postgraduate study to grow their respective expertise on social movements and climate change impacts. Learning also came from working alongside others who were committed to social change. Matthew describes this in relation to his forest activism:

*I became exposed to basically every other struggle. I didn't know an awful lot about feminism or racism or all those other things ... we weren't just sitting out there chaining ourselves to stuff ... I'm more aware than I could have possibly ever been before, of um, all the other struggles that people go through, y'know. And try my best to be an ally for everything that, that I see.*

Similarly, learning about the Treaty of Waitangi meant Rosa's "whole life got turned upside down" as she was better able to see issues of "power and privilege" including "within the activist world."

There were several indications that participants would have liked a stronger presence of elders who could give guidance through their experiences of activism. As Jess said:

*I think that is something that is missing kind of is people who have been through a similar struggle, and having their knowledge and their stories and their support.*

To summarise, all the participants tried to adopt a beginner's mind by being open to taking actions, reflecting on these and learning how to take better actions as a result. This was a deeply social process that was frequently described as occurring in groups and could be aided by opportunities to learn and listen to those who came before them.

### **Key outcomes**

This study interviewed six young adult activists and found that their activism was primarily supported by their acceptance of its necessity; captured by one overarching theme *As it is*. In this sense they were like activists the world over, committed to social change despite its tensions and difficulties (see Harré et al., 2009; Kovan & Dirkx, 2003; Murray & Ziegler, 2015).

The participants recognised that it was not possible to be active at all levels at all times, but that strategy and some compromise was necessary (shown by the theme *Change everything?*). They also acknowledged the need to adapt to their own emotional reality that made some kinds of activism "doable" for them and others not, as described by the theme *Follow your heart*. This included changing their focus; an approach found useful in previous research on activists (Beauchamp, 2009; Brown & Pickerill, 2009).

The interviewees talked of needing to accept and negotiate difficult emotions in the theme of *A hard rain*. All experienced emotional challenges, in some cases leading to prolonged burnout, which has also been found in previous studies on activists (Beauchamp, 2009; Brown & Pickerill, 2009; Kovan & Dirkx, 2003). Ways they managed this included acceptance of these emotions and letting go of their struggles for a while, in keeping with previous research (Chase, 2014; Kovan & Dirkx, 2003).

Participants were also willing to learn (*A beginner's mind*) both from their engagement in the world as activists and from formal settings. Unlike in some other studies (e.g. Coder 2012; Sheridan, 2012), these activists did not however appear to draw on many spiritual practices to support themselves or their commitment. We wondered if a more transcendent perspective may have helped support our participants through the tensions, ebbs and flows of their activism.

To conclude, the young adults we interviewed appeared to be living the cycle of critical consciousness (Freire, 1970) that has been described previously (Watts, Diemer, & Voight, 2011); in which they were constantly observing and acting, and thereby becoming more effective and adaptable. Our intention was to share their insights to support the efforts of other people who are taking social and environmental action.

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## **What does it *feel* like to become aware of environmental issues? The ‘affective patterns’ of young environmental leaders**

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### **Purpose**

This study was designed to explore the ‘affective patterns’ experienced by eight environmental leaders from a secondary school in Auckland, New Zealand, as they developed critical consciousness of current environmental issues. Interviews asked the young people to discuss ‘big feelings’ and ‘light bulb moments’ in relation to their awareness of, or action in relation to, the environment. We found five key affective patterns: inability to dissociate, dissociation, domination/indoctrination, frenetic activity, and awe. We suggest that growing critical consciousness can put young people in the highly challenging position of feeling compelled to take action, while finding such action is fraught with difficulty. We also discuss the role of adult support in helping young people navigate these experiences.

### **Background**

There is increasing recognition that society benefits from politically-engaged young people who work actively for change (e.g., Dittmer & Riemer, 2013; Riemer, Lynes & Hickman, 2014; Blythe & Harré, 2012; Harré, 2007). Young people can also benefit from such engagement, by learning how to navigate social structures and become effective and confident social actors (Crocetti, Erentait & Zukauskien, 2014; Eden & Roker, 2002; Stukas et al; 1999; Youniss & Yates, 1999).

Nevertheless, becoming a political actor in the environmental sphere, which is our concern here, is deeply complex. Images of doom frequently accompany environmental messages about the planet, for example pollution, waste, species extinction, deforestation, contaminated water; a relentless list of how humans are destroying the planet. To become aware of and attempt to influence the current human/environment relationship is often therefore, a process of absorbing the ‘bad news’ and learning to live in a society that insists on hurtling towards it. What does it feel like to be a young person who is gaining such awareness? How can we as adults, support young people who are struggling to find a way to live and make change to the society we have presented them with? That is the focus of the current research.

Our research draws on two main theoretical threads: critical consciousness and embodied affect. We discuss each of these briefly before outlining the method for our study.

Critical consciousness describes a process of analysing and critiquing social power and the practices it produces, as well as feeling empowered to influence these (Christens, Collura & Tahir, 2013; Freire, 1974; Hannson & Jacobsson, 2014; Watts et al., 2011). Theoretically, therefore, it results in political action underpinned by awareness. In practice, however, it may be difficult to combine awareness with empowerment, given the complexity of social power and the resistance to change that accompanies the status quo. In addition, and this leads to our second theoretical thread of embodied affect, the process of critiquing almost everything around you is emotionally fraught and by no means a simple process of intellectual understanding (see Dittmer & Riemer, 2013; Rose-Kransnor, 2009; Thomas, McGarty & Mavor, 2009). This means there is not only *external* resistance to any actions that spring from critical consciousness but also a messy *internal* process that demands attention.

The notion of embodied affect assumes that emotions are not discrete, easily identified subjective experiences; but are instead actions, behaviours, habits or practices that have a marked emotional or affective component at their core (Wetherall, 2012). From the embodied affect perspective, ‘practice’ and ‘feeling’ cannot be easily separated, but are bound together. One way of understanding people’s affectively charged practices is through interviews that elicit rich descriptions of such moments and attempt to understand how they are held together by the interweaving of context, behaviour and emotion. A previous study of animal rights activists in Sweden that used an embodied affect approach found that their activism was underpinned by strong experiences of anger and disgust in relation to meat production (Hansson & Jacobsson, 2014). For example, the activists talked of “institutionalised murder” and “the smell of eating meat” (p. 282), showing how strong metaphors were combined with a powerful sensual experience. Our study was designed to explore the embodied affect that lay behind the process of developing critical consciousness in young New Zealand environmental activists.

### **Research design**

Eight environmental leaders aged 15 – 17 years old from a single secondary school in Auckland, New Zealand were interviewed. These youth leaders were part of student teams responsible for creation of environmental initiatives within the school, alongside their support teachers, the Enviroschools facilitator (see [www.enviroschools.org.nz](http://www.enviroschools.org.nz)) and external helpers from the city council. The leaders were asked to describe moments where they experienced “a big feeling” in relation to their environmental engagement. They were also asked whether they experienced a ‘light bulb’ moment where environmental issues made sense to them and if they experienced any personal contradictions, or heightened senses,



provoked by their awareness. Our analysis involved looking for patterns of embodied affect experienced by these young people in relation to environmental issues and their role in taking action on these.

## Findings

Below we outline five patterns of embodied affect experienced by these young people. Each is accompanied by an interview extract that illustrates the pattern as described by one of the interviewees.

