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**A Needs Assessment of Conservation Educators within the Department of
Conservation**

A thesis

submitted in partial fulfilment

of the requirements for the degree

of

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at

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by

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ABSTRACT

The Department of Conservation (DOC) is the government body that is responsible for conserving Aotearoa/New Zealand's natural and historic heritage. Although education has not been a primary part of what DOC does, the organisation participates in education in a variety of ways. In order to coordinate and strategize their involvement in education, a new policy has been put in place. This policy, outlined in the *National Education Strategy 2010-2030* aims to set the intentions and objectives for education at DOC. A companion to this, the *National Education Strategy Implementation Plan*, provides some guidance on how goals may be achieved. This emphasises DOC educators' work in partnership with teachers, which may represent a change in how DOC staff have worked in the past. Since the recent coordination of education at DOC may be different to the way some staff work, a needs assessment of DOC educators' professional support requirements was called for. Understanding what professional development, support and resources DOC educators need could allow for effective professional support to be put in place. Having adequate professional support could have an ongoing influence on DOC educators' ability to achieve DOC's outcomes. Non-formal environmental educators, such as those working at DOC, are key players in environmental education/education for sustainability (EE/EfS). This group of educators have historically been engaged by formal educators to deliver EE/EfS into their classrooms, and in addition, some scholars have claimed that much of what occurs to educate people about the environment is in the non-formal setting. Non-formal educators need considerable professional support; including professional development, organisational support and resources to do their jobs and see outcomes are achieved.

This thesis was conducted as an interpretive, mixed methods study directed at understanding what professional development, support and resources DOC educators working in education need to do their jobs. Methods for data collection included document analysis, interviews and a survey. Document analysis of key DOC education documents as well as interviews with national education staff allowed for context to be understood regarding the current factors influencing education and educators at DOC. In order to get a sense of DOC educators'

beliefs and opinions about education and the work they are doing, a survey was conducted with DOC staff who self-identified as educators. The data generated from the survey was further elucidated by interviews with DOC educators. The findings of the study revealed that while there is a clearly articulated approach to education at DOC as well as a general level of acceptance among DOC educators, organisational support is needed to help staff understand DOC's role in education and how to practically implement that into work. DOC educators indicated that they need greater support in order to authentically incorporate Māori views into conservation education, work with teachers and understand EE/EfS best practice. In addition, while DOC's education policy was put in place to get higher quality outcomes, it will require a substantial amount of time to implement. Time was found to be a resource that DOC educators needed more of. In order to move forward in education, DOC educators need adequate and on-going professional development to increase skills and knowledge. In addition, organisational support and networks are needed as well as a reasonable allotment of time in order to uphold what is being asked of them.

DEDICATION

This thesis is dedicated in memory of Karen Jacques Bianchi who succeeded and gave the rest of us the tools to succeed.

*To win the respect of intelligent people and the affection of children;
To earn the appreciation of honest critics and endure the betrayal of false friends;
To leave the world a bit better, whether by a healthy child, a garden patch, or a
redeemed social condition;
To know even one life has breathed easier because you have lived.
To laugh often and much;
To appreciate beauty,
To find the best in others;
This is to have succeeded.*

Ralph Waldo Emerson
(Quote Investigator, 2012)

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Chapter 1 Introduction

1.1 Chapter overview

This chapter provides an introduction for this thesis. Relevant background information is given about Environmental Education/Education for Sustainability (EE/EfS) and where non-formal educators sit in these fields. A personal position is given, followed by a discussion of the relevant contextual information that helps set the scene for this work. A rationale for conducting this study is presented as well as the research questions that have driven this work.

1.2 Background

EE/EfS evolved out of a need to address grave environmental issues associated with pressures from the industrialised world, such as climate change and plastic concentration in the world's oceans. Key documents such as the *World Conservation Strategy* (International Union for Conservation of Nature and Natural Resources, United Nations Environment Programme, & World Wildlife Fund, 1980), *Caring for the Earth: A Strategy for Sustainable Living* (The World Conservation Union, United Nations Environment Programme, & World Wide Fund for Nature, 1991) and *Agenda 21* (United Nations Conference on Environment and Development, 1992) focussed attention on EE/EfS through the social, political and economic roots of environmental problems. How and what to teach, as well as the motivation behind EE/EfS, has changed with the thinking of the time. EE/EfS has variously been seen as a way to inform people, change their behaviour or increase their democratic participation for the purpose of environmental stewardship and social development.

Environmental educators now comprise a wide group of people in the formal, non-formal and informal settings. Formal environmental educators are teachers in institutions such as schools or universities. Non-formal educators work outside formal institutions but may adhere to a set of standards for education, such as in parks or zoos. Informal environmental educators will be people having conversations with their peers as well as news outlets, advertising campaigns or other such media that provide educational messages about the environment. All these settings are important to increase knowledge about environmental issues,

create environmental values and develop people's ability to act for the environment. However, non-formal educators are central in these efforts because much of the opportunity to educate environmentally occurs through the passionate advocacy of the natural settings in which these educators operate (Heimlich, 1993, 2010).

Despite the crucial role non-formal educators have in facilitating EE/EfS, especially within the formal school setting, few studies have been done to understand the professional support needs of this group compared to school teachers. Of the research that does exist, environmental educators within park and zoo programmes have been found to be more competent in environmental knowledge than understanding of educational priorities and processes (Jickling, 1997; Taylor & Caldarelli, 2004). Despite the best efforts of these passionate non-formal educators, informing the public about environmental issues has not to date inspired the kind of societal change that is needed to stop the process of environmental degradation. In addition to having the scientific information to inform understanding of environmental issues, environmental education practitioners need to understand the way that people work, how decisions are made and what might inspire taking action for the environment. This requires vastly different skills than utilising solely a knowledge transmission model of learning. This thesis aims to contribute to understanding what types of professional support non-formal environmental educators may need to support quality EE/EfS.

1.3 Position

I grew up in the forests, lakes and rivers of Massachusetts, in the United States, along the Atlantic Ocean. The severe weather, and people, from these places ground me as a New Englander. Stories of strength, endurance and grace of those in the past and present inform who I am. The Charles River, ever present in the landscape but often forgotten, wove its way through my life until, like the majority of my ancestors, I became a migrant. I have lived as an immigrant to Aotearoa/New Zealand for the past five years. As a manuhiri (guest) to this country I am grateful to be informed by the practices, values and way of life of both Māori and Pākehā people.

Like for many others, frequent, unstructured time in the outdoors contributed to my lifelong pursuit of environmental work. Over the past 12 years I have worked and volunteered in environmental: science and conservation, community outreach, arts, recreation, outdoor education, marketing and education. Although all this work was done with the intention of improving environmental and social conditions, the pedagogy and philosophy behind it has been variable. Participating in a wide range of positions and philosophies has given me a glimpse of how EE/EfS can manifest in different ways. As a continuation of this work, the present thesis is a way to learn how to be a more effective environmental educator and contribute a body of work to my new country. Through my experiences I am able to identify as inside the field of EE/EfS as well as an outsider through research.

1.4 Context

1.4.1 Conservation and People

For many people, having access to outdoor space is essential. Contact with the natural world has been shown to contribute to an increase in both physical and mental human health (Maller, Townsend, Pryor, Brown, & St Leger, 2005). Determinants of health include proximal and distal environmental and social factors (Patz, Corvalan, Horwitz, & Campbell-Lendrum, 2012). Health has been described as the balance of “physical, mental and social well-being” (World Health Organization, 1992, p. 6) including cultural heritage and association with nature (Patz et al., 2012). Contact with nature is thus essential for both the individual and communities to flourish.

Being in the environment is part of the cultural fabric that makes up Aotearoa/New Zealand. This stems in a large part from Māori cultural influence. Traditionally, Māori believe all life is connected, including humans and the natural world (Hodges, 1994; Roberts, Norman, Minhinnick, Wihongo, & Kirkwood, 1995). From here springs the concept of kaitiakitanga, or the reciprocal relationship between the environment and humans (Roberts et al., 1995; Taiepa et al., 1997). Although multiple views exist about the environment, this is an essential starting point in an Aotearoa/New Zealand context.

Values for the environment and being in nature is palpable among Aotearoa/New Zealanders. The culture largely revolves around widespread participation in both land and water based outdoor recreation. For example, one of the key insights from Sport New Zealand's survey of sport and recreation in the lives of New Zealand adults was that participation in these is most often done in outdoor environments in both towns and cities (Sport New Zealand, 2015). Perhaps as a result of frequent contact with the outdoors, conservation was found to be very important to most Aotearoa/New Zealand respondents in a 2008 survey about environmental perception (Hughey, Kerr, & Cullen, 2008).

1.4.2 Conservation in New Zealand

Although participants in *Public Perceptions of New Zealand's Environment: 2013* reported having an optimistic view of the state of the environment in Aotearoa/New Zealand, conservation scientists have a different perspective (Hughey, Kerr, & Cullen, 2013). Conservation of Aotearoa/New Zealand's native plants and animals is one of the country's main environmental issues (Hughey et al., 2013). Despite the recognition that Aotearoa/New Zealand is a biodiversity hotspot, indigenous biodiversity is in a state of decline (Hitchmough, 2013). According to the Department of Conservation's (DOC) Threat Classification System, 742 more species have been listed as threatened or at risk from 2005 (Hitchmough, 2013). In addition to having a consequence for biodiversity, some of the country's endemic species that are under threat of extinction, such as the kiwi and kākāpō, are national symbols or have cultural significance (Hughey et al., 2013). Conservation is therefore needed to slow and hopefully halt the progression of environmental degradation for both biodiversity and cultural purposes.

In addition to this biological and cultural value, Aotearoa/New Zealand's economy relies on the image of a healthy environment. Outdoor experiences are marketed to attract tourists, exemplified through New Zealand's official travel website's 100% Pure New Zealand campaign (New Zealand Tourism, n.d.). Fourteen national parks and numerous other open spaces appeal to both domestic and international visitors. As a result of the opportunities available to travellers, tourism directly contributed to 4.9% of the country's GDP in 2015 (Statistics New

Zealand, 2015). Thus the health of Aotearoa/New Zealand's flora and fauna also contributes to the country's economy through this sector.

1.4.3 Department of Conservation

DOC is the government body that is responsible for conserving Aotearoa/New Zealand's natural and historic heritage (Department of Conservation, n.d.-a). The organisation was formed through New Zealand's Conservation Act of 1987, which was created to stimulate natural and historic conservation. To achieve this, five different government agencies were brought together to establish DOC in order to have a coordinated approach to conservation (Napp, 2007). DOC now sits in the Environment Sector of the New Zealand government, along with the Ministry for the Environment and the Parliamentary Commissioner for the Environment. Today DOC is structured through six business groups that report to a Director General. The Outreach and Education team, tasked with guiding education at DOC and who worked in partnership for this thesis, sits within the Partnerships business group.

DOC's vision is for "New Zealand to be the greatest living space on Earth/ Kāore he wāhi i tua atu i a Aotearoa, hei wahi noho i te ao." (Department of Conservation, n.d.-a). Five outcomes are in place to indicate progress toward DOC's vision. These include maintaining biodiversity; bringing history to life; engaging people in recreation; engaging people to participate in and value conservation; and seeing business partnerships benefit from conservation gains (Department of Conservation, n.d.-a). A high level of support for DOC's work was found in the 2008 survey of environmental perception in Aotearoa/New Zealand, although most people were only reasonably aware of the management roles DOC was using to do their work (Hughey et al., 2008).

There is evidence to suggest that there is support for conservation work among Aotearoa/New Zealanders (Hughey et al., 2008). DOC's current strategic direction intends to grow this support. Their current strategic direction, is to "increase the value that New Zealanders attribute to conservation." (Department of Conservation, n.d.-b). Boosting the value people place on conservation is seen as a way to ultimately improve Aotearoa/New Zealand's unique heritage.

1.4.4 Conservation education

While Māori views probably would not separate out conservation education (CE) from other aspects of life, CE in the Western world arose out of a growing unease of environmental degradation in the 18th and early 19th centuries. In an effort to go beyond a knowledge transmission model of education, EE and then EfS developed out of CE. Now CE is seen to nest within and share best practice with EE/EfS. Conservation is well suited to support the multidisciplinary, participatory, place-based learning that is promoted in association with best practices of EE/EfS.

DOC has had varying levels of involvement with education and education at DOC has been done in a variety of ways (Bolstad, Joyce, & Hipkins, 2015). DOC staff have always, however, delivered some kind of conservation education (Bolstad et al., 2015). The organisation is now trying to coordinate a national approach to education, which aligns with DOC's current strategic direction (Department of Conservation, 2011a). Education is described as a “key to broadening support for conservation and the development of ecological literacy and conservation capability – critical for our well-being and prosperity.” (Department of Conservation, 2011a, p. 1). According to this statement, education is an essential part of DOC's work.

1.5 Rationale

The *National Education Strategy: 2010-2030 (Strategy)* is a document that is intended to set the approach to conservation education at DOC (Department of Conservation, 2011a). In order to provide suitable implementation of the education strategy, the *National Education Strategy Implementation Plan (Implementation Plan)* was developed and rolled out in 2015 (Department of Conservation, 2015b). The document aims to coordinate educational efforts for conservation education within the organisation. The *Implementation Plan* might represent a change in the way that DOC educators, commonly known as Rangers, have worked in education. This change has posed an issue for many staff working in this area. To address this issue, it was proposed to conduct a needs analysis in order to assess what professional support might help DOC educators gain the capabilities to achieve the organisation's education goals. This thesis details the research that was undertaken for the needs analysis.

1.6 Research question

The questions used to guide this work were:

What are the needs of DOC staff who engage in conservation education?

- a. What needs, including professional development, support, and/or resources, are perceived to be important from a national DOC perspective?
- b. What needs, including professional development, support, and/or resources, are perceived to be important from a DOC educator perspective?

These questions are aimed at understanding what DOC educators' professional support needs might be. Gaining insight onto what national staff believe should be provided to DOC educators, as well as what DOC educators believe they have and need, could help shape what is offered to DOC staff. The similarities and differences between these views are intended to identify areas affecting DOC staff that might need to be addressed. In addition to directing future education work at DOC, asking these questions may contribute to research regarding the broader needs of non-formal environmental educators.

1.7 Thesis outline

In order to present the study that has sought to investigate the research questions, five chapters organise this thesis.

Chapter one has introduced the background, my personal position, the context for the study and guiding research questions. It sets the scene for the study.

Chapter Two provides a review of relevant literature. This includes an international background of the field of EE/EfS as well as grounding in the Aotearoa/New Zealand context. Best practice of EE/EfS is included as well as how these dimensions fit in to formal and non-formal education. Non-formal educators are positioned as important practitioners of EE/EfS.

Chapter Three explains the methods used for this study. It details the interpretive nature of this research through document analysis, a survey and interviews.

Chapter Four describes the findings from this study in relation to the research questions. This includes a background on education at DOC, some demographic information from survey participants, what skills and capacity DOC educators reported needing and what types of support they reported to be helpful.

Chapter Five discusses the research findings in relation to the literature. This chapter also includes conclusions and presents recommendations for DOC managers, and non-formal environmental educators more broadly, to consider.

Chapter 2 Literature review

2.1 Chapter overview

This chapter offers a review of literature relevant to the main research question, *What are the needs of Department of Conservation (DOC) staff who engage in conservation education?* In order to answer this question, an exploration to unpack the meaning of conservation education (CE) is included. This incorporates a discussion of the thinking and social movements that have contributed to its origins. CE in the formal, non-formal and informal settings are outlined in order to see how this type of learning may manifest in different forms. The educational goals that underpin CE are discussed next to contextualize what might guide CE practitioners in their work. Following this is an examination of CE practice and what a CE practitioner may need to do their job.

2.2 Origins and aspects of conservation education

The origins and subsequent evolution of environmental education (EE) is connected to wider cultural, social, political and environmental discourses (Bolstad, Cowie, & Eames, 2004). To gain an understanding of what may have influenced EE and CE in Aotearoa/New Zealand, Māori worldviews as well as Western trains of thought need to be understood. Both the concepts of ‘conservation’ and ‘education’ are now reviewed from different cultural perspectives to reveal the thinking that may influence the field today.

2.2.1 Māori world-views in conservation education

Integral to Māori world-views is that humans are a part of nature. There are numerous examples of this throughout Māori culture, beginning with the various versions of whakapapa (genealogy) tracing Māori to the union of Papatuanuku, the earth mother, and Ranginui, the sky father (Hodges, 1994; Roberts et al., 1995). Māori had a conservation ethic prior to European arrival (Davis, 1991 cited in McKay, 2013), developed through observation and experience, including mistakes (Hodges, 1994). Māori conservation ethic is based on the reciprocity between human and nature. This includes a use-based conservation system in which taking from the environment incentivises environmental stewardship (Taiepa et al., 1997).

The concepts of 'kaitiaki' and 'kaitiakitanga' are associated with this relationship. 'Kai' is a generic term that when added to 'tiaki' can be understood in a literal translation as one who is a guardian and 'kaitiakitanga', guardianship (Kawharu, 2000; Roberts et al., 1995). Although the underlying meaning can differ across kin groups, the essential features of the concept include the "nexus of beliefs that permeates the spiritual, environmental and human spheres" (Kawharu, 2000, p. 351). While translations of this concept are often associated with what humans can do for the environment, a more accurate understanding might be better represented by a reciprocal relationship. In other words, "The earth kaitiaki's us; what we must do is respect and nurture the kaitiakitanga of Papatuanuku" (Del Wihongi, cited in Roberts et al., 1995, p. 14). Hodges (1994) notes that this conservation ethic is part of cultural and social fabric developed through education and enforcement of resource management practices.