### *Pattern one: Inability to dissociate*

This pattern is one in which the young person, in becoming aware that almost all the everyday practices in our society are environmentally relevant, enters a state of inability to dissociate from that knowledge. In the extract below, the interviewee talks about noticing “everything” and being “real worried” and not able to “relax”. While this seems to motivate her to action, in her words, “you have to say something or you have to try”, the overall picture is of a young woman in a state of agitated vigilance:

*Yeah it's like, you know how everyone says ignorance is bliss and it's like much nicer to not have to worry about it, now that I am educated on it and I notice everything, it means that I think about it heaps, it's not really positive thoughts, it's like 'uhh no these lights are really bright, I wonder if these lights are power saving ones? or...'. I learnt to drive this year, before I would just relax or go on my phone or whatever, now I get real worried, I am like they didn't check their mirror when changing lanes and I notice everything and I hate it. You can't relax. That's kind of what it's like with this you can't, you can't sit back and watch it happen, you have to say something or have to try.*

### *Pattern two: Dissociation*

In contrast to the pattern of *inability* to dissociate, the pattern of *dissociation* appears to make everything on offer almost unreal, due to its connection to problematic cultural norms. This is illustrated below. When the interviewee's father offers to buy her something from the shopping centre, she repeats the phrase, “I don't want any of this stuff.” Her apparent dissociation leads to a “deep sense of discontent”. It is as if she is walking around in a fog with nothing to grasp hold of:

*I just feel a deep sense of discontent and like what is the point of all this and life is so pointless when I am around materialism and stuff, you know what I mean? I feel like when I got back from California and after walking around outdoors all the time, I walked around a shopping centre with my dad and I was like I don't want any of this stuff. I don't want any... Dad was like, 'Can I buy you something?' and I was like, 'No I*

*don't want any of this stuff,' it's all these advertisements and all this materialism everywhere, it's just a distraction.*

#### *Pattern three: Domination/Indoctrination*

Several of the interviews showed signs of domination/indoctrination, characterized by a forceful desire to get other people to behave in environmentally-sensitive ways. Below, one interviewee describes wanting “revenge” or having a “vendetta” against people who do “stupid” things in relation to the environment. He uses strong, physical imagery repeating the phrase “forcing knowledge down throats”. Overall, there is a sense of the impulse to dominate and indoctrinate, which appears born out of repeated frustration and a belief that his view is “more important.” At the same time, his ambivalence about his behaviour comes through, as he notes it is “kinda selfish” and “not necessarily a good thing”:

*I mean like when someone gives me an opportunity to do something, like we are going to clean up somewhere or we are going to go protest, I could be like ‘ohh ok’, (higher tone) I can take that opportunity to make people see things the way I see things. I almost feel like when someone does something stupid that they are forcing this knowledge down my throat and it’s like ‘hey!, I can go protest to tell people about these things and then I will be the one forcing it down their throat’...it’s not necessarily a good thing but yeah...it’s just a, kind of almost vendetta, revenge scenario, it’s kind of selfish, but I feel like mine is more important.*

#### *Pattern four: Frenetic action*

The fourth pattern that we identified from the interviews was frenetic action. In the extract below, the interviewee talks of his compulsion to clean up a beach (which was covered in small plastic beads after a shipwreck). By describing it as if “something dangerous was chasing you” he evokes images of a physical struggle to overcome a powerful force. Notably he frames it as a “small thing” but that because he took action he felt “quite happy”. It is as if, however, even that happiness was disturbed, as he was “still thinking about how this could of happened”.

*Going back to that day on the beach where all the little beads washed up, you see them and you are just like, “Oh everyone, everyone that you know we have to do this. It may be a small thing but we need to do this because this is our physical thing.” Normally when I think of panicking I think of shutting and not taking part of anything and just sitting down and having a good cry, but that day when it was panic, it was panic, as if something dangerous was chasing you, it’s like, “Oh we have to go do this thing right now.” because if we don't someone else has to and someone else won’t ... I was still quite happy, I was like, “I did what I did today,” and then of course I was still thinking about how this could of happened and why this could of happened ...*

### *Pattern five: Awe*

Unlike the four preceding patterns, awe is described in affectively positive terms as shown in the extract to follow. As the interviewee states, it “puts everything in perspective”. This pattern, in which the young person is “infinitely small” in the presence of nature, functions almost like time out from the frustration, disconnection or obligation that social life as an environmental leader brings with it:

*“I love looking at the stars and feeling like I am so infinitely small but it is such a great thing because it puts everything in perspective and it just makes you feel [small]. I know I am quite self-centred, but when you have those feelings of being in nature and being on a beautiful mountain and looking at stars, I am like hold on, the universe does not revolve around whether my hair looked good today or if I said the right thing, I am just this small part in this bigger picture. It’s also a feeling of wonder, like you know I am so lucky to be part of this beautiful place.”*

### **Key outcomes**

When young people are made aware of the environmental consequences of our way of life, and then encouraged to take leadership in creating a more environmentally sustainable society, they are likely to face both external and internal struggles. Our study investigated the affective patterns experienced by eight young environmental leaders, and found experiences of inability to dissociate, dissociation, domination/indoctrination, frenetic activity, and awe. Each of these involved complex networks of emotions and responsiveness to the physical and social world. Only one, awe, was purely positive. The other four involved at least moments of feeling removed from other people, which in some cases led to an impulse to confront them.

The overall sense in these four patterns is of young people who have been ‘stirred up’ mentally and emotionally, but who are not quite sure how to act in the face of these strong feelings.

So, if this leaves young people awash with feelings that are not easily resolved “now I am educated on it” as one of our interviewees said, where does it leave teachers and other adults who wish to develop and encourage these young leaders? First, we remember that youth action is important in creating a better world, and critical consciousness is essential to mobilise young people (Dittmer & Riemer, 2013; Watts, Diemer & Voight, 2011). It is also important to acknowledge that our interview questions may have provoked a more negative picture than is the case. By being asked about ‘big feelings’, we may well have directed these young people away from describing the relatively mundane joy and fun that can result from working with others on a meaningful project, and toward emotionally overwhelming, and hence negative, moments in their experiences as environmental leaders. However, our

findings still indicate that critical consciousness carries with it embodied affect that is likely to be disturbing and potentially alienating, and this should be recognised by adult supporters. We should not assume, for example, that young leaders are ideally positioned to change their peers' behaviour, as if their peers will simply yield to the superior position of these leaders.

Perhaps the best we can do as adult supporters is open up space for young people to discuss the patterns of embodied affect they experience in their work, and acknowledge that discontent is part of the package of becoming aware of environmental issues. Finally, we can also draw on the magnificence of our planet to take young people into the quiet spaces where the power of nature, temporarily at least, gives them a break from trying to make a difference.

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## **The role of identities, online platforms, and collaboration in knowledge generation in EE/SE research**

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### **Introduction**

Following the inaugural Australian Association for Environmental Education [AAEE] Research Symposium in November 2014, a group of 12 emerging researchers commenced an online collaboration – identifying as the Australasian Association of Environmental Education Emerging Researchers – #aaseer – to write a journal article together. Alan Reid's direct and challenging question 'what is worth researching?' (also raised at NZAEE 2016) was a challenge we took up as emerging researchers. With David Orr inciting us to make research more 'dangerous', and the idea of 'flourishing', which emerged in many of our conversations at the symposium, provided much for us to reflect on and consider about our research goals and directions.