Although there is no one Māori perspective on things, McKay (2013) attempts to provide an understanding of EE from a Māori world view. He found that the term 'education' was not meaningful for Māori in his study. Instead, transfer of knowledge and developing life skills were found to be relevant. According to Royal (2005), education is a process of an individual's development throughout life taking a number of forms. This could include formal, non-formal or informal education, which could be family or peer based. In this understanding, education is comprised of all experiences that enable a person to act in a life-oriented way. An example of how this may translate to CE is given by Moller, Kitson, and Downs (2009). They give an account of the transmission of knowledge and learning between generations of Rakiura Māori regarding the sustainable harvesting practices of sooty shearwaters. The literature suggests that having an understanding that Māori might hold a different concept of conservation and education to a Western perspective is essential to participate in CE in Aotearoa/New Zealand.

2.2.2 Western international development of conservation education

According to Eames and Barker (2011), the Western development of EE in Aotearoa/New Zealand largely mirrors that of other Western countries. Roberts et al. (1995) note that the "Māori environmental epistemology sharply contrasts with

the Judeo-Christian view, in which, because man is created in God's image, he is superior to and given dominion over the rest of creation, thus establishing a man: nature dichotomy.” (p.10). The paradigm that places society and environment in oppositional binaries (Barry, 2010) has also been equated to early philosophical traditions that segregated academic disciplines of biophysical science and social science in the Greek dialogue (Bradshaw & Bekoff, 2001). These paradigms propelled a western conservation ethic based on separating the wilderness from civilisation in order to keep nature safe from human exploitation (Miller & Hobbs, 2002; Taiepa et al., 1997). The belief that a balanced natural environmental system should be free of societal interaction inspired the deep-rooted traditions of conducting research and protecting remote areas (Miller & Hobbs, 2002). The concept of disconnection between environment and society “led to the creation of popular environmental movements, anti-anthropocentric in scope, that continue to inform environmental debate to this day” (Barry, 2010, p. 117). Barry (2010) made the claim that the enduring influence of the dichotomy between the environment and society is at the root of all environmental problems.

The orientation of nature to society has positioned EE in different ways depending on the thinking of the time. Tilbury (1995) noted that, “The history of environmental education reveals a close connection between the changing concerns about the environment and its associated problems and the way in which environmental education was defined and promoted” (p. 197). Following industrialization of the western world in the mid 18th to early 19th century, CE was formed in reaction to a growing unease about environmental degradation and separation (Eames & Barker, 2011; Hobart, 1972; Lewis, 1988; Stevenson, 2007). Connected to nature study and outdoor education, CE was initially aimed at creating awareness of environmental problems and promoted the importance of conserving natural resources and wilderness (Nash, 1976; Stevenson, 2007).

Based on scientific transmission of knowledge, initial CE efforts failed to inspire the questioning needed to challenge the political, social and economic reasons for environmental degradation (Stapp, 1970; Stevenson, 2007). Hobart (1972) noted that the biggest issue of initial CE work was its inability to demonstrate the interrelationships between nature and society. Out of the pitfalls of early CE came

a new classification: environmental education. EE was aimed at “producing citizenry that is knowledgeable concerning the biophysical environment...aware of how to help solve these problems and motivated to work toward their solution” (Stapp, 1970, p. 15). Nash (1976) discussed EE as a multidisciplinary process that aims to facilitate inquiry and examine the root causes of environmental issues. The principal feature of this model of EE was to acknowledge that people are part of a system comprised of themselves, culture and the biophysical environment (Stapp, 1970).

2.2.2.1 Environmental Education for Sustainability

Greater emphasis was given to the social, political and economic roots of environmental problems with the (re)conceptualization of EE to environmental education for sustainability (EEfS) (Tilbury, 1995). Sustainability, meaning the need to reconcile economic development and environmental concerns, was first promoted in the *World Conservation Strategy* in 1980 (International Union for Conservation of Nature and Natural Resources et al., 1980). The role education can play to develop people’s sustainable lifestyle choices was discussed in this document, as well its follow-up in 1991, *Caring for the Earth: A Strategy for Sustainable Living* (The World Conservation Union et al., 1991). *Caring for the Earth* discusses EE as an integral part of formal education that can help meet the training needs of society. The United Nations Conference on Environment and Development followed in 1992, and out of this summit came *Agenda 21*, which supported the orientation of EE to incorporate sustainability, or EEfS (United Nations Conference on Environment and Development, 1992). Van Weelie and Wals (2002, p. 1144) explained that:

The evolution from nature conservation education to environmental education to education for sustainable development is one that can be characterized by an increasing awareness of the need for self-determination, democratic processes, a sense of ownership and empowerment, and, finally, of the intricate linkages between environmental and social equity

As Eames, Cowie, and Bolstad (2008) note, there are tensions between the terminology EE, EEfS and education for sustainability (EfS), with EE lingering in use in the formal school sector. Regardless of the preferred term, the fields of

EE/EfS are current preferred terms (at least within Aotearoa/New Zealand) and conservation education is seen to nest within these. The terms EE/EfS will be used to refer to current environmental teaching as an umbrella subject to conservation education for the remainder of this thesis.

2.2.2.2 Education In, About and For the environment

Despite the shift in classification from conservation to environmental to environmental education for sustainability, the struggle to move beyond producing knowledgeable individuals to fostering active citizenry has plagued these fields. As Barker and Rogers (2004) outline, early EE/EfS scholars responded to “situations where cognitive learning was thought to be in danger of subsuming all other human faculties.” (p.16). Lucas (1972) made one of the first distinctions between environmental education *about* the environment, intended at producing knowledgeable people and education *for* the environment, aimed at enhancing the environment through action taking. Now education *in*, *about*, and *for* the environment are considered to be the key dimensions of EE/EfS (Barker & Rogers, 2004; Ministry of Education, 2015).

Providing these dimensions in a balanced programme has been slow to come into practice. Eames et al. (2008) provide an evaluation of EE/EfS practice in Aotearoa/New Zealand that showed education *about* the environment was the most prevalent dimension at the time of their study. While all dimensions should be present in a balanced programme, the *for* element is vital in fostering students’ problem solving and decision-making skills. Education *for* the environment is aimed at synthesising knowledge *about* and experience *in* nature that may lead to responsible attitudes and choices to reduce environmental impact (Ministry of Education, 2015). According to the literature, education *for* the environment encourages students to move beyond their knowledge and concerns for an issue to utilize the skills they possess to contribute to solutions (Bolstad, 2003).

2.2.2.3 Action competence

Education *for* the environment is most closely associated with an action competence approach. Action competence is based on the idea that environmental problems are rooted in society and the choices individuals make, so solutions to these issues need to be developed at these levels (Jensen & Schnack, 2006). The aim

of this approach is to build students' capability to envision "alternative ways of development and to be able to participate in acting according to these objectives" (Jensen & Schnack, 2006, p. 164). This is seen as being different from attempts, for example through formal teaching or informal advertisements, to change people's environmentally negative behaviour (Birdsall, 2010). Instead, the intention is to build the cognitive and affective skills needed to see the underlying cause of problems and participate in their resolution (Jensen & Schnack, 2006).

Within an action competence approach there is a distinction between 'actions' and 'activities'. While activities can increase knowledge and experience, the fundamental component of an action is that it addresses the solution to a problem (Jensen & Schnack, 2006). Environmental actions can be considered direct or indirect. According to Jensen and Schnack (2006), actions that directly address an environmental problem are distinguished from indirect actions that are intended to influence others to contribute to the solution to an environmental issue. Facilitating CE with a school or community group could be considered an indirect action for the environment, while trapping rats and possums in Aotearoa/New Zealand to increase native flora and fauna could be considered a direct action for the environment. Action-oriented EE/EfS is concerned with working toward environmental actions, which might include activities that are not actions, as well as actions that are not solely environmental (Jensen & Schnack, 2006).

2.2.3 What is the "education" in conservation education?

Many organisations that carry out CE have a mission to slow or reverse environmental degradation. Conservation education, associated with social marketing and advocacy, has been a way to engage people with the ultimate goal of achieving conservation results (Braus, 2009; Fien, Scott, & Tilbury, 2001; Foster-Turley, 1996). Braus (2009) notes that many environmental organisations that don't have education as a core tenet of their work still deliver a number of education and outreach programmes. For many such organisations, education has been a social strategy since the origin of the conservation movement. For example, by the 19th century in New Zealand, colonists had formed a sense of place in Aotearoa and concern grew for the expansion of foreign flora and fauna that caused decline of native species. The first Forest and Bird magazine appeared in 1924 to try to inform the public of the "the urgent need to protect native forests

and wildlife” (Forest & Bird, 2011, para 12). For Forest and Bird, children were an important audience from the beginning (Forest & Bird, 2011).

The primary intention of conservation education as a social strategy is to achieve conservation goals. van Weelie and Wals (2002) note that EE/EfS originally gained importance in the Netherlands because of its potential to contribute to environmental issues, not human development. This positions education as a means to an end rather than a process of learning (Sterling, 2010). Education situated in this way has contributed to the prevailing view among conservation biologists that the function of CE should be to “disseminate knowledge that scientists generate, essentially to transport information to the public and key groups in the expectation that it will eventually precipitate more appropriate conservation-related behaviors.” (Bride, 2006, p. 1337). It is well known among many environmental education researchers, as well as conservation scientists, that there is a weak link between knowledge of environmental problems and taking action to change them (Birdsall, 2010; Bride, 2006; Jensen & Schnack, 2006; Kollmuss & Agyeman, 2002; Schultz, 2011). While it is important for awareness of environmental issues to be raised, solely focusing on this may in fact be counterproductive. For example, students can become overwhelmed in the face of a grave environmental problem, which prevents action taking (Hill, 2013). Still, Kollmuss and Agyeman (2002) note that many organisations base their education strategies on the assumption that increasing knowledge will eventuate in more enlightened environmental behaviour.

Although EE/EfS has developed in response to the inadequacies of CE, the pervasive knowledge transmission model of education within CE still exists. This is due in part to the place conservation education sits negotiating between two disciplines. The long-term segregation between biophysical and social science has caused a tense relationship to emerge (Bradshaw & Bekoff, 2001). Bride (2006) explains that conservation education is in the difficult position of trying to find legitimacy among both scientists and educators, due to their respective alternative orientations to quantitative and qualitative aspects of phenomena. He explains that conservation education is pushed toward information-led approaches to achieve

respectability among conservation biologists, while simultaneously criticizing the narrow view many scientists may have of education to align practice with EE/EfS.

The environmental component of EE/EfS and CE has been dominant over the educative dimensions because of the ultimate goal of increasing environmental health. However, Jickling (1997) notes that in order for EE/EfS to have a greater presence in the formal school system, among other places, more emphasis should be made for educative value. In addition, it is not the role of a school to solve all of the world's environmental problems, so an educative component is needed in CE to avoid placing an onus squarely on the next generation (Jensen & Schnack, 2006).

In addition to targeting quantitative results, such as increasing native bird populations, CE should also focus on qualitative, social aspects of environmental action (Jensen & Schnack, 2006). Fien et al. (2001) point out that education is only possible when a programme's design is "embedded within appropriate pedagogical processes that involve people – at all stages of life – in a process of increased understanding, clarification of commitments and priorities, and skill development." (p.388). To unify efforts and utilize the strengths of conservation and education, Berkes (2004) and Bride (2006) call for an interdisciplinary, participatory approach that includes conservation education at all levels of society in order to achieve both conservation and social goals.

Despite the challenges noted in moving away from a knowledge transmission model, conservation can be a platform well suited for multidisciplinary and participatory learning. Education for biodiversity is described by Young (2001) as learning that integrates social values through real world experiences in addition to increasing ecological sustainability. This can be adapted for use with both schools and the community. As a result it can be an excellent platform for participatory action, improving the local quality of life and contributing to economic stability (Young, 2001).

2.2.4 Summary

There are different ways to think about 'conservation' and 'education'. Various cultures and period trends influence the ways in which we understand and live

through these concepts. The way that humans interact with nature is largely dictated by the values and positioning of people to nature of the time.

Although there is no one Māori view on things, one of the perspectives available in the literature is that Māori have a traditional conservation ethic based on sustainable use and reciprocity with nature, which was developed through observation and mistakes. Education is understood to be any knowledge gained that allows a person to act in a life-oriented way. Conservation education therefore must be related to and influenced by these world-views in order to serve CE in Aotearoa/New Zealand.

The Western development of EE/EfS in Aotearoa/New Zealand is largely in alignment with other western countries. This includes the evolution of conservation education/nature study to environmental education to education for sustainability, following critiques and attempts to improve the process of learning related to the environment. Now key elements of EE/EfS include the *in*, *about* and *for* dimensions and an action competence approach to learning. These pedagogies are intended to increase people's experience in, knowledge of, and values for, the environment. The literature suggests synthesising these into affective skills will allow people to question the cultural or political factors that have caused environmental and social degradation. Effective EE/EfS/CE will help facilitate people to take action to resolve such issues.

Since CE can be seen to nest within the dialogue of EE/EfS, CE should align with broader EE/EfS objectives and practices. This can be difficult since many organisations that conduct CE have environmental rather than educative goals. CE often follows a knowledge transmission model that has not shown to increase pro-environmental behaviours. Instead, CE should aspire to utilise a multidisciplinary, participatory approach to education that aims to engage all levels of society in learning to meet conservation and social goals. Viewing EE/EfS through conservation has a great deal of potential to involve both students and community members. Engaging in CE can help facilitate developing values for the environment while taking part in actions that can increase ecological sustainability and improve quality of life. CE that aims to fulfil these goals can occur in the

formal, non-formal and informal settings, which will be discussed in the next section.

2.3 Formal, non-formal and informal conservation education

Formal, non-formal and informal education exist simultaneously in various levels of complement and conflict (La Belle, 1982). Young (2001) suggests that EE/EfS are not subjects that can be taught through formal or non-formal education at all. Instead, she maintains that this is a way of thinking that should be integrated into people's everyday lives. Other scholars have taken the stance that it is human nature to engage in a process of learning, which occurs within education settings and outside of these definitions (Merriam & Bierema, 2013). EE/EfS education targets are noted to range from young children to policy makers in government (Foster-Turley, 1996) at all stages of life (Fien et al., 2001). Thus the role of education in a conservation organisation is to support life-long participation and action taking *in*, *about* and *for* the environment in formal, non-formal and informal settings (Braus, 2009) and beyond. Although extremely important in contributing to EE/EfS, informal education will not be discussed at length. The scope of this study will be tied mainly to what can be considered formal and non-formal forms of education.

2.3.1 Formal education

Some definitions of formal, non-formal and informal EE/EfS refer to setting as a determining factor. Foster-Turley (1996) discusses the three classifications of education, noting that formal CE activities are carried out in the curricular school setting. Fien et al. (2001) and Merriam and Bierema (2013) explain that this can include college and universities, or any education provided by municipal authorities, individual schools and teachers. Heimlich (1993) synthesises a definition of education settings that are determined by control. By this understanding, formal education can be identified where an institution controls the goals of learning as well as the means of educating. Institutions that are considered to participate in formal EE/EfS are those that offer licensure or degrees where specific performance measures are predetermined. Formal education can be understood to mean learning that occurs in institutional settings and that require adherence to a predetermined set of standards.

2.3.1.1 EE/EfS in formal education in Aotearoa/New Zealand

In Aotearoa/New Zealand, EE/EfS has appeared as a non-mandatory part of the curriculum since 1993 (Eames & Barker, 2011). According to Eames et al. (2008), pressures from both the Ministry for the Environment and the EE/EfS community resulted in the publication of the *Guidelines for Environmental Education in New Zealand Schools* in 1999 by the Ministry of Education. This document provides guidance on how schools and teachers can incorporate EE/EfS into the existing curriculum. One of the strong features of EE/EfS in the New Zealand Curriculum is that it allows for cross-curricular application (Bolstad et al., 2004; Bolstad et al., 2015). The concepts of interdependence, sustainability, biodiversity, personal and social responsibility for action, and how these are relevant to Māori worldviews, are described as foundations for EE/EfS (Ministry of Education, 2015). The three dimensions of education *in*, *about* and *for* the environment are also indicated to be present in a balanced programme (Ministry of Education, 2015). Taking from the *Tbilisi Declaration* (1978), five aims were adopted as main goals of EE/EfS in the *Guidelines for Environmental Education in New Zealand Schools* (2015):

- Aim 1: awareness and sensitivity to the environment and related issues
- Aim 2: knowledge and understanding of the environment and the impact of people on it
- Aim 3: attitudes and values that reflect feelings of concern for the environment
- Aim 4: skills involved in identifying, investigating, and problem solving associated with environmental issues
- Aim 5: a sense of responsibility through participation and action as individuals, or members of groups, whānau (family), or iwi (tribe), in addressing environmental issues.

The 2007 update of the New Zealand Curriculum is considered by many researchers and practitioners to uphold a stronger EE/EfS message for schools than the 1993 version (Bolstad et al., 2015). However, Bolstad et al. (2015) explain in their recent assessment of EE/EfS in Aotearoa/New Zealand that teachers' and schools' ability and capacity to incorporate EE/EfS into the curriculum remains variable.

Numerous issues hinder incorporating EE/EfS into the curriculum. Taking students out of the classroom is only possible when temporal, economic, and legal/safety concerns are mitigated (Dickinson, 2011). Cowie and Eames (2004)

also observed that one of the main challenges for teachers to incorporate EE/EfS into their work was tied to curriculum overcrowding. Even for inspired teachers, competing demands on time may cause EE/EfS to slip in priority (Bolstad et al., 2015). Bolstad et al. (2015) note that several years of practice might be needed to achieve the depth required by quality EE/EfS programmes. EE/EfS has languished as an extra to the formal curriculum, competing with other fields pushed into the margins of education because of its non-mandatory status (Bolstad et al., 2004).

In addition to the time required to do EE/EfS, teaching and learning in these areas is not always straightforward. Eames et al. (2008) found that at the time of their study most teachers were engaging their students in education *about* the environment. In order to implement place-based EE/EfS and move in to education *for* the environment, teachers themselves need to have a in-depth understanding of cultural awareness, the ability to self reflect on values and the ability to facilitate action taking themselves (Bolstad et al., 2015). In doing so, practitioners may have a clear understanding of their own practice and what dimension is being used.

Due to its potentially holistic approach, Cooper (2010) explained that some Māori medium teachers have viewed EE/EfS as a good way to deliver aspects of pūtaiao (science). However, two issues dominate the inclusion of Māori views in EE/EfS. Māori views are often included in a superficial way leading to misuse and appropriation. In addition, Māori medium specific initiatives can seem as an afterthought or an ‘add-on’ rather than being incorporated in an authentic way (Cooper, 2010). Bolstad et al. (2015) note that EE literature in Aotearoa/New Zealand often includes discussion about the “importance of approaches that acknowledge the Treaty of Waitangi, New Zealand’s bicultural heritage, and the relevance of Māori spiritual and ecological knowledge in forming New Zealand based understanding of environment and sustainability.” (p.27). However, inadequate coverage was made in their 2015 review of EE/EfS in Aotearoa/New Zealand to understand the practices and knowledge relevant for this advancement.

2.3.1.2 The intersection of formal and non formal education

Landmark documents, such as the *Tbilisi Declaration* (UNESCO, 1978); Brundtland report (WCED, 1987); *World Conservation Strategy* (International Union for Conservation of Nature and Natural Resources et al., 1980); *Caring for*

the Earth (The World Conservation Union et al., 1991); and *Agenda 21* (United Nations Conference on Environment and Development, 1992), have set intentions and guidelines for EE/EfS across multiple settings and with various audiences. These influential documents have helped ratifying countries develop policy and curricula in environmental education in formal and non-formal settings.

Despite the recognition of the role of education and guidance that these documents provide to implement it, EE/EfS has been slow to take on in the mainstream. A contributing factor to the outlying nature of EE/EfS could be that education for the environment and building up students' action competence might be at odds with the design of formal education. The traditional school setting is concerned with creating future citizens, while an action-competence approach to education calls for students' immediate participation (Heimlich, 2010). Since EE/EfS mainly exists outside the formal school setting, change may be quicker to take hold non-formally than in institutional structures.

Bolstad et al. (2015) note that more examples of exemplary EE/EfS practice (such as those based in action orientation, using whole-school approaches and that are long-term) among schools are becoming easier to find. The ability to achieve EE/EfS success in the formal school setting often involves the support of partnerships with people and groups that can be considered to be in the non-formal setting (Bolstad et al., 2015; Peffer & Bodzin, 2010). Nearly half of teacher respondents in Cowie and Eames (2004) study reported that they had support from outside environmental organisations. Input and expertise from partners were seen as valuable contributions to schools and classrooms.

2.3.2 Non-formal education

According to La Belle (1982), the term 'non-formal education' came in to use in the late 1960's as a response to the need for extracurricular learning opportunities. The term's use helped to legitimize the importance of this education setting as a community resource. Non-formal education was used in the industrialized world to provide a complement to the traditional school system's authoritarianism and inflexibility (La Belle, 1982). Thus, this type of education often refers to settings and teaching methods that are considered to be non-traditional (Taylor & Caldarelli, 2004). Non-formal EE/EfS/CE is often the domain of organised

settings such as park and zoo programmes (Fien et al., 2001; Foster-Turley, 1996; Peffer & Bodzin, 2010). One of the attributes of non-formal education has also been described as intentional education experiences that are done by an agency, community group or institution whose main mission is not education (Merriam & Bierema, 2013; Norland, 2005). Organisations providing non-formal education may do so through a number of education services such as working with the general public, school students or providing professional development (Peffer & Bodzin, 2010).

Historically, more of what has occurred to educate people about the environment has taken place in the non-formal setting (Heimlich, 1993, 2010). Brewer (2002a) explains that this is due in part to the perception that EE/EfS is best suited for field trips, outside the confines of traditional school. Heimlich (2010) offers a different perspective. He maintains that EE/EfS is best suited for the non-formal setting. Formal education is noted to have infrequently responded to the “cultural, social, political, economic, and environmental challenges as a function of affecting larger societal change” (Nelson, Cassell, & Arnold, 2013, p. 3). Rather than improving test scores of children and youth, the purpose of EE/EfS is to provide contact with nature and facilitation to develop the skills, knowledge, and values of a world population (Heimlich, 2010; Nelson et al., 2013; UNESCO, 1997).

2.3.2.1 EE/EfS with adult learners

EE/EfS with adult learners in non-formal settings can exist in many different forms. Walter (2009) explains that this can include “community development, popular education, and social justice—in extension education, literacy, and workplace education, on one hand; and in the labor, civil rights, peace, and other social movements, on the other” (p.3). Regardless of the setting, adult EE/EfS is an area where the tensions and contradictions between the environment and economic development can become very apparent (UNESCO, 1997). The challenges that come along with working in non-formal adult education may result in more EE/EfS efforts being directed at youth (UNESCO, 1997; Valenti, Torres de Oliveira, & Logarezzi, 2015). Valenti et al. (2015) note that despite difficulties, implementing an adult EE/EfS programme can be part of a transformation of local people’s quality of life and biodiversity conservation.

Although many EE/EfS/CE programmes prioritise the education of children and youth, adults are the dominant decision makers in conservation and thus capable of changing the status quo (Valenti et al., 2015; Walter, 2009). Building capacity for EE/EfS among adult stakeholders is critical in moving people to take action. As lifelong learners, all members of a community involved in CE should be given access to professional and technical support (Fien, Scott, & Tilbury, 2002). Providing professional support and development is especially needed among non-formal environmental educators, such as conservation education practitioners (Braus, 2009; Fien & Rawling, 1996).

2.3.2.2 Andragogy for professional development

Understanding how adults learn, or andragogy, can enhance professional development. Although there is no one theory of adult learning, certain principles and teaching styles may contribute to success (Zepeda, 2013). Some authors have discussed the need for adult EE/EfS and professional development to be hands-on, active and participatory with the opportunity to apply what is being learned (Robottom, 1987a, as cited in Fien & Rawling, 1996; Velardi, Folta, Rickard, & Kuehn, 2015). As well, adult education and professional development should be practically oriented (UNESCO, 1997) and relevant to everyday life. Adults engaging in relevant non-formal education, including professional development, need to be willing to learn for these to be successful (Zepeda, 2013). Valenti et al. (2015) found a number of adult characteristic factors that influenced the adult's willing participation in an adult EE/EfS programme between local people and conservation scientists, including personal and job interests. Adult learning experiences should also take into account the context that people are coming from (UNESCO, 1997; Zepeda, 2013). According UNESCO's handbook, *Environmental Adult Education: From Awareness to Action*, the cultural, political and environmental contexts people are living in need to be considered in order to make space for different people and learning styles.

According to Robottom (1987a, as cited in Fien & Rawling, 1996), one of the key principles of professional development in EE/EfS is adopting a critical orientation and reflective practice. Here, practitioners are encouraged to scrutinise their own teaching practices and beliefs as well as the social or cultural factors that have

influenced these. The literature indicates this reflection can allow practice to be improved through understanding what underlying values and assumptions may be affecting teaching and learning. The UNESCO (1997) handbook states that, “Environmental education, if it is to be meaningful to adults in their daily lives, needs to address ecological questions in terms of the social, political and economic factors involved.” (p.6). Reflective practice is also useful in an EE/EfS context where other social factors also need to be understood to create environmental change.

UNESCO (1997) advocates for an approach to adult EE/EfS that is based on collaboration (rather than knowledge dissemination) and that is based on participation of all local people, regardless of demographic factors like gender and creed. Similarly, Robottom (1987a, as cited in Fien & Rawling, 1996) also suggests professional development opportunities should be based on a collaborative, community based environment. Zepeda (2013) discusses the importance of learning communities for effective professional development and support. She explains that a learning community is comprised of a group of people who share education values and who can enhance personal and professional development through working toward common educational goals. While traditional professional development opportunities may feature increasing the skills of an individual, a learning community model involves the collective capacity of an organisation (Zepeda, 2013). In a study of one branch of the Project Learning Tree EE/EfS professional development programme for educators, the authors conclude that in-person workshops with online follow up sessions were an effective model for providing a supportive practitioner network (Velardi et al., 2015).

2.3.3 Informal education

Informal education is framed by La Belle (1982) as the continual learning process that every person goes through to acquire knowledge. This is gleaned outside organized education and is considered to be distinguished from deliberate forms of instruction, such as through news media, community interaction or peer-based processes (Fien et al., 2001; Foster-Turley, 1996; La Belle, 1982). Heimlich (1993) explains that informal learning can also occur in a formal learning setting in the instance that learning opportunities are created outside a formal programme

structure and where participation is optional. Informal learning, no matter the setting, is constantly happening throughout life. In an EE/EfS context it is important to recognise the weight informal interactions may have in helping to form knowledge, values and contributing to action taking (Heimlich, 2010).

2.3.4 Summary

Formal, non-formal and informal education coexists in various concentrations. In an attempt to organize and understand where and how learning exists, settings are used to define education. Formal education is connected to learning that occurs in an institutional setting and that require the adherence to a predetermined set of standards in order to receive a degree or licensure. In Aotearoa/New Zealand, EE/EfS is a non-mandatory part of the formal curriculum.

Most of what has occurred to educate people about the environment has been associated with non-formal education. EE/EfS's non-mandatory status in the formal sector may have contributed to its most common place in the non-formal setting. Non-formal education may mirror some aspects of formal education since it can exist in organised institutions, such as zoos or parks.

Adult EE/EfS and professional development are often in the realm of non-formal education. Adults are an important group to include in EE/EfS because they are influential decision makers. EE/EfS andragogy shares many similar qualities to pedagogy. This includes adopting a hands-on, participatory way of engaging that is practically oriented. In addition, adult EE/EfS should be critical and action oriented.

Informal education is also an important setting for learning about the environment. Informal learning is any learning outside an organized setting, such as through news media, community interactions or through peers. This is part of a continual learning process that every person goes through and can be an important source of knowledge, can contribute to forming values and shape action taking.

2.4 Educational goals for conservation education

This section aims to synthesise literature regarding the educational goals of successful CE. In order to see that both education and environmental goals are

met, EE/EfS should be part of a transformation of our social and political systems, rather than just practices within them (Fien et al., 2002). Using the context of public protesting over proposed governmental mining in a national park in Aotearoa/New Zealand, Eames and Barker (2011) make the point that there is a “critical need for environmental education in this country to equip our people with the education to be kaitiaki (guardians) of this land and to make good decisions for its future.” (p.189). The literature suggests that in order to encourage the transformational type of education that is required for people to make good decisions now and for the future, educational goals of CE should align with broader EE/EfS goals.

Effective CE programmes focus pedagogical processes on conservation outcomes that include social and scientific capacity, building popular support, and that help improve living conditions that can ease environmental pressures (Fien et al., 2002). van Weelie and Wals (2002) offer three main competency areas regarding conserving biodiversity: the nature and self, ecological literacy and the politics of nature. These correspond with three general goals of EE/EfS: ecological literacy, personal growth and development and understanding of socio-scientific disputes of environmental issues (van Weelie & Wals, 2002). Sterling (2010) advocates for integrating both the ‘environmental’ and ‘educational’ goals of EE/EfS in order to engage in a process of environmental and social health. From a Māori perspective, education should allow for life skills to be developed and conscious choices to be made so people can be a part of the environment and participate in society with the environment being an inherent part (McKay, 2013; Royal, 2005). Thus it can be extrapolated that CE is part of a life-long process of learning, so education and engagement need to be considered for all levels of society and throughout all aspects of an organisation.

To achieve the complex goals of CE, increasing awareness, establishing dialogues between stakeholders, developing understanding and skills, as well as building capacity, should be embedded in its structure (Fien et al., 2001). However, since the environment and groups of people are multidimensional, it is also reasonable to assume that there is no one correct way to do CE. The following discussion

includes elements that may increase the likelihood of success of a CE programme, although various projects could look different based on situational factors.

2.4.1 Participatory engagement

No objectives, educative or scientific, can be sustained unless there is support (Braus, 2009). To gain support, people must be actively engaged. Education programmes should address and involve a wide range of audiences, moving away from narrowly defined views of education being confined to students in the formal school setting (Fien et al., 2002; Heimlich, 2010). Promoting EE/EfS/CE to school-aged children is extremely important, however it is also essential to invest in community capacity-building (Blair, 2008; Walter, 2009). In their assessment of conservation education across the World Wide Fund for Nature network, Fien et al. (2002) conclude that effective programmes are characterized by pedagogies based on participation. They list helping people to develop knowledge, values, analysis skills and to work collaboratively with others as aspects of participatory pedagogy in CE. They also add that focusing CE programmes on multipliers, or people who can maximize the spread of outcomes, can lead to greater educative and environmental impact. To increase the efficacy of a CE programme, partnerships should be aligned with a wide range of government and community stakeholders, including teachers and students.

2.4.1.1 Engaging multiple perspectives

In order to allow societal participation, an essential element of CE is the acknowledgement of different perspectives and multicultural views of the environment (Craig, Moller, Norton, Saunders, & Williams, 2013; Peterson, Russell, West, & Brosius, 2010; Roberts et al., 1995). Nelson et al. (2013) bring up the point that all cultures have their own distinct interactive relationships with the environment and that any combination of these may yield strategies that could help address the current situations on Earth. It is particularly poignant in bi- and increasingly multi-cultural Aotearoa/New Zealand that a science-based understanding of conservation is only one of these perspectives that offers a certain set of solutions (Brewer, 2002a).

Authentically working with different people who hold various cultural views and values relating to the environment could serve both humans and nature. A

Western paradigm of sustainability or conservation may not be a suitable response to solve environmental issues since these might reflect a set of values that instigated and perpetuate a pattern of environmental degradation (Chandra, 2014; Nelson et al., 2013). As an alternative, there is interest in traditional ecological knowledge (TEK) to contribute to solutions to the environmental crisis, however this might not always suit indigenous people (McGregor, 2004). McGregor (2004) explains that indigenous cultures are required to translate their meanings and values to fit in to the Western framework, which is akin to a new form of colonisation. According to McGregor (2004), TEK is about participating in reciprocal relationships rather than just understanding them. This discussion suggests it is essential to engage in a process to increase equitable power relationships based on respect in order to honour multiple perspectives in EE/EfS/CE.

2.4.1.2 Community participation

Both the community and the environment can benefit from community participation in a CE programme. Community-based environmental education can increase the skills and knowledge for environmental action-taking among citizens, such as influencing public policy (Blair, 2008), thus integrating conservation science, politics and education (Jimenez, Monroe, Zamora, & Benayas, 2015). Jacobson and McDuff (1997) found that local participation was a key element of a conservation programme's success. They provide document analysis of 15 successful conservation education programmes, demonstrating that this was an important component in 93% of the cases in their study. A lack of involvement by the local community from the beginning and failure to put mechanisms in place for long-term engagement can result in the decline of support for a project (Jacobson & McDuff, 1997).

In order to effectively work within a community, a realistic expectation of what this might entail is needed. While Berkes (2004) advocates for a process of “collaboration, transparency, and accountability so that a learning environment can be created” between local people and resource management agencies (p.624), he notes clarification should be made with regard to the concept of ‘community’. Speaking with reference to community-based conservation, Berkes (2004) alerts that the term ‘community’ can erroneously mean an idealised, cohesive social

group. Barrett, Brandon, Gibson, and Gjertsen (2001) explain that communities are made up of individuals with complex relationships. It is a myth to believe that social groups live in complete harmony. In the context of tropical biodiversity conservation, Barrett et al. (2001) assert that the trend of community-based resource management has overemphasised “the place of local communities in tropical-conservation efforts, much as the previous top-down model underemphasized communities’ prospective role.” (p. 497). They propose the best management designs involve authoritative distribution across many institutions rather than focusing on a few.

2.4.1.3 Organisational participation

Distributing responsibility for EE/EfS/CE programmes across multiple stakeholders, such as through local groups, schools and government agencies, has the potential to ensure a project’s longevity (Blair, 2008). Relying on one organisation or one person might mean that the enthusiasm and skills needed to foster programming can rest precariously on the shoulders of individuals. For example, Smith (1995) describes a scenario in which government advocacy for an education project deteriorated when a CE programme planner’s contract ended. Partnerships can increase the capacity of a programme and leverage resources that a singular group may not be able to provide (National Park Service, 2011). Case studies of the *Park for Every Classroom* programme show that key elements of successful partnerships include groups sharing common goals, understanding each other’s organisational culture, and determining ways to work together (National Park Service, 2011).