This online collaboration resulted in a paper since published in the *Australian Journal of Environmental Education* (Aguayo et al., 2016). In the paper we identified four 'themes' or directions that we thought were worth pursuing in environmental/sustainability education research. The themes were *Uncertain futures*, *Traditional knowledges for the future*, *Community SE/EE*, and *The rise of the digital age*. Each will now be described.

*Uncertain futures:* Drawing on 'Anthropocene' related research which shows that both human and non-human agency is unpredictable and non-linear, we argued that the future will be more uncertain than the last 40 years that EE/SE (environmental education/sustainability education) has faced. Therefore EE/SE researchers need to embrace diverse and creative ways of knowing, focusing on community rather than individual learning, although we recognised that a key challenge is how to achieve this in intensely neoliberal times.

*Traditional knowledges for the future:* In this theme we made the case that diverse perspectives are required so that we are open to alternative ways of being, and that 'Indigenous' and 'traditional' knowledges are important in this. We noted that Indigenous knowledge has been advocated in EE/SE for decades, but that it has tended to be poorly implemented. We proposed that this is perhaps because of assumptions on which it is based and belief that it is only relevant to the past. Thus we argued that a key challenge for EE/SE is to work with 'traditional' Indigenous knowledges for uncertain futures. We also argued

that one important example of the value of these knowledges is their recognition of the agency of nature, the importance of which ‘the Anthropocene’ and its associated literature is making clear.

*Community EE/SE:* Here we argued that knowledge is produced and enacted in relationships with others, that is, through communities and social networks. We acknowledged that international policy has been promoting community engagement for decades, contending that despite this promotion, there is still an evident need to bridge the gap between academia, practitioners, and the wider community. In this sense we see universities as having a key social role in and responsibility towards promoting transformative learning and an engaged citizenship. This could be achieved through strong community-university based partnerships.

*The rise of the digital age:* As emerging researchers, we also saw social media and mobile learning technologies as an exciting area for research and practice for EE/SE. Yet we felt some sectors within the field are resistant to embrace technology, perhaps because of some misunderstandings around *how*, *where*, and *why* technology can be a powerful tool to promote transformative learning. We recognised that in this discussion it is important to firstly clarify how to effectively balance ‘digital’ and ‘real-life’, and how to know when one format is appropriate or necessary. We need research that helps us understand the benefits of learning technologies, and the dangers of digital colonisation, if any, for the field of EE/SE.

At NZAEE 2016, we presented a reflection on the ways in which our identities, the online platforms, and the collaborative process influenced the knowledge produced in that paper, as summarised above. We again used an online collaboration to collectively reflect on the research process we had used.

### **Purpose**

In our first paper we noted briefly that the research was “an experiment in online collaborative research and writing” and that the paper “could not have resulted as an individual response but [had] been assembled and reworked by this evolving collective, #aaeeer” (Aguayo et al, 2016, p. 18). This current paper is an attempt to reflect critically on that collaborative research process and how it influenced what was produced. In this paper we explore how the collaborative process, online medium and ‘emerging’ identity influenced the final paper.

### **Rationale**

We understand knowledge not as discoverable, as though it exists independent of practices of knowing, but as enacted (Barad, 2007; Fenwick & Edwards, 2014; Hekman, 2010). Part of

this performative epistemology recognises that the researcher's or the knower's identity influences the knowledge generated (Harding, 2008). Critical reflection is a practice that tries to increase the objectivity of knowledge claims through making their subjectivity more transparent (Lykke, 2010). This is usually understood in an individual sense, but as we wrote a paper collectively, we wanted to reflect on how both individual identities and the group identity might have influenced the emergent knowledge. In addition to exploring this social dimension, we wanted to incorporate an analysis of how materiality influences knowledge generation, in line with new materialist approaches to research (Barad, 2007; Bennet, 2010), in this case, with a specific focus on the materiality of the online collaboration tools used.

Kock and Nosek (2005) argue that electronic collaborative platforms structure knowledge production. It has also been found that knowledge production is influenced by group identity (Hardy, Lawrence & Grant, 2005) including in online collaboration (Cochrane et al., 2013; Janssen, Erkens, Kirschner & Kanselaar, 2009), and that such collaborative research can also change identities (Goodnough, 2011). The strength of the relationships between collaborators is found to influence research output and performance (Abbasi & Altman, 2011).

As such, we think reflecting on how our knowledge was generated through the practices in which we engaged and relationships we developed is important for making the research outcomes more transparent and accountable, and is useful for EE/SE research to consider.

### **Research Design**

Two of us developed the following four questions through discussions face to face and then further refined them through online collaboration with another #aaseer member.

*Q1. Can you reflect on the process of writing the #aaseer paper: What was good / challenging? What did not work? What did you notice?*

*Q2. How do you think this process was influenced by the medium used (online platform)?*

*Q3. Can you comment on the dynamic between the identity (group/individual level) and the process and medium?*

*Q4. Considering some of the issues raised, how do you think they impacted on the final product (#aaseer article)?*



We used a free online survey platform (Survey Monkey) to circulate the questions to the authors of the original paper, asking them to respond anonymously. In total, nine of the original 12 authors (including those who developed the questions) responded to the questions.

Given our enactive epistemology, it is worth recognising that while this second paper seeks to account for how the first paper was produced, the writing of this second paper has also influenced our development as researchers and is also influenced by similar online collaborative processes as the first. We recognise that in this second paper's methodology, certain discourses and practices – such as 'critical reflection' – are at work, producing us while we use them to produce knowledge. Thus it isn't the case that we can unambiguously know our previous selves as though they were waiting to be discovered, but that as we write this paper, we re-write our former and current selves (Barad, 2007). Thus while we present the following collective reflections, we note that our current agendas and identities are influencing and being influenced by the data we choose to present.

## **Findings**

### *Q1. The collaborative process*

In response to this question, we found that collaborating together was empowering and built our confidence. For some of us this was our first time writing a peer reviewed journal article and being able to go through that process with peers provided significant learning opportunities, including working with reviewers' comments and the editing process. We valued the non-hierarchical and inclusive community we had developed although recognised that sometimes this meant crucial roles like structuring and editing were not done sufficiently. Finally we noted that meeting face to face before collaborating online was very important and significant, and that more face to face time (including via video chat) would have strengthened our relationships.

### *Q2. Influence of the medium on the process*

We found the online media used (Google+ and email) made it easy for people to join in, choose when and on what parts to participate, and that it was very efficient. However, it was also easy for people to 'hide', as not responding to emails is easier than ignoring a colleague in the office. We felt that emailing drafts between contributors allowed scope for developing ideas substantially, but was a somewhat linear process of idea development, whereas Google+ allowed multiple people to edit simultaneously and chat while doing so, making the process more democratic and transparent. However this potentially allowed less idea development.

### *Q3. Influence of identities on the process*

Our identities emerged through the process of writing the paper, and this group coherence – which we labelled as being ‘emerging’ researchers – ended up as the organising concept of the paper. This non-expert identity led us to be very inclusive of each other, and many of us appreciated the lack of egos, but this made it harder to be critical of our work. We noted that this process and the group identity developed also influenced our individual identities outside the group. For example, being an ‘emerging researcher’ is different to being a ‘research student’ and provides a kind of position within, rather than outside, the research community.