External and internal support needs to be cultivated in order to ensure programme strength. Among conservation organisations, leadership and commitment at senior levels is very important to ensure the sustainability of a programme (Braus, 2009; Fien et al., 2002; National Park Service, 2011). In addition to needing organisational support for CE in conservation-related organisations, Cowie and Eames (2004) found that teachers also need support from senior management in schools in order to provide EE/EfS.

2.4.1.4 Whole school approaches and action competence

Having supportive senior leadership was described by teacher respondents in Cowie and Eames' (2004) study as something that was a prerequisite to a whole-school approach. A whole-school approach refers to a holistic learning environment that aims to engage learners in taking action for sustainability (Tilbury & Wortman, 2005). In addition to internal school participation at all levels, partnerships with outside agencies are an essential part in facilitating a whole-school approach. In effective partnerships, stakeholders both contribute to and learn from programming. Tilbury and Wortman (2005) note that schools utilising a whole-school approach have demonstrated the ability to contribute to cultural shifts in students, teachers and administrators that have resulted in change among schools and the broader community.

Tilbury and Wortman (2005) explain that the meaningful participation, including democratic decision-making, among all stakeholders is a fundamental characteristic of whole school programmes. Since this is consistent with elements of action competence, Eames, Barker, Wilson-Hill, and Law (2010) found in their investigation of whole-school approaches that action competence offered the best framework for understanding student learning in EE/EfS. According to Jensen and Schnack (2006), an action competence approach goes beyond encouraging pro-environmental behaviour or behaviour modification and helps to facilitate people's ability to make intentional actions guided by a foundation of knowledge and experience. Eames and Cowie (2004) give examples of action competence in Aotearoa/New Zealand schools, explaining that "projects at some schools involved students identifying an environmental issue, making decisions, liaising with sponsors, community agencies, or the media, and taking the actions they identified as necessary for reaching their environmental goals." (p. 23). This demonstrates the type of pedagogical process in CE that Fien et al. (2001) say includes a combination of strategies for learning that stimulate gaining knowledge, defining values, taking actions and reflecting on the changes that have occurred.

2.4.2 Multidisciplinary practice

Since human problems are extremely complex it is unlikely that they will be resolved through employing one discipline of knowledge or thought. In *Learning to Care for Our Environment: Me Ako ki te Tiaki Taiao: A National Strategy for*

Environmental Education (Ministry for the Environment, 1998), environmental education is described as, “A multi-disciplinary approach to learning that develops the knowledge, awareness, attitudes, values and skills that will enable individuals and the community to contribute towards maintaining and improving the quality of the environment” (p. 9). Multidisciplinary learning that builds people’s ability for decision-making can result in the capacity to make environmental lifestyle choices and take action for the environment (Brewer, 2001, 2002a; Selby, Moore, & Mulholland, 2010; Takacs, Shapiro, & Head, 2006).

Multidisciplinary practice is essential for creating a population who can make informed decisions. Nash (1976) makes a compelling argument that the separation of disciplines can lead to the types of limited perspectives that resulted in bombings of Hiroshima and Nagasaki. He explains that, “The conclusion could not be avoided: science, undiluted with ethical and humanitarian influences, could be man’s greatest problem rather than his greatest blessing.” (p. 8). Applied to conservation, Mascia and Brosius (2003) explained that, “The disconnect between our biological knowledge and conservation success has led to a growing sense among scientists and practitioners that social factors are often the primary determinants of success or failure” (p. 649). Biological sciences help to inform conservation practice, but central to conservation should be the recognition that a healthy environment is about people’s relationships and interactions with nature (Craig et al., 2013; Mascia & Brosius, 2003). An increase of this recognition has been noted in both resource managers and conservation scientists (Ardoin & Heimlich, 2013; Brewer, 2002a). Building an invested and educated population, connected to nature and who can participate in environmental action is critical to seeing environmental objectives fulfilled in both the sciences and among environmental education practitioners (Fien et al., 2002).

2.4.3 People in the landscape and a place-based pedagogy

Place-based education is concerned with helping people forge a personal connection to their local places (Penetito, 2009; Sobel, 2004). Connecting to local places includes the physical landscape as well as extending to the spirituality and culture of a place (Gonzales, 2013). In addition, place-based education can be enhanced by understanding the histories that demonstrate what has shaped the relationships between humans with each other and to the environment (Flowers,

2010; Penetito, 2009). In other words, place-based education “emerges from the particular attributes of a place” including the “geography, ecology, sociology, politics and other dynamics” (Penetito, 2009, p. 7). By creating place-based opportunities for learners, CE programmes could increase people’s connection to their environment as a prerequisite for engaging in informed, grounded, locally relevant action-taking.

Adopting a place-based approach to education contrasts a solely classroom centred model of learning about the environment. For example, many urban and suburban students learning about the environment may translate to classroom lessons about exotic locations or long bus rides to remote places (Brewer, 2002a; Fisman, 2005). Both of these scenarios can result in students knowing more about distant habitats rather than their own localities, as well as viewing nature as being separate from their world (Brewer, 2002a; Fisman, 2005; Haluza-Delay, 2001). To contrast this, Brewer (2002a) calls for use of school-yard laboratories for science learning in order to connect students with the environment.

Having sustained contact with outdoor space, whether it be in a schoolyard, urban or national park, is essential in creating values and positive attitudes toward the environment (Aswathy, Popovic, & Linklater, 2012; Bogner, 2002). Having an embodied experience in the outdoors can have profound affects on the relationships that people have with the environment since this type of experience engages the kinaesthetic, sensory and emotional facets of being (Hill, 2013). Vaske and Kobrin (2001) confirm in their study that sustained contact with a place, through EE/EfS or work programmes, can help foster attachments with a particular place that may lead to environmentally responsible behaviour. Experiences in natural areas, especially in the formative years, have also been found to be a significant factor in environmentalists’ choice to pursue environmental commitment later in life (Chawla, 1999). With this in mind, one of the basic goals for CE programmes should aim to create opportunities for learners to experience local outdoor places in order to develop a positive connection to the environment (Flowers, 2010).

In addition to connecting people to the environment, much of the place-based literature has arisen out of the work people are doing to satisfy education with indigenous communities, however Penetito (2009) notes that place-based education can directly benefit all people. In a study of environmental perceptions in Aotearoa/New Zealand, New Zealand European and Māori respondents were consistently found to express more concern for freshwater issues than people of other ethnicities, which included Pacific Islander and Asian people (Hughey et al., 2008). As immigrant communities increase their presence in Aotearoa/New Zealand, place-based education may help to ground newcomers in order to help them connect and care for the country.

Using outdoor space for learning may have unintended outcomes and be difficult to apply in some situations. In a discussion about the merits of outdoor education's ability to contribute to EE/EfS goals, Hill (2013) raises the point that some outdoor experiences may work against them depending on the intention of a learning opportunity. He explains that traditionally, outdoor education used the environment as a backdrop for personal development narratives. This may enforce the human/nature dichotomy. This suggests that for place-based education to be successful in aligning with EE/EfS objectives, it needs to have intention to do so. An other example comes from Fisman (2005) who conducted a study of the pre and post ecological awareness of a neighbourhood-based EE/EfS programme in two urban middle schools. She found that the students living in dangerous neighbourhoods, whose parents did not let them go to urban parks alone for fear of physical safety, did not show an increase in ecological knowledge or values. Thus social and economic problems can be a barrier to contact with and participatory action for the environment (UNESCO, 1997). This demonstrates that sensitivity to situational factors that may inhibit environmental connection need to be present in a programme and the flexibility to respond to such scenarios with an action orientation needs to be in place.

2.4.4 Summary

Many elements need to go in to CE work in order to meet educational objectives. Working in a participatory, place-based and multidisciplinary way that recognises the likelihood of multiple community perspectives can be complex; however will increase the involvement of multiple stakeholders that can potentially strengthen a

programme. Participation needs to be garnered by students, teachers, community stakeholders, conservation education practitioners and senior levels of leadership among these groups in order to ensure sustainability of the programme and to meet environmental goals. Although long-term relationships between multiple stakeholders may be complicated to establish and maintain, partnerships between multiple layers of society have the potential to inspire social change.

2.5 Conservation education practice

Environmental educators, as agents of change, are central to facilitating the social and ecological developments needed to achieve EE/EfS goals (Fien & Rawling, 1996). In order to build capacity for action-taking, professional support and development are needed for CE practitioners (Braus, 2009). Access to training and professional networks were concluded to be a key factor in best practice understanding and implementation among educators at the National Park Service in the US (Bowling, 2013). Ardoin and Heimlich (2013) found that conservation professionals would benefit from access to case studies of successful education projects that could demonstrate both the positive opportunities as well as challenges of integrating social with scientific strategies for conservation. The findings from their study also showed that the effectiveness of conservation education depends on adequate training of practitioners, time/funding and strong evaluative evidence to support CE programmes (Ardoin & Heimlich, 2013). Qualities, skills and resources that benefit conservation educators appear to include having reflective skills and flexibility, knowledge, time and support. These will now be discussed in greater depth.

2.5.1 Reflective skills

Having time to reflect on personal practice and programme running can be an important aspect of a CE practitioner's work. Conservation educators participating in *A Park for Every Classroom* made the analogy that environmental stewardship is like a marathon rather than a sprint (National Park Service, 2011). As a result, educators need to keep a steady pace and check that they are on the right track. Critical thinking and reflection are embedded in EE/EfS theory so these should also be evident in the practice of CE educators in order to increase learning and improve professional practice (Ferreira, Keliher, & Blomfield, 2013). In addition

to carrying out personal reflection of CE practice, evaluation should also be carried out to gauge a programme's success.

2.5.1.1 Reflexive practice

While it is important to recognise that there is no singular understanding of EE/EfS, attempts should be made for educators to elucidate what EE/EfS/CE mean to them. It has been noted that multiple perspectives on nature and learning may exist (and which sometimes conflict) among students, parents, educators and administrators within one programme (Dickinson, 2011). Despite scholars attempting to provide a definition of EE/EfS, the individual might consciously or unconsciously render their own meaning (Jickling, 1997). For example, Ardoin and Heimlich (2013) found that there were a wide variety of definitions of education among conservation education practitioners. Some educators in their study defined education as something that was more akin to social marketing, highlighting the pervasive view that education is the equivalent to providing information. Clear understanding about views of CE could help facilitate communication in order for those participating in CE to be explicit about an education programme's intentions (Jickling, 1997), or so this dialogue can be a platform for learning.

It is argued that educators should engage in a process to articulate the underlying assumptions that are being made about how people learn and what the purpose of education is (Etmanski & Barss, 2011). EE/EfS/CE practitioners need to be reflexive in order to have a conscious awareness of "the creation of their personal identities and professional objectives and practices helping them to bridge the gap between their intentions and practices." (Fien & Rawling, 1996, p. 19). Ferreira et al. (2013) found that reflecting on practice enabled tertiary EE/EfS students to explain their individual and professional actions and intentions with regard to EE/EfS and social change. EE/EfS/CE educators may need to understand their own, as well as shared, definitions of environmental education in order to consciously make choices on what methods may best serve their objectives. Developing initiatives that are a departure from the norm, as EE/EfS/CE should aspire to do, requires practitioners to continuously reflect, adapt and reassess their values and on what paradigms their pedagogy is founded (Barry, 2010; Lotz-Sisitka & Raven, 2004).

2.5.1.2 Programme Evaluation

Although it may not always be prioritised in a non-formal CE setting (Norland, 2005), programme evaluation can help ensure that outcomes are being achieved. Young (2001) called for more strategic planning for biodiversity education, including clear evaluation methods, in order to make informed decisions about the effectiveness of teaching and learning. Having clear goals and evaluating education programmes against these is essential to ensure objectives are being met and failure is not being repeated (Jacobson & McDuff, 1997). In order to respond with modifications to a programme as needed, evaluation should be an ongoing process. One of the principles of good practice in effective management of CE includes continual monitoring and evaluation of a programme for both short and long term outcomes (Fien et al., 2002; Flowers, 2010; National Park Service, 2011). This type of evaluation is an important step to take since this can be the primary tool for gauging a programme's outcomes against an organisation's mission (Heimlich, 2010). Although it may be difficult to measure the outcomes of CE, once secured in a programme there is evidence to suggest that evaluation can increase the likelihood of success (Jacobson & McDuff, 1997).

Evaluation is imperative to measuring a CE programme's success, but it can be difficult to incorporate. Respondents in Ardoin and Heimlich's (2013) study attributed the difficulty in measuring the effectiveness of education activities as a major barrier to incorporating education into their work. What to, and how to, evaluate the efficacy of environmental programming can be hard to determine since goals are often widespread. Objectives may span both short and long term and could be intended to increase education while simultaneously slowing or reversing environmental degradation (Fien et al., 2001). In addition, since EE/EfS should help facilitate how to think rather than what to think, learners could take a variety of different actions that might serve the same goal, making evaluation complicated (Heimlich, 2010). One conservation practitioner in Ardoin and Heimlich's (2013) study explained that, because they could not produce quantifiable justification for educational activities, their organisation did not participate in education at all. In addition, the challenges in determining what and how to evaluate can be further compromised by capacity. Evaluation may not be prioritised by managerial leadership in CE because it can be seen as a time

consuming activity (Jacobson & McDuff, 1997; Norland, 2005). Continual evaluation with a range of data collecting techniques was found to be more likely to occur if this is built into a programme's plan from the beginning (Jacobson & McDuff, 1997).

Documentation of programme success is beneficial to the education community, which may include individual programme planners, formal teachers or researchers. Building capacity among EE/EfS/CE practitioners to improve programmes through data is one of the valuable roles evaluation can play (Heimlich, 2010). Documented cases over a 10-year period of the Gold Fields course in South Africa were shown to increase understanding of the professional development processes as well as enhanced the professional development of education practitioners (Lotz-Sisitka & Raven, 2004). The findings of this study suggest CE practitioners should have time to reflect and collect evaluative data throughout the duration of a programme in order to respond to challenges, celebrate successes and provide a basis for learning from past experiences.

2.5.1.3 Flexibility

If CE practitioners have capacity to evaluate programmes throughout their duration they also need to have the flexibility to respond to a project as it evolves. The type of CE that is being advocated for requires practitioners to work with a variety of people and organisations to co-construct learning opportunities. Many *A Park for Every Classroom* facilitators reported one of the keys to their success was the ability to adapt and change in order to move forward. They had to, “learn how to ‘let go’ a little and accept the amorphous nature of the process. The models they were creating often did not look like anyone else's and moved in a completely different direction than expected” (National Park Service, 2011, p. 10). The unstructured nature of this process can be uncomfortable for some people to work in since it allows for a large amount of variation. Therefore, working in a flexible, reflexive way is a necessary skill for CE practitioners.

2.5.2 Knowledge

Scientific understanding of environmental issues, conservation strategies and field-based work are an essential base to CE. In addition to these, CE practitioners also need to understand theories and pedagogies associated with education in

order to reach their audiences in authentic learning situations. Basic curriculum understanding could help CE practitioners connect and work with the formal sector. In Aotearoa/New Zealand, CE practitioners need to have bicultural awareness and a sense of responsibility to learn about Māori culture. Some of the knowledge areas that CE practitioners should have a grasp of are now further discussed.

2.5.2.1. Education pedagogy

Non-formal EE providers are typically more skilled in environmental science than classroom pedagogy or educational priorities (Jickling, 1997). As a result of the environmental aspect of EE/EfS being dominant over the educational one (Jickling, 1997), these educators are often hired because of their content knowledge rather than their teaching knowledge or ability (Taylor & Caldarelli, 2004). Ardoin and Heimlich (2013) conducted a study with conservation practitioners who may engage in education, with one survey respondent expressing concern that there was a perception among scientists that education was not a specialist skill. With some CE practitioners more versed in science than education, and potentially devaluing the specialisation of education, Bainer, Cantrell, and Barron (2000) note that some natural resource professionals are not adequately trained to manage social interactions and basic education techniques. Biologists working with students for the first time may have limited knowledge about how different age groups and students learn (Brewer, 2002b).

If conservation professionals want to work in an educative capacity they need to have a basic understanding of the ways in which people can learn and how to engage learners, or current thinking in andragogy and pedagogy. In a study about teacher EE/EfS professional development, Wade (1996) found that the majority of EE/EfS in-service education for teachers was being conducted by natural resource agencies. In her study, she found that “what to teach is emphasized far more than how” (Wade, 1996, p. 12). While a CE practitioner may be versed in presenting information, additional skills may be needed to facilitate problem solving or action taking processes (Bowling, 2013). In order for CE practitioners to go beyond an information-based approach to learning, educators need an understanding of learning theory and current education research (Ardoin & Heimlich, 2013).

2.5.2.2 Basic curriculum understanding

Basic understanding of CE pedagogy and how schools work would help CE practitioners be effective in their education work. School groups are important and often regular visitors to parks (Slattery & Lugg, 2002). However, a commonly perceived barrier to teachers' participation with National Park Service programmes in the US was not understanding how the programme related to students' academic achievement (Stern, Wright, & Powell, 2012). Many teachers do not have the environmental knowledge and skills to connect EE/EfS/CE to the curriculum, making the role of the CE practitioner important in educating teachers as well as working with students (Lugg & Slattery, 2003; Slattery & Lugg, 2002). In an Australian context, Slattery and Lugg (2002) explain that better liaising with teachers could allow CE practitioners to help create longer-term relationships to avoid 'one-off' experiences that have little educative value. Park staff who provided park interpretation were found to need the skills to create shared responsibility with teachers in order to utilise their respective expertise for learning (Slattery & Lugg, 2002). The literature suggests that curriculum knowledge does not have to be extensive, but CE practitioners should be able to see the relevancy of conservation in the formal school setting and communicate this to others.

2.5.2.3 Authentic incorporation of Māori views

CE practitioners in Aotearoa/New Zealand have a responsibility to be educated about Māori culture and conservation ethics. Hodges (1994) notes that this does not mean Māori should provide free education on things Māori, but that relationships between Iwi (tribes) and government agencies that may be participating in CE have a relationship based on respect and reciprocity. DOC, in accordance with the Conservation Act 1987, has an obligation to fulfil Treaty of Waitangi responsibilities that include developing relationships with tangata whenua (indigenous people of Aotearoa) to improve conservation (Department of Conservation, n.d.-c). One example given of how DOC could adhere to the management strategy for the Hawke's Bay Conservancy was for DOC staff to become biculturally aware and show appropriate consideration in developing a relationship with Iwi (tribes) (Hodges, 1994). Including Māori culture in professional development for CE practitioners could help foster respect and

contribute to Māori perspectives being included authentically in CE and fulfil DOC's Treaty of Waitangi responsibilities.

2.5.3 Time and budget

A lack of money, time and other resources can be barriers to incorporating education into a CE practitioner's work (Ardoin & Heimlich, 2013; Slattery & Lugg, 2002; Stern et al., 2012). Fifty-eight per cent of respondents in Young's (2001) study about organisational biodiversity planning indicated that they spent less than half a day per week on education and 65% of respondents said that funding constrained progress in this area. Many CE programmes can be time intensive for both CE practitioners and stakeholders. For example, the *A Park for Every Classroom* programme, in the Northeast of the United States, is noted to have required investment of staff time to achieve collaborative and educative success between the parks and community members (National Park Service, 2011). For many formal teachers the time required to work with outside experts can also prevent successful partnerships (Cowie & Eames, 2004). In a formal school setting, Youngs and King (2002) note that student achievement is directly influenced by the quality of facilitation and facilitation is affected by capacity. It is not surprising then that best practices were found to be more prevalent at national parks in the US with more full time equivalents devoted to education (Bowling, 2013).

Limited research exists on non-formal EE/EfS/CE practitioner's professional development needs, so looking to case studies of professional development in the formal setting can provide some reference. Paul and Volk (2002) discuss their concern that typical EE/EfS professional development for teachers is too short to create any meaningful learning. They suggest that, "2 to 3 years of implementation may be optimal for teachers to fully develop their competencies and gain confidence in using interdisciplinary EE curriculum" (Paul & Volk, 2002, p. 18). Overnight professional development camps totalling 9 days over the course of one year were seen to change teachers' confidence and ability to deliver place-based EE/EfS in the classroom (Curtis, 2013). Since CE should be a life-long learning process, adequate time should be invested to train practitioners in what and how to teach EE/EfS/CE.

2.5.4 Support

Ideally CE should include the commitment and participation of multiple stakeholders and levels of an organisation in order to achieve long-term objectives. Ardoin and Heimlich (2013) found that a lack of commitment to EE/EfS within survey respondents' organisations prevented incorporating education into CE practitioners' work. In order to achieve CE goals, CE practitioners need support from within their organisation as well as through external relationships (Bowling, 2013).

The social aspects of adult learning and professional support are important. While adults can learn independently, interactive support through coaching, mentorship and peer support can help improve an education practitioner's work (Zepeda, 2013). Having at least one face-to-face meeting among programme facilitators was seen to help form bonds and trust among teams which aided the establishment of networks of support among staff (National Park Service, 2011). Establishing a working relationship can help aid developing the elements of strong professional communities. Some of these elements are explained to include having shared goals, participating in meaningful collaboration with other educators, inquiring into assumptions about, and alternative pathways for, problems and have some influence over education work through distributed leadership (Youngs & King, 2002).

Having strong professional communities might strengthen a programme and ultimately aid in achieving higher programme outcomes (Youngs & King, 2002; Zepeda, 2013). In a formal school context, effective school-wide professional communities were noted to influence the achievement of students (Youngs & King, 2002). There was little turnover among National Park Service staff and teachers who participated in the *A Park for Every Classroom* programme. As a result, the trust and connections that were extended into long term working relationships were seen to help the group improve the programme over time (National Park Service, 2011).

2.5.5 Summary

CE practitioners, as agents of change and life-long learners, need professional development, support and resources in order to do their jobs and see outcomes are

met. Literature suggests that many of these educators have a science-based background and do not have the pedagogical or theoretical foundation to promote best practice in CE. Adequate training in pedagogy and the formal curriculum could help CE practitioners work in the formal school setting or with teachers. In Aotearoa/New Zealand, an understanding of Māori worldviews and Treaty of Waitangi obligations are also essential. Having time and the skills to engage in on-going reflection and evaluation could allow CE practitioners to make suitable modifications to programmes as well as to recognise and celebrate success. Practitioners who had time to do education work showed improved CE outcomes. Leadership that understands the importance of CE and appreciates the time it takes can help support practitioners in their work. Support through professional community networks can also improve practice through providing mentorship and peer learning.

2.6 Chapter Summary

The orientations and assumptions of conservation and education affect the practices and methods of CE. The Western world has seen a process of transformation in EE/EfS/CE practice that now shares many of the methods and aspirations of indigenous education practices. This is in reaction to the fragmentation and specialisation view of the world that aims to reduce complex interactions between humans and the environment that has dominated the industrialised world. In Aotearoa/New Zealand, Māori have had a conservation ethic based on reciprocity and sustainable use, recognising people as part of the environment. Although there is no direct translation for EE/EfS/CE, Māori perspectives of these can be understood to mean anything learning in the formal, non-formal or informal space that allows people to act in a life-oriented way.

The educational goals of CE promote life-long learning of all members of society and organisations. This should be based on participatory engagement of multiple stakeholders in order to share resources and responsibility for programmes and ultimately the environment. Engaging in a multidisciplinary practice can contribute to developing knowledge and values that contribute to action taking. Learning should be conducted *in* the environment in order to create a connection to place. Learning *about* the environment, or creating knowledge is an essential base to inform actions. Taking action *for* the environment, or developing action

competence, is also essential in creating authentic learning experiences. The educational goals and practices of CE are not easy to achieve and could be part of an uncomfortable process since they promote social change and disrupting the status quo.

In order to adequately uphold the educational goals of CE, practitioners should take time to reflect on their work and the influences that shape the basis for their education practice. Since engaging in education can be seen to be indirect action for the environment, it is essential to understand what assumptions and orientations shape a practitioner's ideas about what conservation and education are. Both personal reflection and programme evaluation can allow practitioners to gauge the success of their work and navigate toward the most effective facilitation methods.

The literature suggests that on-going professional development should be provided to keep CE practitioners up to date with both what and how to engage learners in EE/EfS/CE. Many CE practitioners may be coming from a scientific rather than educational background, requiring them to gain additional skills and knowledge to work in this space. For example, some knowledge of how to work with teachers might be needed since teachers have been shown to rely on non-formal educators. Another influential factor that was shown in the literature was organisational support. Support from senior leadership and time to incorporate education into a non-formal educator's work was discussed as something that could increase quality outcomes.

Chapter 3 Methodology

3.1 Chapter overview

This chapter outlines the design of this study and justifies the methodological approaches employed. The research questions are revisited as well as the objectives in posing these questions. In order to connect to the broader field of research, a brief discussion about positivist and interpretive paradigms is given. Research methods that were used, including document analysis, surveys and interviews, are described. The research design employed for this study is outlined, as well as how data were analysed. In addition, steps taken to ensure the research was carried out in a robust and ethical way are explained.

3.2 Research questions

The research in this thesis was a small scale, interpretive study of environmental educators' professional development needs that may be useful in improving Environmental Education/Education for Sustainability (EE/EfS) practice for both educators and the people they work with. The intention of this study was to contribute to the Department of Conservation's (DOC) understanding of what professional support their staff working in education might need in order to do their jobs and to achieve DOC's education goals. This study also aimed to add research to the wider EE/EfS community on what non-formal environmental educators could require to facilitate action-oriented EE/EfS. The following research questions guided the study:

1. What are the needs of DOC staff who engage in conservation education?
 - a. What needs, including professional development, support, and/or resources, are perceived to be important from a national DOC perspective?
 - b. What needs, including professional development, support, and/or resources, are perceived to be important from a DOC educator perspective?

These questions are concerned with the issue of professional development for non-formal adult conservation educators so they can ultimately contribute to social change. There is little research available that has been conducted regarding non-formal EE/EfS practitioners, even though this is a group of people who have

a substantial influence on how the field is practiced. This study is connected to dialogues about the nature of EE/EfS in the formal and non-formal sectors. The fundamental premise is that all people, from childhood to adulthood, are life-long learners who make decisions that shape society and the environment.

3.3 The Nature of Research

A primary starting point in research is to determine what will be acceptable types of knowledge that can contribute to a study, or what epistemological considerations need to be made (Bryman, 2012). According to Cohen, Manion, and Morrison (2011), positivist and interpretive paradigms are aimed at understanding social phenomena through two distinct ways of thought. Positivism claims that through observation and analysis by a researcher, universal laws can be formulated and knowledge can be gained (Cohen et al., 2011). Studies based in a positivist paradigm aim to understand the world through classification and order, such as in the natural sciences (Bryman, 2012; Cohen et al., 2011). Central to epistemological considerations is whether or not the application of positivism is adequate to produce the type of data that could contribute to the understanding of the research question (Bryman, 2012).

Contrasting with a positivist paradigm, the main concern of interpretivism is to understand the subjective meaning making of the participant's experiences as they relate to their world (Cohen et al., 2011). Theory is grounded in data, but this is built by the experience and meaning making of people at the source (Cohen et al., 2011). Interpretivism offers an epistemological alternative to positivism because it recognises that both the societal constructs and individuals that form them are complex.

The present study is concerned with both the complex nature of professional development within an organisation and the meaning making and experience of DOC educators, so is embedded within an interpretive paradigm. In addition, this study is not concerned with creating a law, as would be attempted in a positivist paradigm. Instead, this thesis is intended to provide research evidence that is based on a present situation through a needs assessment of DOC educators, with the hope that the findings will contribute to an organisational and social change through professional development for non-formal environmental educators.

Ongoing evaluation of the professional support needed for this group of people, as well as educators from other organisations, will be necessary as the EE/EfS field evolves over time.

In addition to epistemological considerations, whether or not social constructs are objective, or are modified by individuals, must also be taken into account in order to conduct social research (Bryman, 2012). Bryman (2012) outlines two main central ontological positions, objectivism and constructionism. The basic premise of objectivism is that the individual is part of a system, such as an organisation or a culture, that has rules and regulations beyond influence from its participants (Bryman, 2012). An individual in one of these social constructs internalises the beliefs and values of the bigger entity. In an objective ontological understanding, the organisation or culture is external to the actors that make up the sum, seen therefore almost like its own being. According to this way of thinking, a social construct exerts influence on the individual to conform to its rules and regulations.

Constructionism challenges these notions. Rather than accepting a social construct as separate but controlling an individual, constructionism proposes that characteristics of a social construct are negotiated by the players (Bryman, 2012). According to constructionists, a culture or organisation undoubtedly influences individuals. However, social constructs are formed by everyday interactions and choices made by individuals (Bryman, 2012). Constructionism stresses that individuals have an active role in forming social reality (Bryman, 2012).

The ontological position of this thesis is constructionist. While staff members might be influenced by the organisational culture that they participate in, their beliefs, needs and skills also shape how this is formed. DOC educators are being asked to share their opinions and experiences in order to determine how professional support is offered to them. The intention of this constructionist research is that these individuals will help shape society. By providing quality professional support to non-formal educators, the opportunity arises for these staff and the people they work with to engage in a process of EE/EfS. Since environmental issues are rooted in society, it is up to individuals to be a part of the societal change that is required to solve them (Jensen & Schnack, 2006). The

ontological and epistemological positions taken in research also dictate the methods used to gather data, which are discussed next.

3.4 Research Methods

Researchers should decide the most appropriate methods to collect their data. According to Cohen et al. (2011), the preliminary phase of determining what methods might be appropriate is to establish the objective of the study. Following this, a researcher should identify subsidiary topics that relate to the study's central purpose followed by formulating specific data requirements relating to these issues (Cohen et al., 2011). The following research methods were determined to be the best for this study based on the epistemological and ontological stance, research questions and data requirements.

3.4.1 Document analysis

In order to understand the situational factors that influence research participants it is essential to grasp the context that they are in. Cohen et al. (2011) classify document analysis as a type of observation since the intention is to observe the situations that a participant is affected by. Document analysis can help provide a baseline of information and provide background information of the context within which people operate, especially in the workplace (Bowen, 2009; Mills, Bonner, & Francis, 2006). Analysing relevant documents can also help raise additional questions that need to be asked directly of participants (Bowen, 2009).

Bowen (2009) notes that documents should be treated critically in order to establish their underlying meaning and how that contributes to the issues that are being scrutinised. The conditions in which a document was produced, the original purpose of, and the audience intended for, documents should all be considered (Bowen, 2009). Analysis also involves providing an initial, superficial examination of relevant material followed by thorough reading and interpretation (Bowen, 2009). During this process "the researcher should strive for objectivity and sensitivity, and maintain balance between both" (Bowen, 2009, p. 34). Maintaining this, along with the triangulation of other data sources can contribute to the trustworthiness of a study.

Documents are often produced for a purpose other than for research analysis. As a result they may not provide sufficient detail to answer research questions (Bowen, 2009) and this may limit their utility. Document analyses of reports or organisational plans are often used to triangulate data collected in other research methods, such as with surveys and interviews.

3.4.2 Survey

Surveys can be used to collect data, often from larger groups of people, at a specific point in time, so existing conditions can be described (Cohen et al., 2011). Along with nominal data, such as a participant's background information, surveys can also gather information about a participant's reported attitudes, preferences, beliefs, behaviour and experience in the past and present (Cohen et al., 2011; Menter, Elliot, Hulme, Lewin, & Lowden, 2011).

Surveys can be conducted in a variety of ways. This can be with the researcher present in a structured interview or a researcher-administered survey (Menter et al., 2011). They can also be self-administered by the participant (Cohen et al., 2011). Self-administered surveys are most often done through the post or online via the Internet. Online surveys invite participants to visit a website where the proposed survey is available (Bryman, 2012). Online surveys have many benefits. For one, an online survey can be programmed to respond to certain situations (Bryman, 2012). For example, a survey respondent may be prompted to answer a question before moving on, which is not possible in written surveys. In addition, survey data can be downloaded for ease of analysis.

Self-administered surveys have many positive traits. This type of survey allows a large sample group of people to be reached and offers little cost to the researcher (Cohen et al., 2011). As long as participants have access to the research tool, such as the Internet, they can complete self-administered surveys at a time and place of their own convenience. A researcher is not present for a self-administered survey, which preserves respondents' anonymity and may elicit more honest answers (Cohen et al., 2011). In this type of survey, participants choose to respond without the presence of a researcher. This can smooth the balance of power between researcher and respondent, which may be less equal in an interview (Cohen et al., 2011).

Self-reporting surveys can also be subject to issues because of the absence of a researcher (Cohen et al., 2011). Participants may provide answers that are not relevant to the questions asked, either because of a lack of effort or because they may misunderstand the questions (Cohen et al., 2011). A researcher needs to ensure that questions are written clearly and as specifically as possible when conducting a survey where participants will self-report. In order to mitigate potential misunderstandings, testing can be done through a pilot survey and peer review can provide an editing process to trial readability and comprehension. Taking these steps and making necessary adjustments increases the chances that the researcher and all respondents understand the questions in the same way in order to respect the time of participants and generate usable data.

A survey can include structured, closed or unstructured, open-ended questions. Structured, closed questions require that respondents can pick from predetermined answers (Bryman, 2012; Menter et al., 2011). These types of questions generate data that is more amenable to statistics and patterning. Although closed questions are quick for respondents to complete and fast for researchers to analyse, structured survey questions have some drawbacks. There is a risk that predetermined categories listed in closed questions might not encompass all necessary options for respondents, thus limiting accurate responses (Cohen et al., 2011). They could also provide bias that influences how a participant answers.

Unstructured questions are open-ended and will produce more word-based descriptions from respondents. Open-ended questions allow respondents to answer as they wish (Bryman, 2012; Menter et al., 2011). These types of questions can elicit more specific detail in respondents' answers that add detail to a particular situation (Cohen et al., 2011). Respondents can write freely, without the confinement of predetermined categories. Unstructured survey questions do also have limitations. Due to the open nature of the question, irrelevant or redundant information can be included in a response (Cohen et al., 2011). In addition, open-ended questions are more time consuming for participants, who may become exhausted or discouraged by answering in detail. For a researcher,

they can be challenging to analyse, requiring interpretation and coding of the response.