### *Q4. Impacts on the ‘product’*

We felt that through this online collaborative research process, we ended up with a paper where each section was well written but there was potentially a lack of overall coherence, as each section was somewhat independent of the others. As one participant commented:

*We didn't so much integrate our understandings or interests, as much as we did add them all together ... with the process and medium we used there will naturally be some tendencies to present the parts and not the whole.*

While this level of collaboration meant the paper included multi-disciplinary approaches, it meant the paper was quite broad, that is, we contributed a novel approach but perhaps made little significant contribution to the discussion of EE/SE trends beyond the method. Of course, we also noted that perhaps this is sufficient, as ‘perfect’ is not required.

## **Discussion and conclusion**

In the process of writing an online collaborative paper and reflecting on how our identities and the medium played a role in the generation of a final product in EE/SE, we have learnt invaluable lessons. In this article we aimed to present these through a collaborative reflection. What would we do differently if we were to start this again or undertake a similar project? We would have clearer objectives at the start, or perhaps more time dedicated to establishing them collaboratively. Online platforms provide important opportunities for collaboration, especially across cultures/geographic distances, but evidently structure knowledge in certain, specific ways (as do all knowledge production methods); we would pay more attention to how this was happening. While we valued the non-hierarchical, inclusive, loose group structure, we think that future papers might require a different kind of structure to ensure criticality, innovation and coherence are maintained although we are not sure what structure, exactly, would be best.

Knowing each other face to face certainly enabled trust building and made in depth discussion easier; in the future we would make more time and space for this. ‘Emerging’ in

EE/SE research long after standpoint theory has made its mark, we know it is not revolutionary to say that identities influence knowledge or that knowledge influences identities. However, we were surprised at how an identity marker like 'emerging researcher' had such an impact while we felt the traditional categories such as gender and race were less influential on this occasion.

In summary, we found that the four elements in this research project - online platform, collaborative process, individual and group identities, resultant paper - influenced each other. There is always a first time, and we learn by doing. So if we were to do this again, we would keep this knowledge in mind and pay attention to how the research process is influencing the knowledge produced.

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## Seeing the wood for the trees: The Unitec Arboretum as a case study for campus-based environmental education

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### Aim

The aim of this project was to engage tertiary landscape architecture students in environmental issues related to their campus environment, testing Chawla and Cushing's (2007) assertion that engaging in an advocacy role encourages the development of pro-environmental behaviour. Such behaviour is regarded an indicator of transformed values and attitudes towards the environment.

### Background

Unitec Institute of Technology is proposing a re-development of its campus in Mt Albert that will result in a loss of green space. Staff and students from the Department of Landscape Architecture have been evaluating the proposal and considering ways to maximize the use of the remaining space. This paper presents an analysis of campus-based projects designed by students using Kolb's (1984) cycle of experiential learning and then considers their potential for environmental advocacy.



Figure 1. The Unitec Masterplan (Unitec, 2016)

Figure 1 depicts the Unitec development Masterplan, showing the proposed mix of educational and other redevelopment, with approximately half of the current 55ha campus subdivided for residential housing.

A number of projects have been implemented in order to engage students with campus environmental issues. These include the documentation of the campus trees for the establishment of the Unitec Arboretum, design studio projects for the campus and Arboretum, urban ecology evaluations of Oakley Creek and final year design projects. This paper will present findings associated with the Unitec Arboretum Project – to document the Unitec campus tree collection and design studio projects that aimed to include the Unitec Arboretum in the Urban Forest of Auckland.

Part of the Unitec Arboretum Project was to document the existing trees on the Unitec Campus in order to ascertain if they could be developed into an arboretum. An arboretum is a managed green open space displaying a wide range of tree species, which are documented, labelled with their botanical names and intended at least partly for scientific study. It may be a stand-alone entity, or part of a botanic garden, which would have an associated library and herbarium of pressed samples (Cliffin, 2004).

The design studio projects included proposals for walkways and car parks associated with the Unitec Arboretum. The brief included the design of a new pedestrian/cycle path from the North to South end of campus, and to consider how the campus could operate more effectively in the Urban Forest of Auckland, with particular emphasis on tree plantings to develop the Arboretum. The methodology and findings of the campus design studio projects are described below.

### **Research Design**

The methodology for this part of the project was based on a classic design process cycle, which has a strong relationship to Kolb's cycle of experiential learning (1984), shown below. How each step was enacted in landscape design studio projects will now be discussed.

## Kolb's Cycle of Experiential Learning

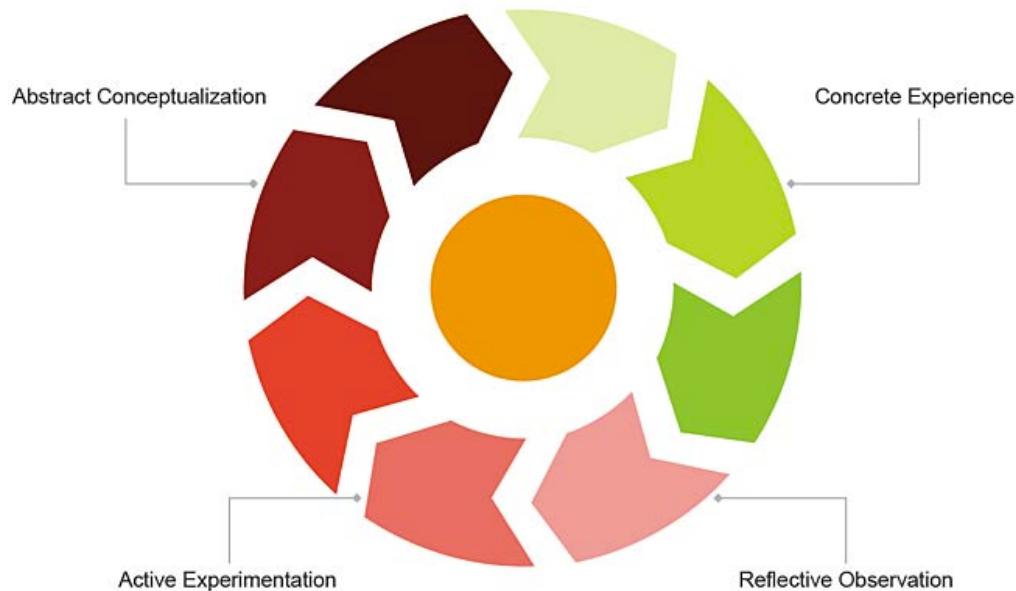


Figure 2. Kolb's Cycle of Experiential Learning (Kolb, 1984)

The first priority for student engagement in the landscape design studio project is an ability to observe – keenly and in detail. This process provides the **concrete experience** phase for the learning cycle.

The next step in designing landscapes is about the ability to **reflectively observe** and analyse the special character of a site, what Norberg-Schulz (1980) termed the genius loci of a place. The designer selects and emphasises particular characteristics or elements to prioritise. The designer must understand the client vision and the issues to be addressed by the design. This stage requires research into a myriad of topics, from style to site conditions of climate and soil, to council regulations, useful precedents and concepts.

Drawing up site plans to document site observations and characteristics is a physical process which provides an opportunity to analyse the opportunities and constraints of the site and client goals.

**Active experimentation** begins with rough sketches and jottings to capture concept ideas as alternatives are generated, analysed and sometimes combined to achieve the best solution, which can then be further refined and developed (Booth & Hiss, 1991).

Finally students may reflect on the abstract concepts that were the drivers for their design, and the success and limitations of their design interpretation/solution.

Relating the campus design studio projects to Kolb's cycle of experiential learning involved beginning with a **concrete experience and observation**. This involved a campus walk for observing and recording of the site character and conditions. Students were encouraged to take notes, make sketches, as well as sound recordings and photograph as they **reflected** on the potential of the site. Lecturers and guest experts introduced the client brief and provided insight into the ecology, cultural and political issues related to the site. Site plans, contours and GIS data were made available. Council regulations were investigated and discussed in class to ensure accurate interpretation. Environmental issues such as erosion, water quality, pest and waste management, habitat quality, threats and opportunities were highlighted and discussed.

The next step in the cycle was **active experimentation**. Students recorded their design ideas, researched suitable case study precedents, sketched and sometimes returned to the site to consider further possibilities. Generation of multiple design possibilities was encouraged at this stage in order for lecturers and peers to provide feedback on the relative merit of the various designs. The feedback loop at this stage was crucial. Alongside spatial, functional and aesthetic design criteria, maximisation of environmental benefits of the various design possibilities was considered and critiqued.

In landscape design studio projects, the design is often regarded as the product or output of the design process. Each student's completed project was evaluated as an **abstract conceptualisation**.

## **Findings**

### *Exploring the potential for an arboretum*

As a result of documentation of existing trees, it was found that there was potential for the existing tree collection and campus environs to be developed into an arboretum. Furthermore, in order to gain an increased community/public profile, it is proposed to provide an interpretation of the collection through labeling and QR coding of the 100 top trees, and also extend Unitec's library collection of reference books in relation to these trees. In addition, an Arboretum website has also been developed ([www.unitec.ac.nz/trees](http://www.unitec.ac.nz/trees)) as shown in Figure 3. The website includes an interactive map, video clips, a self guided walk, and links to the database of tree information plus a Facebook page. These strategies increase the potential for community knowledge and involvement in the Unitec campus project. Planning for new plantings is now under way.



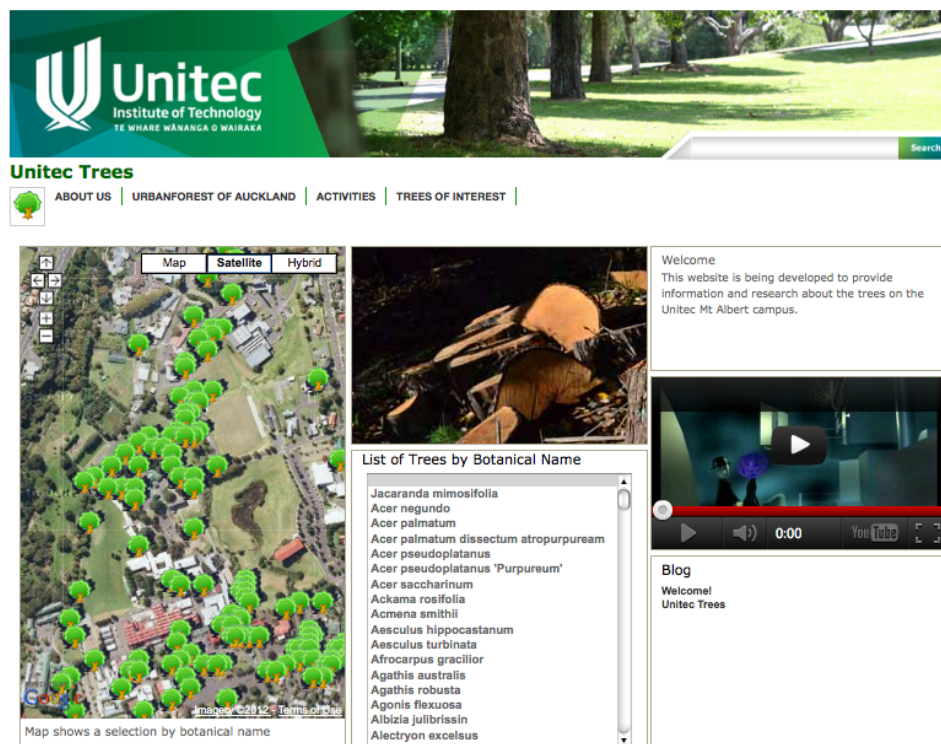


Figure 3. Unitec Arboretum website ([www.unitec.ac.nz/trees](http://www.unitec.ac.nz/trees))

### Design Studio Projects

Twenty landscape architecture students' design studio projects were analysed in terms of

Table 1

Landscape Architecture Students' Design Themes

Project Focus	Theme
Plant / People associations	Human experience of landscape conditions
Recreation (go cart track) and productive garden plots	Community goals for open space
Providing a range of Light/shade conditions	Human experience of landscape conditions
Connection, contrast, transition experiences	Human experience of landscape conditions
Branding Unitec as a wildlife sanctuary	Biodiversity and conservation
Providing a range of Elevation condition experiences	Human experience of landscape conditions
Developing Unitec campus as a bird sanctuary	Biodiversity and conservation

their potential to advocate in a pro-environmental manner. The range of designs included developing plantings to provide food and habitat for bird species, large orchards, plantings based on historic associations, and niche plantings based on the wind conditions in particular parts of campus. However, it was found that two-thirds of these projects focused on themes related to human experience of landscape conditions, such as a planting for shade. These results are shown in Table 1.

Figure 4 illustrates that 65% used design themes related to providing improved human experiences with the campus landscape, 20% focused community goals such as productive gardening and education. The remaining 15% prioritised non-human nature in their designs to create specific plant communities, or to increase bird or wildlife biodiversity.

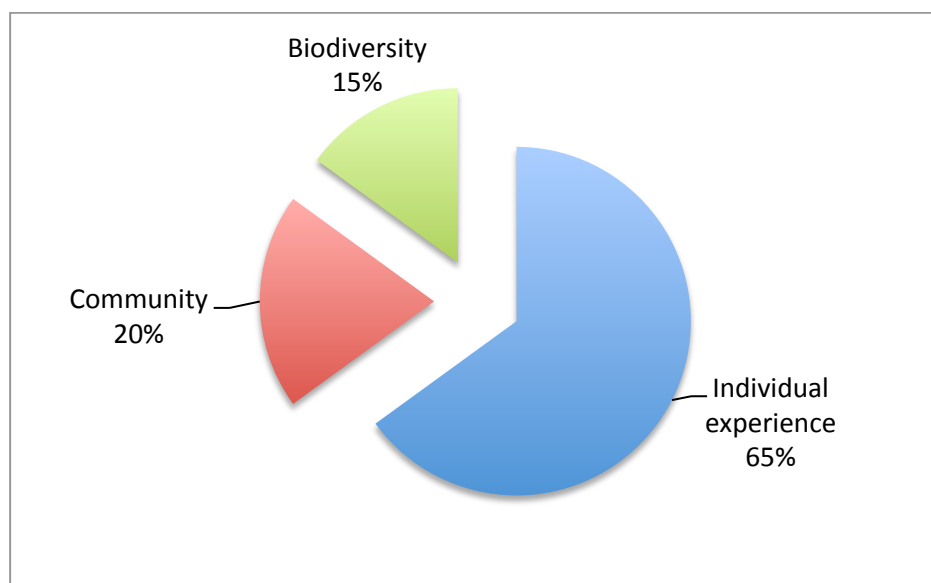


Figure 4. Students' design themes

## Conclusion

This paper has considered the potential of the Unitec campus to provide opportunities to develop students' advocacy skills, as a means of demonstrating pro-environmental behaviour. The findings could be interpreted in different ways.