A survey has the ability to establish a large set of data through open and closed questions. The present study employs this mixed-methods approach in order to generate rich data. However, surveys can be limited in their ability to provide extensive nuanced detail on a situation (Cohen et al., 2011). Interviews can add crucial information and triangulate survey data.

3.4.3 Interviews

Interviews can increase clarity of data or validate other methods, such as surveys. The information gleaned from an interview is intended to enhance understanding of people's perceptions and experience and as a result is not suitable to contribute to generalised findings (Menter et al., 2011). According to Cohen et al. (2011), interviews are research instruments that are able go beyond data collection since they allow participants to express more in-depth opinions through conversation. In this sense interviews are more about life since discussion is embedded in society.

Qualitative interviews tend to be less structured than those conducted for quantitative survey research. Bryman (2012) provides a description of the two main types of qualitative interviews, unstructured and semi-structured. In an unstructured interview, a researcher may have prompts to stimulate responses, but respondents mostly speak freely and how ever they want. This type of interview is more like a conversation. In a semi-structured interview respondents are still encouraged to answer as they like, but a researcher has a list of questions that they would like to ask. Questions in this type of interview may not be asked in the exact same order for all participants, but the questions asked will mostly be the same for each person.

Interviews, regardless of type, are a popular research instrument because of their flexibility (Menter et al., 2011). Interviewees are able to ask clarifying questions to make sure they understand what is being asked as well as use their own terminology to answer questions (Menter et al., 2011). In an engaged, active discussion an interviewee can also shape the interview in unforeseen ways while an interviewer is able to adapt questions to elicit the most relevant discussion.

During an interview, a researcher may need to go beyond planned questions to get more detail and understanding of an answer. Specifying and probing questions can be used to gain a greater sense of the participants' thoughts and experience (Bryman, 2012).

Interviews can be conducted in-person or remotely through video conferencing or via telephone. In-person interviews or video conferencing have the advantage of being able to capture non-verbal communication in the discussion. Video conferencing or telephone interviews may be used where it is not possible for an interview to take place in person due to travel costs or scheduling (Cohen et al., 2011).

3.5 Research Design

This section details the research design of this study. An outline of how I became involved in this project is explained. An interpretive paradigm situated this thesis with a mixed method design including qualitative data being gathered through document analysis, a survey and semi-structured interviews, as well as some quantitative data through the survey. Detail of the documents that were analysed to set a context for education at DOC is given. Following document analysis, interviews were conducted with two education managers in order to gain a national perspective for education at DOC. A survey was offered to DOC educators, followed by interviews, which added depth to survey findings.

3.5.1 Research approach

I became interested in professional development for environmental educators following a contract I completed with DOC. Historically, DOC has employed a variety of approaches to education but with little coordination, strategy or long term planning. In 2015, the Education Resource Framework Project was undertaken by DOC management in order to learn more about what types of education resources were in use, their quality or their connection to current pedagogy or the curriculum. Employed as part of this project, I talked with DOC educators through a researcher-conducted phone survey, called the Education Resource Audit, to see what education resources were in use. I also began to ask DOC educators a little bit about their education practices and their thoughts on education at DOC. Upon completing this project, I submitted a final report to

DOC outlining the findings, as well as a list of teaching and learning resources that DOC educators reported using.

After my role in contributing to the Education Resource Framework Project was fulfilled, I contacted the Outreach and Education team to see if there was an opportunity to continue work in this area through my thesis. At the same time that the Education Resource Framework Project was going on, the *National Education Strategy Implementation Plan (Implementation Plan)* (Department of Conservation, 2015b) was also being developed. Through developing this plan, it was realised that there might be a gap in capability of DOC educators related to what would subsequently be asked of them in their work. I had contacted the team at the time when they were trying to figure out how to address the capability requirements of DOC educators. A needs assessment was necessary to find out what DOC educators may require to facilitate action-oriented conservation education (CE), since that is what is being asked of them in the *Implementation Plan*. After discussing the potential of working together on this project, a partnership was formed between members of the Outreach and Education team at DOC and myself to complete this work.

This specific project interested me for two reasons. For one, I believe that an action-orientation is essential in order to see change in the societal structures that contribute to environmental degradation. In order to facilitate an action competence approach, educators need to be seen as life-long learners themselves. Professional support for non-formal environmental educators is therefore an important research area and will be a key to seeing advancements in environmental education. The other motivation for this study was to provide a tangible piece of research that would be immediately applied in the real world. Since this study was done in partnership with DOC, the findings are aimed to help them improve the professional support they offer their staff. The data from this thesis might be used in future decisions DOC makes about education and professional support for their staff, so my work would be a useful piece of research. The intention is that this will have a broader effect on what the organisation can offer their staff, learners in Aotearoa/New Zealand and ultimately will benefit the environment.

3.5.2 Sampling

Participants in this study were a purposeful sample of people who were connected to education at DOC. To begin, two managers from the Outreach and Education team were interviewed for this study. These two managers were the main contact people for this thesis partnership, so understood both the background on the research project and had a national perspective of education at DOC. These managers agreed to support the study in its entirety and a working relationship was established in order to gain access to other DOC staff for the survey and interviews.

In order to invite DOC educators to participate in the project, a communications plan was developed between DOC's Outreach and Education team and myself. As part of this plan, a series of communications were developed to inform all staff of the study's purpose and details and invite them to participate in the study. Communications included DOC Intranet front-page stories, organisation-wide emails and information given at a face-to-face meeting by Outreach and Education managers. These communications explained that an independent University of Waikato Masters student was conducting the study, information gathered in the project would be confidential and that the findings would be used to enhance the professional support offered to DOC educators in the future. Sample emails that represent these communications are in Appendix A.

These communications asked DOC staff who were engaging in education to self-identify for the survey. DOC educators who wanted to participate in the study sent their email contact information to a designated DOC staff member who compiled a database. This generated a list of 67 potential participants, their location, role at DOC and whether they would be willing to do an interview following the survey. The list of potential survey participants was given to me, and I provided further direct communications at this point. Further communications included an email with a link to the survey (see Appendix B) and email reminders to complete the survey (see Appendix C and D). After one month of the survey being open, 50 completed surveys were generated from the potential list of 67 participants.

Fifty-two out of the 67 participants that initially signed up for the survey also indicated they would be willing to do an interview. Due to time and size limitations of this study, only 6 interviews with DOC educators were planned for. The 6 interview participants were further selected (in proportion to those who indicated willingness to participate) by gender (4 female, 2 male), geographical location (urban and rural) and position type (at the time: Services, Partnerships, Outreach and Education, other) in order to get a mix of perspectives. All six DOC educators who were initially contacted for the interview completed it. See Appendix E for the invitation email to participate in an interview.

3.5.3 Methods

For the present interpretive study three methods were selected to generate data about the experience, perspectives and opinions of DOC staff working in education. First, a review of relevant documents relating to education at DOC was carried out to understand the context for the study. Next, DOC staff operating on a national level, or education managers, provided their perspectives on DOC's national education strategy through interviews. Finally, DOC educators, commonly known as Rangers, were invited to share their perceptions of what they believed was needed for them to deliver CE at DOC through a survey and interviews. A detailed chronology is given below in section 3.6 *Data analysis*. More detail of how each research method was used is now given.

3.5.3.1 Document analysis

The document analysis carried out for this study relates to one of the thesis sub questions, 'What needs, including professional development, support and/or resources, are perceived to be important from a national DOC perspective?' Documents were searched for in order to gain an understanding of the current education strategy, implementation, aspirations and what is being asked of staff by the national office at DOC.

Four documents were initially read for this purpose. In order of reading, these included the *National Education Strategy 2010-2030 (Strategy)* (Department of Conservation, 2011a), *Effective Approaches to Connect with Children with Nature* (Wilson, 2011), the *Education Resource Audit Report* (Bianchi, 2014) and the *Implementation Plan* (Department of Conservation, 2015b), which has been

mentioned previously. The *Strategy* sets the goals and objectives for education at DOC. *Effective Approaches to Connect with Children* was published alongside the *Strategy* in order to assist with implementation of goals and objectives. As previously discussed, the *Education Resource Audit Report* was a piece of work that I authored and that was intended to shine light on teaching and learning resources currently in use by DOC educators. Written a few years after the *Strategy*, the *Implementation Plan* aims to set a tactical plan for education in order to have the impact that DOC is aiming for.

To begin, the documents were read to get a general sense of their meaning. This prompted some initial questions (see Appendix F for the document analysis questions). These questions were related to what education might mean at DOC and how staff should carry out CE. This provided a framework relating to what CE would involve or what things would impact conservation educators. Keeping these things in mind would allow documents to be read and understood in order to gain a better sense of the current education situation at DOC. Arising questions were put in a table and compared to literature that related to best practice in CE. Following this, I reread the documents trying to answer formed questions based on my understanding of what each document provided in terms of definitions and guidance. This resulted in a table of my initial questions, related literature, the DOC document that may contribute to the answer and either a summary or a quote from that document which indicated an answer.

The main document that provided the most relevance to the questions I initially asked was the *National Education Strategy Implementation Plan*. This document provided elucidation about what is being put forward in terms of DOC's role and objectives in CE, what pedagogical underpinnings might guide best practice as well as implementation themes. The *Strategy* provided a basis for education objectives while *Effective Approaches to Connect Children to Nature* also described best practice. The *Education Resource Audit Report* provided some initial clues on whether there would be synergy between what the *Implementation Plan* suggests and what DOC educators might believe they need to facilitate CE.

In the end, two main documents were emphasised in this study because of their relevance to the present education situation at DOC. These were the *National Education Strategy 2010-2030* and the *National Education Strategy Implementation Plan*. The *Strategy* is a document that is publically available on DOC's website (Department of Conservation, 2011b). This document intends to declare DOC's education policy publically as well as for staff. The *Implementation Plan* was written by the current Outreach and Education team, or education managers, and is an internal document that aims to provide guidance to staff on how to uphold DOC's education policy. I kept the fact the *Implementation Plan* was written by education managers in mind throughout the study. Although the *Strategy* did not featured heavily in the document analysis table I created to help me analyse the data, the *Strategy* is seen to be foundational in the development of the *Implementation Plan*. Further elucidation of the intention and meaning behind these documents was made through interviews with education managers. The *Implementation Plan* was also discussed with DOC educators in the survey and interviews to gain an understanding of the document from their perspectives.

3.5.3.2 DOC educator survey

Surveys allow a wide group of people to be reached in an interpretive study, so were an appropriate instrument for use. The questions and national perspectives that arose out of the document analysis and the Outreach and Education manager interviews informed survey questions. The survey was intended to elicit information about who DOC educators are, what their thoughts on conservation education were, and what they might need in terms of professional support.

Draft survey questions were made and sent to two Outreach and Education managers who provided feedback on the wording and readability of questions. DOC's resident social scientist also provided feedback on the draft. After adjustments were made, a pilot survey was given to four environmental educators outside the DOC network to test readability and understanding. Timing, number of questions and understanding seemed appropriate from the pilot survey so no further adjustments were made. A final 29-question SurveyMonkey survey was created (see Appendix G). Survey participants were also informed that a paper survey could be sent to them, however no one selected this option. The online

survey prompted participants to complete the majority of the questions, rather than being allowed to skip some as could be done in a paper survey. Offering an online survey was also helpful in reaching participants across the country at a low cost. Questions were grouped in the following themes:

- Demographic information
- Conservation education
- Best practice and formal education
- Support, knowledge and professional development
- Evaluation and monitoring projects
- The *National Education Strategy Implementation Plan*

The survey included closed, multiple choice and scalar questions, as well as open-ended questions. Closed questions and scale questions were used to gather information to see patterning or trends that would be helpful for DOC reporting. Scale choice questions were used to get a sense of the level of belief DOC educators had in relation to topics. Open-ended questions allowed participants to express ideas more deeply and richly, adding insight into the closed question responses. Information about informed consent was given at the beginning of the survey. By completing the survey, participants consented to be included in the study. Since the survey was available online through SurveyMonkey, participants could log in and take the survey over the course of multiple days until completed. As a result, there is no reliable way to determine how long the survey took participants to complete.

I sent out the survey invitation to all 67 participants on the list through email. The survey invitation included a link to the survey, a brief explanation of the survey and the researcher's contact details (see Appendix B). A reminder email was sent out approximately three weeks after the open of the survey (see Appendix C). The survey was closed approximately one week after the reminder email was sent out so the survey was open for approximately one month (see Appendix D).

3.5.3.3 Interviews

Interviews were selected as a research tool in order to develop further description of the education situation at DOC. First, this method was employed to understand what the interpretation of the DOC strategy for education might be from a

national perspective. These interview questions were based on questions that arose out of document analysis, which is discussed above. They were designed to gain insight into the education situation from a national perspective and understand the *Strategy* and *Implementation Plan* further. Since no other equivalent people could be identified to test interview questions with, there was no prior reading of the interview questions. Two Outreach and Education managers completed an interview, one in person and one through Skype. These discussions were guided by 26 questions on the following themes (see Appendix H):

- How the *National Education Strategy 2010-2030* and *National Education Strategy Implementation Plan* were developed
- Who these documents are intended for and who would be involved in education
- How the *National Education Strategy Implementation Plan* was disseminated
- Principles of the *National Education Strategy Implementation Plan*
- What professional support is available for DOC educators
- The desired outcomes for education at DOC

These interviews lasted an average of an hour and 15 minutes.

Following an initial analysis of the documents mentioned, national perspective interviews and survey data, DOC educator interview questions were developed. DOC educator questions were aimed at eliciting a further description of DOC educators' experiences, opinions and beliefs about conservation education at DOC. Phone interviews were deemed to be the best option due to the spread of the six DOC educators to be interviewed around the country. These took place at a mutually convenient time. A draft of the interview questions was provided for two Outreach and Education managers to read and comment on and a test interview was made with an environmental educator outside the DOC network to ensure readability and understanding. Following edits, thirteen questions guided the conversation, including questions on the following themes (see Appendix I):

- Past and present experience in education
- Thoughts on education pedagogy

- Specific areas of professional support
- Clarity on the *National Education Strategy Implementation Plan*

These phone interviews took an average of 28 minutes to complete.

Before all interviews started, written consent was obtained and verbal confirmation was made that participants understood the nature of the interview, their confidentiality and their right to withdraw. Any questions regarding these topics or other aspects of the project were answered at the beginning of the interview. As the interviews progressed, all were guided by a set of predetermined questions. The conversations were allowed to deviate or be clarified when appropriate, thus all interviews were semi-structured. All interviews were recorded on an iPod and later transcribed. Following this, transcribed interviews were emailed to participants for review.

3.6 Data analysis

Analysing qualitative data is a difficult task since information can be so rich (Bryman, 2012). According to Bryman (2012), there is a risk in failing to see how a study can relate to the wider world if a researcher is captivated by all of the detail available in data. In order to strike a balance between portraying the complexity of what people have expressed and create a digestible piece of research, data analysis procedures need to be in place. The following chronology outlines the data analysis process for this study, with more detailed descriptions of the analysis method following:

- Document analysis:
 - Four documents read for general understanding
 - Initial questions formed (see Appendix F), placed in table to see relevance to literature
 - Two documents emphasised to look for answers to initial questions
 - Outreach and Education manager interview questions formed (see Appendix H), placed in table
- Outreach and Education manager interviews conducted
 - Relevant transcribed text was summarised using MS Word's comment tool

- Survey questions formed based on document analysis and Outreach and Education manager interview analysis, summary table created
- DOC educator survey formed (see Appendix G)
 - Closed and scale choice questions downloaded using SurveyMonkey's MS Excel analysis tool, trends reviewed
 - Open-ended questions downloaded from SurveyMonkey, coded/recoded and analysed
 - DOC educator interview questions formed, placed in summary table
- DOC educator interviews conducted and transcribed
 - Transcribed text highlighted and coded with survey trends in mind, MS Word's comment tool used
- Analysis synthesised in findings chapter

3.6.1 Document analysis

As Bowen (2009) advises, document analysis should comprise providing an initial, superficial examination of relevant material followed by thorough reading and interpretation. Four documents were initially reviewed in this study to get a general sense and form first-impression questions, as discussed in section 3.5.3.1 *Document analysis*. Following this, the *Strategy* and *Implementation Plan* were examined more thoroughly as they related to research questions and relevant literature. Reflection was also made to consider the situation in which the documents were produced, their intended audience and what significance this might have to different staff at DOC. Major question themes that came out of analysing these documents were:

- The need to determine what DOC's role in education is
- How can DOC staff contribute to DOC's education objectives?
- What pedagogical underpinnings are guiding and being expressed through education at DOC?
- How will best practice be implemented?
- What resources are needed to implement best practice?
- Is their synergy between what is being promoted nationally and at a regional/local level?

The analysis of these documents allowed for Outreach and Education manager interview questions to be formed. Interviews conducted with the Outreach and Education managers contributed to an understanding of the thinking that was behind the *Strategy* and *Implementation Plan* as well as what these documents represent nationally. DOC staff at both the national and regional level then subsequently commented on their understanding of the *Implementation Plan* and what that represents for their work in education.

3.6.2 Survey analysis

The SurveyMonkey survey was open for approximately one month to allow time for participants to fit it into their work schedules. After the survey closed, incomplete surveys were discarded, as this indicated consent to use the data had not been given. This resulted in 50 complete surveys.