On the one hand, 15% of students chose design themes that prioritised biodiversity or conservation goals. This result might indicate that some students' projects illustrated an awareness of the need to improve biodiversity, which could imply development of advocacy skills on behalf of non-human nature. With 85% of students prioritising human interaction with nature in their designs, it is possible that the design brief and/or marking criteria need to be re-evaluated.

On the other hand, the 85% prioritising human interaction with nature could be regarded as advocating for people to engage more with a non-urban outdoor environment. This could lead to people having positive experiences in nature, possibly leading to pro-environmental behaviour (Williams & Dixon, 2013).

Overall, as a result of being part of the project, it would seem that students gained greater understanding of an empathy with environmental issues. However, there is a need to construct design briefs and marking criteria that challenge students to engage with sustainability issues in order to encourage advocacy that might lead to them demonstrating pro-environmental behaviour as well as in others who experience these landscapes.

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## Changing landscapes for sustainability education in higher education

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### Introduction

This is our story about transformation change in one postgraduate programme at an Australian regional university with an offshore branch campus in Singapore. We begin with an explanation of the process of change. This is followed by a discussion of the new programme, with a specific focus on education for sustainability. The paper concludes with a section on lessons learned.

### The Change Intention

Sustainability has long been seen as marginal to the core business of education. Orr (2004) argued that the 'problem of sustainability' has also been 'the problem of education' in that formal education has variably neglected the major socio-ecological issues of this century. James Cook University's *Strategic Intent* formally recognizes and commits to principles of sustainability, in that the University "will ensure that our actions today do not limit the range of social, cultural, environmental and economic options open to future generations" (JCU, 2015). Explicitly embedding sustainability into postgraduate education was a process of making this *Intent* tangible in practice. In a very real sense we were attempting to close the 'rhetoric/reality gap' (also known as Stevenson's Gap). Stevenson (2007) is sanguine that the gap that exists between intent and practice "should be expected given the traditional purposes and structures of schooling in in western industrialized societies" (p. 129).

According to the Canadian Sustainability and Education Policy Network [SEPN] (SEPN, 2014), sustainability in higher education is "deeply susceptible to being framed in exclusively economic terms, which closes down possibilities that are more just and environmentally sustainable than what neoliberalism has to offer". Institutions' claims of a sustainability focus are often a 'selling point' for attracting student enrolments and mollifying university staff as the neo-liberal agenda increasingly takes over almost aspects of university life in Western nations. We discovered that having an overarching *Strategic Intent* for sustainability endorsed by University Council does not mean curriculum change is easy. But neither did we consider that our University's *Intent* is an attempt at 'greenwashing'. We decided to act within the discursive space made available. We operated from Moore's (2005) contention that universities are intended to be places where cemented ideas are challenged, creativity is promoted and new knowledge is produced. And even though the

redesign process took considerable perseverance and effort, we were committed to placing sustainability at the centre of the reconceived programme.

Our intention was to redesign the Master of Education (M.Ed) in response to the challenges facing 21<sup>st</sup> century adult learners in the tropics; and to also meet the Australian Qualifications Framework (<http://www.aqf.edu.au>) implementation of January 1, 2015. The challenge of initiating change and transforming an existing M.Ed. by coursework required the collective efforts of both academics and professional staff within the university at a number of levels, disciplines, and geographic locations. Australian universities are not yet 'nimble' institutions, and typically, present both barriers and opportunities for enacting sustainability education (Buchanan 2012). In our case, enacting programme change involved changing mindsets just enough to make the case for our redesign. This required openness and inclusiveness, generously spirited interpersonal interactions, and persuasive conversations, what Stevenson (2010) has identified as 'relational agency'.

The M.Ed. is not an initial teacher education programme. Rather, is it an AQF Level 9 professional development programme taken by educators from a range of fields, who wish to develop their knowledge and skills in order to progress with their careers. In some education systems in Australia, this postgraduate degree is necessary for teachers wishing to become curriculum and school leaders. While there is a growing body of useful information and case studies on embedding sustainability into initial teacher education in Queensland (see Evans et al., 2016 & Stevenson et al., 2015), there was not much literature available on which we could draw that illustrated the same process at a professional development level. So we had to work out our own sense of what would be possible.

### **The Change Process**

Our purpose was to provide Masters students the opportunity to upgrade their expertise and further their qualifications through professional development. We began by determining first what teaching academics and practitioners wanted regarding postgraduate studies in Education, and what was currently offered in by other universities. Discussions with colleagues revealed that what was wanted within our University was a programme that was distinctive, innovative, inspiring, relevant, relational, contemporary, collaborative and communal. Our colleagues were keen for us to move the M.Ed. design into new territory, beyond subjects offered solely within Education to embrace subjects offered in other disciplines across the new Division of Tropical Environments and Societies within the University. Making fuller use of available and appropriate AQF Level 9 subjects was one innovation that enabled the university to offer a more diverse curriculum to the professionals who are our students, and who desire a more 'portfolio' approach to Masters

study. Because the University has three campuses in Townsville, Cairns and Singapore, subjects in the new programme had to be offered online, in limited and blended mode. The redesign of the programme had to employ pedagogical practices that responded in a socially just manner to the needs of adult professionals in Australia and in Singapore.

We began by seeking an appropriate patron within the university to provide the protection, continued support and wisdom needed for us to enact our expertise and energy to create a new paradigm for the M.Ed. (McArdle & Spry, 2002) . Having this patron enabled us to be active in working side-by-side our colleagues to produce effective and efficient results. We intentionally engaged people in the process of co-designing the programme, pinpointing possible supports and resources necessary to achieve the transformational goals of the project. As ‘wise analysts’, (and learning to exercise our relational agency) we identified shared values, connecting intentional objectives with what information we needed for the redesign to happen.

We became thoughtful translators gathering multiple sources of relevant information including involving key stakeholders; assessing the feasibility of the current programmes; scoping the postgraduate programmes offered by other universities; learning the needs and priorities of industry partners; evaluating the likely results of different structures (generic or Majors); collaborating and planning cross discipline and cross campuses with others in the redesign of the programme; openly communicating on significant issues within multiple stakeholders; and soliciting honest feedback so we could open-mindedly meet expectations (McArdle & Carter, 2009).

Being respectful, authentic, communicative, principled, broad-minded, energetic, audacious, and cooperative throughout this process was key to our actions to accomplish our desired transformation. Our focus was always the system, and not the person, with participant leadership our ethical compass. As the team leading and pacing planned change, we had, as Gelsthorpe (2003) recognised, “a high level of trust in each other and hence confidence in the collective decisions” (cited in Gelsthorpe & West-Burnham, 2003, p. 25) that were made. We were involved in this joint venture “... engaging people, creating space and developing influencing relationships” (McArdle & Carter, 2009, p. 141).

The outcome of this process has been the successful redesign of a new programme that affords three major strands of expertise relevant to professional educators working in the Anthropocene; namely sustainability, leadership and management, and global contexts. In all majors, students can enroll in postgraduate subjects offered across the Division. The leadership and management major is relevant to aspiring and current leaders wanting to progress their capabilities in leadership and management. Our global context major was

developed in response to the global learning revolution, growth in globalization and transnational education. Our sustainability major examines issues of sustainability and stewardship and is relevant to persons seeking to upgrade their knowledge and action capability.

Our programme is directed at equipping students with advanced knowledge of sustainability learning, leadership, management and organizational change relating to schools, colleges, firms, agencies, and institutions. The focus is on the skills, knowledge and attitudes required of today's educational leaders in the Anthropocene. Our curriculum, modes of delivery and pedagogical framework are intended to be evidence-based to enable our students to develop their capacity as curious, collaborative, critically reflective, strategic and sustainability literate leaders in their chosen leadership role or context.

### **Our Revised Programme**

There are 36 credit points in our programme, comprised of four three-credit point Education core subjects with one 12-credit point major (e.g. sustainability major). The remaining 12 credit points can be comprised of a second major or a selection of Education subjects representing 12 credit points. The core subjects of interest to this discussion are *Education for Sustainability* (linked to the national Sustainability cross-curriculum priority of the Australian Curriculum, and to international EfS frameworks) and the *Individual Researched Action Project* (100 hours of professional or community project work for socio-ecological sustainability), where students generate inquiry, deepen knowledge of complex issues and develop sustainability action skills. We do not wish our students to engage in knowledge replication via transmissive learning. Rather, we wish for our students to take up Stirling's (2013) challenge of "seeing our worldview rather than seeing with our worldview" (p. 34).

In *Education for Sustainability*, the very first module is an introduction to learning in the Anthropocene (see Waters et al., 2016). *Education for Sustainability* became core to the M.Ed. in 2015. Previously, it had been core only to the sustainability strand of the Graduate Certificate of Education for Sustainability and the former M.Ed. for Sustainability (which was disbanded at the end of 2014 as it did not meet AQF requirements). Making any subject core changes the composition of students taking the subject. To cater for a greater diversity of students with quite different levels of understanding of sustainability concepts, an optional module explaining the 40-year history of environmental education in the Asia-Pacific was made available. The major assessment in this subject is a curriculum (and/or) research project through which students are asked to explicitly make links between their own learning and their professional or community practice.



The *Individual Researched Action Project* is slightly awkwardly named, but indicates that students are to undertake an action project of 100 hours and engage with the relevant literature on innovative action in a professional or community setting. A further 30 hours is allocated for researching and reporting. The thinking behind this core subject is that novel and innovative small scale projects contribute to building resilience because as Folke et al. (2010) argue, transformational change undertaken on a small scale builds resilience on a larger scale. Students can undertake a social sustainability project (focusing on building social capacity and resilience), or a socio-ecological project (linking social wellbeing with ecological wellbeing) or an environmental sustainability project enhancing the lives of non-human others (regenerative projects). This subject is very much focused on professional development and informed skills-building and the well-being agenda in schools. The range of projects undertaken was truly amazing, from music education, drama education, writing classes, shark education, school gardens, garbage investigations, biodiversity communication, to the award winning 'Have a Rice Day' project from St Andrew's Catholic College, Redlynch, and a sustainability change plan for a local medical practice.

### **Lessons Learned**

We learned we had to thoughtfully and deliberately work with colleagues to expand and/or change their paradigms in order to bring about significant programme change. The case for sustainability education still has to be made to professional and academic staff, who can hold quite different positions on what sustainability means and why it is important. We discovered that it is not necessary for academic and professional staff to arrive at a coherent understanding of what sustainability is in order to enact change. A consensus view of the importance of sustainability does not need to be built in order to initiate changes within one postgraduate programme. It is perfectly fine to learn our way towards sustainability practice (see Wals, 2011), and this includes educational redesign.

What does have to be done, is that a respectful case has to be made and perseverance employed. Our experience aligns more with the research findings of Sylvestre et al. (2013) who examined institutional change towards sustainability in a Canadian university, and concluded that trying to create a unified vision of sustainability could, in fact, act as an impediment to change "given the plurality and often conflicting perspectives" held by university staff (p. 237). We were acting from the perspective that educating for sustainability is important in the Anthropocene, but we found that the concept of the Anthropocene hasn't yet permeated from the scientific literature into community discourse, even within our university, which has an international reputation for environmental research. However, making the best of pluralism worked for us. Though others may have held different views, it was also to our advantage that we could also promote our views.

Our most important learning was that we had to remain positive and optimistic, and directed by the principle of continuous learning and improvement, even as we hit the inevitable barriers. We kept focussed on notions of improved quality and contemporaneity within our revised M.Ed. And yes, there was some grumbling involved as we pushed through yet another committee reconstituted through yet a further restructure. But, it was because we sincerely and personally engaged with much of the behind the scenes administration work, that the changes to the degree received support. A localized culture of innovation and change was able to be established, bringing with it “fresh ideas, methods, and visions” (Nahavandi, 2015, p. 308). And, so far, the student response has been very positive.

We do continue to tinker with the programme as the university consolidates postgraduate subjects across the Division, and students make suggestions as to what inclusions would benefit their learning trajectories. However, the sustainability subjects remain as core. In conclusion, it does help to have an institutional *Strategic Intent* genuinely intended to be enacted but transformational programme change really does come through persistence and perseverance.

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## **Preparing pre-service early childhood teachers to teach Education for Sustainability**

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### **Purpose**

Whilst Education for Sustainability (EfS) remains non-mandatory in the early childhood sector in Aotearoa New Zealand, pre-service early childhood teacher education providers determine if, and how, they are going to incorporate EfS into their teacher training programmes, resulting in wide-ranging levels of understanding of the benefits of EfS in the early childhood sector. If pre-service early childhood teacher training institutions were to embed EfS within their programme, then it is possible that beginning teachers could support a change in culture toward embedded EfS in the early childhood sector (O’Gorman & Davis, 2013). To date there seems to be no research regarding early childhood pre-service teacher education in EfS in Aotearoa New Zealand. This paper reports on the findings of a Master of Education thesis that sought to address that gap.

The study investigated a cohort of Diploma of Teaching pre-service early childhood teachers’ perceptions of their preparedness to teach EfS at the conclusion of a compulsory paper in their final year of study.

### **Background**

Since the Tbilisi Declaration there have been calls for a re-orientation of initial teacher education to embed EfS into the curriculum (Scott & Gough, 2002; UNESCO, 2005; UNESCO-UNEP, 1990). However, it appears that this has been slow to happen in pre-service teacher training institutions (Ferreira, Ryan, & Tilbury, 2007a; O’Gorman & Davis, 2013; Van Petegem, Blicke, Imbrecht, & Van Hout, 2005). Globally, it has largely been left to the institutions themselves to decide how EfS is going to be included in their programmes (Ferreira, Ryan, & Tilbury, 2007b). However, despite the slow uptake of EfS by the pre-service teacher education training sector, there have been examples of institutions internationally that are working toward embedding EfS into their teacher training programmes (Boon & Wilson, 2011; Corney & Reid, 2007; Falkenberg & Babiuk, 2014; Ferreira, Ryan, Davis, Cavanagh, & Thomas, 2009; Van Petegem et al., 2005).