SurveyMonkey automatically logs responses, which allows datasets to be downloaded for review. Closed survey question data were downloaded, organised and analysed using SurveyMonkey's MS Excel format. SurveyMonkey's MS Excel format collates data into tables and graphs that can be verified and modified as needed. To begin, I confirmed the data had been handled correctly through verifying numbers and percentages were accurate. This allowed me to make sure there were no automatically generated errors with the data. Next, I modified the tables and graphs into a format that I felt best showed the data in a simple and effective way. Each closed question had a page in an MS Excel spread sheet that could be flipped through easily. This allowed me to see what trends might be occurring through comparing questions.

Open-ended survey question responses were also downloaded from SurveyMonkey and coded. Coding consisted of looking at each response for a given question to determine appropriate labels that seemed important or offered a trend (Bryman, 2012). The themes emerged from the data and were guided by literature as well as the documents that were analysed. Responses in a code were compiled in a list and tallied to get a sense of the frequency in which they were discussed. This process was repeated twice for each open-ended question in order to gain a solid understanding of responses and provide quality coding. For some questions different codes were made during the second coding process. A sample

of coding was peer-reviewed for verification of codes and any changes incorporated.

3.6.3 Interview analysis

Recorded interviews were first transcribed into MS Word documents and sent to participants for review. Participant-verified transcribed interviews were then read to get a general sense of what was said. Following this, the transcriptions were read as a part of a deductive analysis, or an analysis that reflects the research questions and related concepts (Menter et al., 2011). Inductive analysis was also conducted to allow ideas to emerge from the text. In both cases, points were highlighted that related, elucidated or contributed to key findings. This process consisted of highlighting chunks of text and using MS Word's comment tool. For Outreach and Education manager interviews this consisted of using the comment tool and summarising the points that were being made or further questions that were raised. DOC educator interviews were conducted following the DOC educator survey, so analysis was made through either highlighting transcribed text for coding purposes or summarised and coded using the comment tool. Trends found through survey analysis discussed in section 3.6.2 *Survey analysis* informed the DOC educator interview questions. As a result, these interview questions related to the responses given in the survey. Scope for these interview questions was left intentionally open for interviewees to add additional ideas or for the researcher to ask probing questions so ideas not seen in the survey could develop.

3.7 Limitations

A small number of limitations need to be considered for this study. For one, not every staff member who works in education at DOC participated in this study. This study therefore only represents the thoughts of those who participated in the study. The survey was designed to be self-reporting, so answers could not be verified for accuracy. For example, this could mean that certain concepts in conservation education might be misunderstood but reported with high confidence or understood well but discussed with low confidence. Due to time and scope limitations, there was a restricted ability to follow up with survey participants through an interview.

3.8 Quality of research

A researcher in a qualitative study is part of the world they are exploring, so cannot be completely objective (Cohen et al., 2011). Still, a number of qualities and steps can help ensure that a study is trustworthy (Bryman, 2012). Dependability and confirmability are two aspects of trustworthiness. Dependability can be shown when an accurate account of what occurred is available (Bryman, 2012). One of the ways to do this is to be transparent in methodology, data analysis and personal interests. I attempted to do this every step of the way, as indicated in this chapter. Confirmability is demonstrated when a researcher has been shown to act in good faith. I have endeavoured to maintain integrity in the research process and provide as truthful a portrayal of information as possible.

Providing a credible study is another way to ensure the quality of research. This can be done through triangulation and respondent validation (Bryman, 2012). Using more than one source of data, or triangulating, increases the confidence that findings are an accurate portrayal of what has occurred. Triangulation of three methods was used in this study through conducting document analysis, a survey and interviews. Also in order to ensure the credibility of this study, peer review was done for survey and interview questions and thematic codes during analysis. Piloting the survey and DOC interview questions enhanced the validity of these. As well, participants verified interview transcriptions and initial findings were presented to two members of the Outreach and Education team at DOC. According to Bryman (2012), respondent validation is a process where the researcher provides a group of people or organisation the impressions or findings from a study to gauge feelings about the draft.

3.9 Ethical issues

Acting in an ethical way was crucial in this body of research. This study was undertaken according to the ethics guidelines outlined by the University of Waikato with the approval of the Human Research Ethics Committee (see Appendix J for ethical approval letter). Steps to preserve the confidentiality and obtain the authentic informed consent of participants during the survey and interview process were planned for and adhered to.

There was an existing relationship between two members of the national DOC team and myself. This is based on a partnership formed through a previous DOC contract in which I carried out research for the Outreach and Education team. The nature of the relationship between these DOC staff and myself was determined not to interfere with the ethics of the study. The two education managers involved in this study agreed to provide the support needed to complete the current project and participate in interviews to gain an understanding of education at DOC from a national perspective.

Informed consent for Outreach and Education manager participation was initially gained from their line manager (see Appendix K). Due to their positions, it was not possible to hide the identity of the two DOC managers involved in this study. This was disclosed through the informed consent letter and verbally confirmed prior to interviewing in order to ensure that they agreed to partake with this in mind. The DOC managers chose not to have a pseudonym used in place of their names.

Access to survey participants was through DOC channels. A series of three emails, along with Intranet front-page stories, were sent out to staff outlining the opportunity to participate in the project. Interested candidates were invited to self-identify for the study. DOC educators who wanted to participate were then asked to contact a DOC staff member who compiled a database of interested parties.

Consent for staff participation was initially gained from the Director of Community Engagement through a formal letter (see Appendix K). This letter outlined the points of contact for DOC staff, what the nature of that contact would be and how much of their work time would be required. Consent for staff participation was also gained from the national Outreach and Education manager (see Appendix L) with the same details. Following this, a letter seeking consent was given to all interviewees that explained the project and how their participation will be kept confidential and their information secure (see Appendix M). This communication also included how much time participants were being asked to give. Consent letters were sent digitally or through the mail.

For participants volunteering for the survey, ethical information appeared in the three invitational email communications. Information about privacy and confidentiality was also available at the beginning of the SurveyMonkey survey. By completing the survey, participants consented to the use of their submitted data in the study. All incomplete surveys were deleted prior to data analysis.

Participants were asked to volunteer 20 to 60 minutes of their time in order to partake in the study. In addition to trying to minimise time commitment, measures were also taken to ensure that participants felt secure about their involvement. Since this study was being conducted through a workplace, care needed to be taken to make sure that participants did not feel coerced into joining. This is why participants were initially given the opportunity to self-identify to join the study and the survey was self-administered. Pseudonyms for these and all other participants were used where applicable. All personally-identifying information, such as reference to location, was also removed. Other than in its aggregate form, data is not available to anyone except myself. If all privacy and consent procedures are followed, no other harm should come to participants because their information will be secure.

3.10 Chapter Summary

This study is a small scale, interpretive study of conservation educators' professional development needs within DOC. The intention of this study is to contribute to DOC's understanding of what professional support their staff working in education might need in order to do their jobs and to achieve DOC's education goals. In order to gain a clear picture of the situation at DOC, data was triangulated through document analysis, a survey and interviews.

Document analysis was completed in order to understand the context of education at DOC as well as what is being asked of staff. This was coupled with interviews and a survey to elicit information and discussion about the nature of education at DOC. Participants were a purposefully-selected group of people. This included two DOC education managers who provided a national perspective on education at DOC through interviews. DOC staff working in education, commonly known as Rangers, were invited to self-identify as someone who worked in education. This generated a list of 67 potential survey participants and out of this number, 52

potential interview participants. At the closing of the survey, 50 participants completed a survey. The responses from the survey were further elucidated by 6 DOC educator interviews. Care was taken to involve all participants ethically and with respect.

The methods in this study aimed at generating data that can help shape decisions about professional support for conservation educators at DOC. This interpretive study offers a portrayal of the experiences and meaning making of DOC educators while offering some concrete examples of how professional support could look moving forward. The findings of the study are presented in the next chapter.

Chapter 4 Findings

4.1 Chapter overview

This chapter includes key findings from the data collection. A background on education within the Department of Conservation (DOC) is included to contextualize their current approach to education. This explains what past educational efforts have been made in addition to a review of the development of two guiding documents, the *National Education Strategy 2010-2030 (Strategy)* and the *National Education Strategy Implementation Plan (Implementation Plan)*. These documents represent an effort to coordinate an approach to education within DOC. As a result of the work that has been done to strategize education at DOC, staff may be asked to work in a different way than before.

The present study sets out to indicate some of the types of professional development, support and resources that could be helpful for DOC educators to do their work moving forward. There are no specific DOC educator positions, so DOC staff who do education as part of their job are described with some demographic information to get a sense of who these people are. Following this, some of the skills, knowledge and capacity DOC educators might need are discussed. Determining necessary skills and knowledge could indicate areas for professional development while identifying capacity could show what resources might be needed. Areas for support are also discussed. Support refers to the guidance, networks and provision of professional development and resources that might facilitate an educator doing their job. Data from the survey is presented in graphs where appropriate, and with quotes for open-ended responses, with attribution given as (Rxx), indicating the survey response number. Interview data is quoted using pseudonyms for the DOC educators.

4.2 DOC's education role and strategy

Historically, a variety of educational approaches have been used at DOC, although these have not been coordinated into long term strategic planning. Education has typically been done in a more reactive rather than proactive manner. More recently efforts have been made to set objectives and pathways to achieve longer-term outcomes for education at DOC. This is shown through the

development of the *Strategy* and the *Implementation Plan*. These guiding documents may represent a shift in what will be required of DOC educators.

4.2.1 Past education efforts

Previously DOC has participated in education in a variety of ways. As Bolstad, Joyce and Hipkins (Bolstad et al., 2015) report, DOC is known to have approached Environmental Education/Education for Sustainability/conservation education (EE/EfS/CE) through at least five forms of engagement. This includes working with other education providers (such as Enviroschools, www.enviroschools.org.nz/), participating in community-driven, place-responsive projects (such as Kids restore the Kepler, www.kidsrestorethekepler.co.nz/), producing teaching and learning resources, providing Learning Experience Outside the Classroom (LEOTC) funded conservation educators and giving one-off talks and presentations (often referred to as ‘Dial-a-ranger’). With many different ways to interact, CE could have been variant depending on the skills and capacity DOC educators had available in a given location. In an interview, Outreach and Education manager, Kerry described this:

So our old approach was very reactive, quite ad hoc, so different things happening in different necks of the woods depending on which office you were in and the level of staff, experiences and competencies in education in each of those offices.

With little to no coordinated effort and multiple forms of engagement being pursued, the type of education being offered was often through a need-basis rather than through strategic planning.

In some cases, past education efforts at DOC may also have focused more on knowledge transmission. Sarah, an Outreach and Education manager, expanded on the content of former CE at DOC, explaining:

Traditionally in the past we have seen our role as sharing our knowledge and to a lesser extent sharing our skills with students so it has always been a knowledge transfer role. So we know a lot about conservation, we know a lot about species and so we have seen our role just as disseminating that knowledge to schools. I think the difference by that and where we want to head is where we recognise that actually that alone doesn’t achieve the

outcomes we are looking for from a conservation perspective and it doesn't achieve what education is looking for.

In order to organise a deliberate plan for education with pedagogy aimed at learning *in, about* and *for* the environment, DOC has since developed the *National Education Strategy 2010-2030* (Department of Conservation, 2011a) and the *National Education Strategy Implementation Plan* (Department of Conservation, 2015b).

4.2.2 National Education Strategy 2010-2030

The *Strategy* was compiled in 2009 by a small team of DOC staff, with input from external stakeholders such as Ministry of Education, with its release in 2011. This document sets DOC's goals and objectives for education. The aspirational goal published in the *Strategy* "is that by 2030 one million conservation kids are connecting with nature and restoring New Zealand's natural and historic heritage because they understand and value its contribution to their quality of life." (Department of Conservation, 2011a, p. 2). The aspiration is that all youth under the age of 18 have conservation experiences in the environment that help form positive attitudes toward, and values for, conservation. Through engaging young people in conservation, a ripple effect is expected to occur where other people in the community will also be involved in conservation. A limited outline on how to implement education is included in the *Strategy*. As a complement to the *Strategy*, *Effective Approaches to Connect Children with Nature* (Wilson, 2011) was published in order to offer some pedagogical themes for CE. This includes making environmental learning relevant to a child's everyday life by exploring their local area, including the wider community in learning and providing opportunities for social connections (Wilson, 2011). The document also promotes using an action competence approach and encouraging free-choice learning, or learning that is self-paced and based on inquiry (Wilson, 2011). Thus an approach is being advocated for CE to include experiences *in* and *for* the environment as well as *about* it. While the *Strategy* and *Effective Approaches to Connect Children with Nature* provide aspirational goals and pedagogical direction, neither document offers guidance on how these can be practically applied in a DOC educator's work.

4.2.2.1 Definition of conservation education

According to the *Strategy*, DOC's definition of CE is aligned with an action competence approach. An educational process that aims to develop knowledge, values and skills is associated with action competence, or the ability to participate as an active citizen for the environment (Jensen & Schnack, 2006). The *National Education Strategy 2010-2030* states that education activities at DOC should "aim to develop knowledge, values and skills in young New Zealanders so they may be confident, connected and actively engaged learners, who are able to sustain and care for their environment now and in the future." (Department of Conservation, 2011a, p. 3). A quality DOC education programme is characterised as one that has a "structured approach to learning and develops mental, emotional and physical competencies to help young people participate in their world as critical, informed and responsible citizens." (Department of Conservation, 2011a, p. 3). In addition, the *Strategy* interprets that "viewing the natural world as a single entity made up of a number of interrelated, interconnected webs" is the explanation of CE from a Māori perspective (Department of Conservation, 2011a, p. 3).

4.2.3 Development of the National Education Strategy Implementation Plan

After an organisational restructure, DOC's Outreach and Education team inherited the *Strategy*. At that time they evaluated the *Strategy* and determined that further work was needed on how to implement DOC's education goals. Outreach and Education manager, Sarah, explained in an interview:

One of the things that we very quickly determined was that the *Strategy* was fundamentally sound but what the organisation was looking for was more tactical direction and more detail around how that strategy could be applied and how we would use it to drive the choices we made about the work we did, particularly at a local level. So basically what we had was the *Strategy* and a whole lot of work happening on the ground but what we had was a gap in the middle in terms of action for implementation of the *Strategy* and pragmatic, tactical approaches for our education work.

In order to expand on the *Strategy*, an internal working group was established (Sarah, interview). This was comprised of people from the DOC business groups of the time in order to gain different perspectives within the organisation. In addition to the Outreach and Education team, this included members from the Services, Partnerships, Kahui Kaupapa Atawhai and the Science and Capability

team. This group provided the “initial thinking that drove the thematic approach” as well as the development of the five themes that appear in the *Implementation Plan* (Sarah, interview). After this foundation was established, Sarah explained that, “we continued to use that working group for feedback and comment and input as we developed the drafts and as we moved toward the final document.” The *Implementation Plan* was formed with input from those outside the Outreach and Education team in the national DOC office.

Some external people and organisations were also involved in providing feedback on the direction DOC was pursuing. Kerry, a manager, described this in an interview:

So teachers were consulted in an informal sense. So we are working with teachers on different project work and we talked to teachers in that sense. We also talked to partners such as Enviroschools, like a key national partner, we brought them into the loop in that drafting stage so they could give us feedback and also so we could have the discussion, “this is where we are heading”. Are our shared values still shining through in this direction, can you see this working in our partnership? And we got really positive feedback.

In addition to informal discussions about where education at DOC was going, the *Implementation Plan* also underwent a process of peer review through the University of Waikato (Kerry, interview).

4.2.4 Outline of the National Education Strategy Implementation Plan

The intention of the *Implementation Plan* is to move to a strategic, long-term approach to CE that delivers quality conservation and education outcomes (Sarah, Outreach and Education manager, personal communication). The *Implementation Plan* describes principles and themes to guide this new approach to CE at DOC. Sarah, a manager, noted in an interview that this redefines DOC’s role in education:

DOC’s role is to support schools to incorporate environmental learning for sustainability into their teaching and learning for their programmes and to use conservation education as a contact to do that. ... I think we’ve got a role in supporting and encouraging community to support schools ... but what I mean there is that we have got a broker role, we have an enabler

role in terms of connecting our schools with communities who have got something to offer to help them achieve what they are looking for and I think that fundamentally our role in conservation education is to make education engaging, relevant, appealing and kind of worthwhile for schools.

The *Implementation Plan* expands on the *Strategy* to state how DOC can support schools to utilise CE. This explicitly states that DOC's strategy to do this will shift focus from working only with students to working more directly with teachers. DOC staff, who are not education experts, are seen to have a lot to offer teachers through providing support to utilise conservation education for learning. By supporting teachers to make CE worthwhile for schools, more students can be reached.

The *Implementation Plan* aims to set the approach and define DOC's education role with schools and community members. This also represents how DOC will participate in education on a broader scale. Sarah explained:

There is another aspect to our role, which I think we sometimes don't acknowledge enough and that's that we are a central government agency. We are a reasonably big player in terms of ...conservation education and environmental education with MfE [Ministry for the Environment] and MoE [Ministry of Education] and so we have quite an important leadership role in terms of looking at the whole sector and working with other government agencies and other kind of national partners to lift and support and improve the way the sector is working as a whole.

The *Implementation Plan* is an internal document that is intended to provide guidance to DOC educators (Sarah, interview). This establishes DOC's place in education with stakeholders, as well as outlines some general implementation actions from 2015-2025. These coincide with the implementation themes stated in the document.