Much of the literature relates to the formal sector of teacher education training, with few articles related to early childhood teacher training. Boon and Wilson (2011) undertook a survey of pre-service teacher trainees from across the education sectors in Australia and found that they had little understanding of sustainability issues. Furthermore, Miles, Harrison & Cutter-Mackenzie (2006) found that primary pre-service teachers’ engagement

in EfS had a correlation to their own values and beliefs and many felt they had a lack of content knowledge and thus were unprepared to teach. However, providing pre-service teachers with the opportunity within their training to engage with EfS should encourage them to recognise and challenge their own values and beliefs, and reflect on how these may influence their teaching (Ärlemalm-Hagsér & Sandberg, 2011). International studies have shown that when pre-service teachers' awareness of sustainability issues is increased, and they are provided with the pedagogical tools to engage with EfS, they are more likely to be motivated to engage children in sustainability issues within their teaching (Ärlemalm-Hagsér & Sandberg, 2011; Boon & Wilson, 2011; Kennelly & Taylor, 2007; O'Gorman & Davis, 2013). This study sought to determine if completing a paper in EfS would give confidence and motivation to a cohort of early childhood student teachers to engage with EfS when they began their teaching careers.

### **Research design**

The question that guided this study was, "What are pre-service early childhood teachers' perceptions of their preparedness to engage in Education for Sustainability at the beginning of their teaching career?"

The study was undertaken in two phases using a mixed methods design and an interpretive approach to analyse data. Phase One data was collected using a voluntary and anonymous questionnaire that a cohort of 29 early childhood student teachers were invited to complete at the end of a paper in EfS, undertaken in their final year of teacher training. The questionnaire contained mostly open-ended questions and asked students to comment on their understanding of sustainability, the influence of the paper on their understanding, the role of the teacher in supporting children to engage with nature and sustainability issues, the role of prior knowledge and experience to teach sustainability, and their confidence and motivation to teach EfS.

Data collection for Phase Two was via interviews with four beginning teachers who had completed the EfS paper in Phase One. At the time of the interviews they had been teaching for four months. They were purposefully selected based on how long they had been teaching and the researcher's perception of their engagement in the paper. The interviews were semi-structured and asked the new graduates to report on their level of engagement with EfS, supports and limitations to their level of engagement, the beneficial aspects of completing the paper, and whether they felt prepared to engage with EfS when they began teaching. Pseudonyms were used to protect the identities of the interviewees.

## Findings

Analysis of Phase One data found that students' understanding, knowledge and/or awareness of sustainability, especially in relation to environmental aspects, had increased as a result of completing the paper. This had given many of them a sense of empowerment to make a difference in their personal lives, while for others the sense of empowerment also extended to teaching children. The majority of students indicated that they felt motivated to teach EfS at the conclusion of the paper. When explaining their motivation, most identified a concern for the future, as highlighted by one student who stated, "I believe children need to learn more about how to help the planet and what simple things they can do at preschool and home. This gives us a better chance at a better future."

In considering the role of the teacher, students felt that it was important for teachers to support children to develop connections to nature and learn how to care for it. They also felt it was important for teachers to support young children to actively participate in sustainable practices. Furthermore, the majority of the students indicated that in order to engage children with EfS, teachers needed to have prior knowledge and experience of sustainable issues. One student highlighted this by asking, "How can we teach young children if we have no knowledge ourselves?" However, a small number of students felt that "knowledge and experience will help the experience, but is not essential" as they felt they could learn alongside the children.

Knowledge also emerged as a indication of their levels of confidence to teach EfS, as just over half rated themselves as confident and just under half rated themselves as less confident. The majority of those who felt confident indicated that it was due to "knowledge of why it's important to address and include sustainability among my practice." Contrastingly, those who were less confident indicated they needed more knowledge, as one student outlined, "I now know more so I can teach it, but I also feel I need to grasp a better knowledge before I am fully confident in this area."

Knowledge and experience gained through taking the EfS paper during their final year of training was reported to give confidence to the new graduates who were interviewed in Phase Two. Julia felt that the most beneficial aspect was "all the extra readings and videos around it. Because it just strengthened what you [lecturer] were saying and it kind of gave you a different perspective as well." Meanwhile, Helen, Catrina and Rachel felt the best aspect was the environmental project they were required to implement on their second practicum. All three reported that while the project had challenged them, implementing it had given them confidence in their ability to teach EfS. Catrina summed this up by saying, "Implementing the project...without the experience I don't think I would feel as confident doing it in a centre."

However, despite this reported confidence, at the time of the interviews two of the graduates had not integrated sustainability practices into their teaching, while two had done so to varying degrees. All felt they could have done more. Rachel, who had integrated the most EfS into her practice, was employed in the centre that had the greatest focus toward sustainability. Meanwhile Julia, who had not implemented any sustainability practices, felt “the lack of understanding by people higher up, and the need for EfS,” was impacting her ability to provide resources through her perception of budgeting constraints.

The realities of being a beginning teacher had also impacted on the ability of the four new graduates’ levels of engagement with EfS. For Helen and Rachel this related to learning about being a teacher in ratio and what this meant for managing day to day routines. Helen said, “It’s different. You’re on the floor. You’re in ratio. And I actually found that I got busy with just the day to day routines.” Meanwhile, for Julia, the realities related to staffing changes resulted in her not being able to “get time off the floor” to plan and prepare resources. Catrina’s reality was the number of children in her classroom and “I find the children have quite a few behaviour issues, so it’s hard to implement those sorts of activities that are slightly different.”

Despite the lower level of engagement with sustainability practices than they had expected, that the new graduates had been able to foster children’s connections with nature through intentional teaching, such as gardening with children, taking care of a worm farm, using children’s interest in insects to learn about them, and teaching infants and toddlers how to care for and be gentle with the centre pets.

### **Key outcomes**

This study has shown that by undertaking a compulsory paper in pre-service teacher education, a cohort of early childhood student teachers have had their awareness of sustainability issues raised, especially in relation to environmental issues, and have been empowered to make personal changes in their lives. The paper has provided most students with the motivation to want to engage with EfS in their teaching practice.

Content knowledge was a key factor in providing the student teachers with the confidence to engage in EfS at the end of their qualification. The new graduates indicated that the content knowledge they had developed during the paper, and the experience they gained from implementing an environmental project on their second practicum, had afforded them with a level of confidence to engage with sustainability. This would indicate that if teacher training providers engage early childhood student teachers in an EfS paper that explores sustainability issues, and includes a practical component, it may be beneficial for raising



student confidence to explore sustainability issues with children when they begin their teaching careers.

However, a consideration for pre-service early childhood teacher training providers is how to prepare new graduates so that they can balance teaching what they have learnt about EfS with the realities of being a beginning teacher. Mahmood (2013) in a study of Aotearoa New Zealand early childhood beginning teachers, has described the “reality shock” (p. 154) of learning what it means to be a teacher in ratio, staffing changes, management changes, and guiding behaviour. This study found that for the beginning teachers there was a tension between learning how to be a teacher in an early childhood setting, and trying to implement EfS into their practice. Guidance on how they can incorporate EfS across the curriculum during their teacher training may be one way to counter this tension. This is particularly pertinent as EfS is currently not a mandatory requirement in early childhood centres in Aotearoa New Zealand, and the levels of engagement with sustainability issues differ between centres. Continuing to hold onto their motivation to teach EfS, as they grapple with the realities of being a beginning teacher, may be difficult for new graduates if they are employed in a centre that does not provide high levels of support for sustainability.

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