4.2.4.1 Key principles

The foundation of the *Implementation Plan* is based on three principles. In the context of education at DOC, "Mātauranga Māori" (Māori knowledge/wisdom) is one of the key principles that prioritises exploring and integrating Māori perspectives throughout conservation education (Department of Conservation,

2015b, p. 8). In doing this young people will have the opportunity to “connect the history and whakapapa [genealogy] of their local places” as well as the “relationship between the people and the whenua [land]” (Department of Conservation, 2015b, p. 8). By “working to strength” DOC will aim to add value to conservation education in their areas of expertise, such as protecting and monitoring species, restoration and heritage (Department of Conservation, 2015b, p. 7). The idea of working to strengths recognises that there are other people and organisations who can also contribute unique skills and knowledge for education. Another key principle, “working with others” is based on working in partnership (Department of Conservation, 2015b, p. 8). Partnership between DOC, schools, businesses, local and national organisations will give students the opportunity to work with different perspectives in order to solve complex environmental problems (Department of Conservation, 2015b). Working collaboratively also allows organisations to share resources and opportunities.

4.2.4.2 Key themes

Five areas of focus have been developed to help achieve goals and objectives set out in the *Strategy* (see figure 1). ‘Building DOC’s capability’ refers to supporting DOC educators to build an understanding of CE and the wider themes of EE/EfS. This theme also encapsulates helping staff to build their capability to support and deliver EE/EfS/CE (Department of Conservation, 2015b). The *Implementation Plan* may represent a change in the way that some DOC educators have worked in the past. Thus, determining what professional support DOC educators need is part of ‘building capability’ and is the driving force behind the present research.



Figure 1: Key themes of the National Education Strategy Implementation Plan

According to the *Implementation Plan*, DOC's new direction will focus on investing in youth from early childhood to secondary school through supporting their teachers. This correlates with "building a nation of conservation education teachers" (Department of Conservation, 2015b, p. 13). Part of DOC educators' role in education will be to support teachers to confidently deliver conservation education. This includes conservation education in the classroom and in the outdoor environment. "Teaching and learning outdoors to create place-based connections" is another theme (Department of Conservation, 2015b, p. 15). This encompasses children's need to access outdoor space as well as teacher's need to have the skills and knowledge to use the environment for learning.

The "Conservation education in partnership" theme recognises that DOC is one of many capable contributors to CE (Department of Conservation, 2015b, p. 17). Through this theme, DOC intends to set the priority to engage with partners who share their values and goals in order to have maximum impact in CE. As discussed in section 4.2.3.1, this is possible through sharing resources, opportunities and perspectives. These partnerships can help facilitate quality education programmes that foster youth's confidence, connection and active engagement in their environment, which aligns with the "youth-led conservation education" theme (Department of Conservation, 2015b, p. 15). The intention is to

support young people to engage in conservation action through authentic leadership roles.

4.2.5 Implementation Plan circulation and understanding among DOC educators

The *Implementation Plan* was circulated internally based on a strategic communications plan. This included presentations to various levels of staff at DOC so the ideas in the document could be socialised and questions could be asked (Kerryn, interview). Accompanying this effort were Intranet front-page stories to launch the *Implementation Plan* and provide examples of related work on the ground. Circulating the document among staff has resulted in the majority (72%, 36/50, question 24) of DOC educators who participated in the survey reporting that they have read the *Implementation Plan*. DOC educators who participated in the survey were also asked if they would or would not like to use the direction outlined in the *Implementation Plan* in their work. A similar percentage (77%, 28/36, question 26) of participants who answered this question indicated that they would like to do this. This shows that there is a general level of receptiveness to what the *Implementation Plan* offers DOC educators.

In order to provide guidance on how to use the *Implementation Plan*, the Outreach and Education team set up an online discussion board for DOC educators and followed up with webinars, phone conversations and Skype conversations nationwide. Outreach and Education manager, Kerryn, described one particular webinar:

It was mostly [attended by] people that we already knew that were working in the education space and when we asked them what questions they had, the vast majority of them didn't have questions about the plan. They read it, they got it, it was clear to them, but what they wanted help with is 'I've got this project, and I have been doing this, but what should I do next?' So it was that, that how do I apply the plan to this particular project that I have already started?

While DOC educators might understand the *Implementation Plan*, it may be more difficult to see how this could be applied to their work. Kerryn explained why this may be:

It's a very complex thing that we want to create because we are talking about values and social identity and a connection to place so there is a whole lot of layers of complexity around that and that looks different for different people based on their experiences and where they are too. But also for people to understand conservation they need to understand that from different perspectives, not just the one so its no right or wrong answer when it comes to conservation people actually need to understand that it is complex and there are complex issues and challenges that we are dealing with conservation in New Zealand and there's not one silver bullet and there are different ways of looking at things and we need to understand all of those ways if we are to move forward collaboratively to protect and restore and ensure that we have a healthy place to live.

What is being proposed in the *Implementation Plan* is an action competence approach to education, which takes time and diligence to work toward. Since this could represent a change in how DOC educators have worked in the past, additional professional support is needed to help them understand how to apply this to their work.

4.2.6 Summary

Formerly, DOC educators could have done education in a variety of ways with no unified national objective. Now, the *National Education Strategy 2010-2030* sets the goals and objectives for education at DOC while the *National Education Strategy Implementation Plan* aims to outline how those may be achieved. Three key principles and five key themes provide the foundation for the latter document. One of the biggest changes in the new approach is having DOC educators directly support teachers to utilise conservation for education. While there was a general level of support among staff for the *Implementation Plan*, DOC educators also expressed needing additional help to apply the approaches advocated for to their work. The *Implementation Plan* might represent a difference in what is being asked of DOC educators from the past, so additional support may be needed for staff to do their jobs.

4.3 Who are DOC Rangers working in education?

“Working to strength” is an underlying principle and “building DOC’s capability” is a theme of the *National Education Implementation Strategy Plan* (Department

of Conservation, 2015b, pp. 7, 11). To enable DOC educators to contribute to conservation education effectively, it is essential to understand who they are and what their strengths may be. In order to get a sense of who identified themselves as DOC educators for this study, a small amount of demographic information such as age, gender and locale was collected. DOC educators were also asked questions to see what their orientation toward education might be.

4.3.1 Demographics

4.3.1.1 Locale

Prior to the survey, DOC staff were asked by DOC managers to self-identify as someone who worked in education and who might be prepared to be involved in this study. This self-identification generated a list of 67 potential survey participants. DOC staff, or Rangers on this list supplied their contact details, the location of their work and their current position.

Rangers who volunteered their information on the pre-survey list showed that they work in a range of settings across the country. These locations were classified as either urban or rural using Statistics New Zealand's (2001) urban/rural profile classification. This showed that roughly half (52%, 32/67) of Rangers who self-identified for the survey are working in rural locations while the other half (48%, 32/67) are working in urban locations. No correlations were examined between location of work and findings due to this even split, but this finding does imply the need to have professional support suited to multiple scenarios.

4.3.1.2 Gender and age

Of the 50 DOC educators who completed the survey, 70% (35/50) were women and 30% (15/50) were men. According to DOC's *Annual Report for Year Ended 30 June 2015* (Department of Conservation, 2015a), the organisation included 39.8% women employees. The high number of women participating in CE at DOC, especially compared to DOC's organisational percentage, is consistent with anecdotal evidence that environmental education is a female-dominated field. Most (78%, 39/50) survey respondents were over 35 years old with the majority (50%, 25/50) of respondents indicating they were in the 36-50 years range (see figure 2). This shows that the majority of staff surveyed in this study were mid to late career. No correlations were examined between age and other findings.

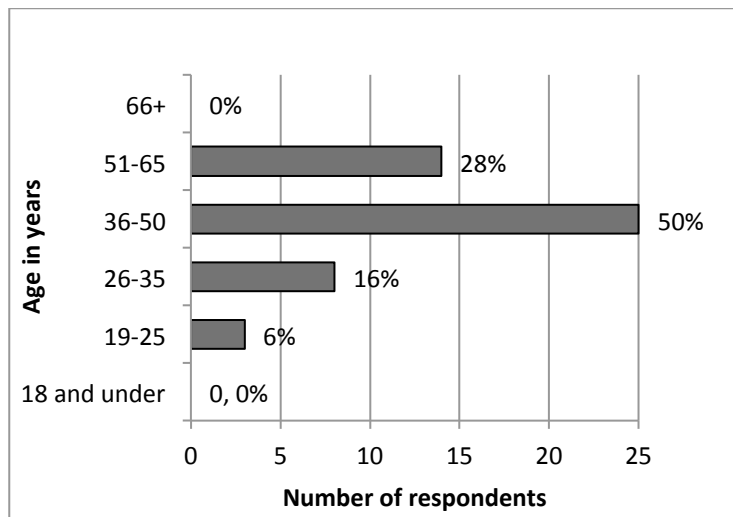


Figure 2: Question 1, age demographics of survey participants (n=50)

4.3.1.3 DOC educators' positions and time with organisation

Rangers who volunteered for the study gave their position within the organisation. The findings from this are reflective of the structure of DOC at the time the survey was taken and may not represent the current structure or positions held. At the time of the study, the majority (64%, 43/67) of the Rangers on the pre-survey list indicated that their current position lay within the Partnerships team (see figure 3). Some of the things a Partnerships Ranger may be involved in are associated with land management and concessions. Members of the Services team (13%, 9/67), associated with biodiversity, were the next biggest group. The remainder of staff were spread across the Outreach and Education team (9%, 6/67), associated with regional and national education coordination; and visitor centres (3%, 2/67). Nine per cent (6/67) of potential survey participants did not fit into any of these positions and were placed in the “other” category. The positions listed in this category were very specific so will not be detailed in order to preserve the anonymity of the participants. As noted, DOC has undergone a restructure since the time of this survey so DOC educators may now be working in different positions or reporting to different management lines.

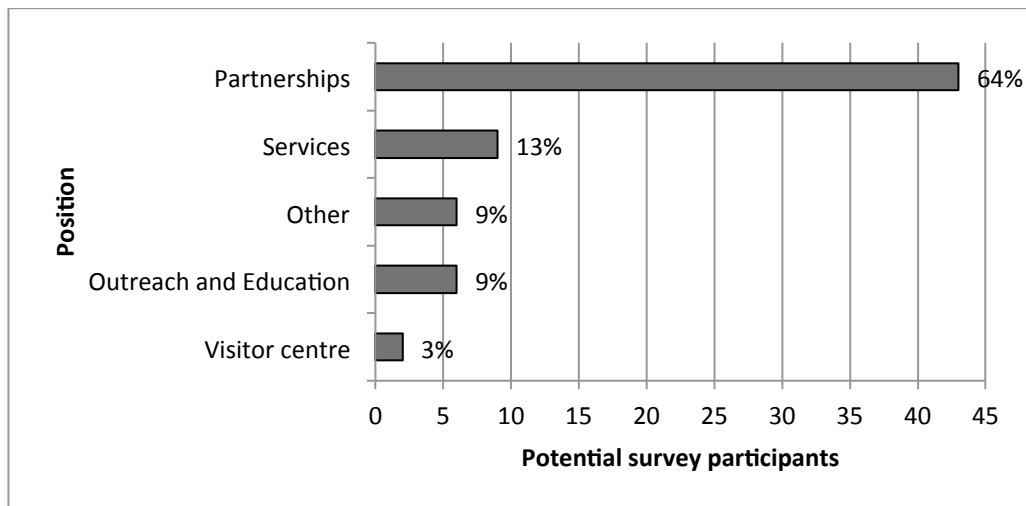


Figure 3: Potential participants' positions within the organisation (n=67)

Rangers, or DOC educators, who went on to complete the survey were also asked how long they had been working within DOC and how long they had been in their current role (questions 3 and 4). Overall, there was a fairly even spread of DOC educators in each time group with a slight bias toward recent appointments being at DOC between 6 months and 2 years (32%, 16/50, see figure 4). Most staff (40%, 27/50) had been in their current role between 6 months and 2 years, with the next highest group (17%, 12/50) being at their current job between 2 and 5 years. These trends suggest that DOC staff who participated in the survey may be new to their role but not necessarily new to the organisation.

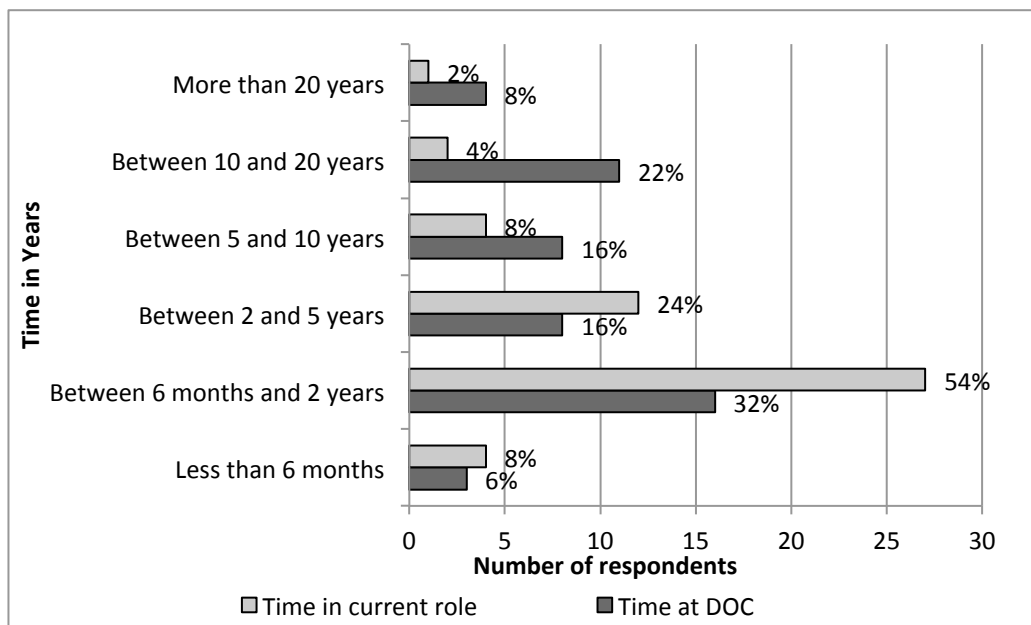


Figure 4: Question 4, time at organisation and DOC (n=50)

4.3.1.4 Time spent on education

In the survey, DOC educators were asked how much time they spent doing education in their current role (question 5). Almost eighty per cent (39/50) of DOC educators indicated that they spend 40% or less of their time on education. Half (50%, 25) of the respondents in this question said they spent between 1-20% of their time on education (see figure 5). These two statistics show that for most DOC educators this is a minor part of their work. Typically education appears to be one of numerous tasks that are competing for time in a Ranger's schedule. Anne, a DOC educator, made this point in an interview when she explained:

I did pick up as much of the education programme as I could and my other work is working with volunteer groups and things like concessions and land management and working with Iwi [tribes] and a whole big raft of other things so education at the moment is – it's even hard to say, maybe [I do education] less than 10%?

She went on to make the point that because Rangers were juggling multiple priorities, it was very important to have support to do education.

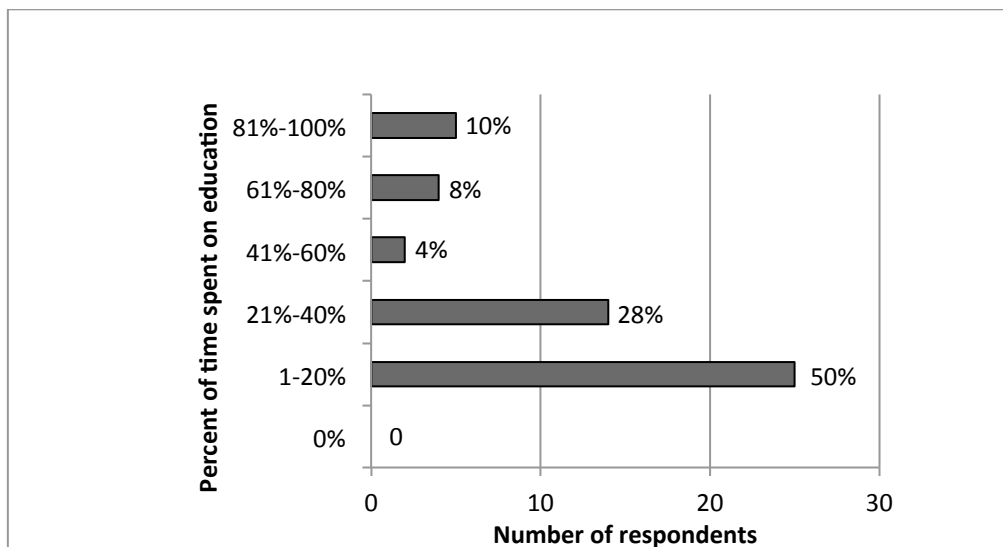


Figure 5: Question 5, time spent doing education (n=50)

4.3.2 DOC educators' views about education

DOC educators showed a preference for learning through hands-on engagement that was echoed in both the survey and interviews. Survey participants were asked to rate how important they felt different approaches in education were for children and young people for conservation education (see figure 6). Ninety-six per cent (48/50) of survey respondents said that hands-on learning in the field is very

important to conservation education for children and young people. During an interview, DOC educator, Reagan, described her approach to education as:

...hands on, something really tangible that they can see and touch and feel because I think that is a great way for getting smaller kids involved. The school here is only at the primary so the children are all under 13, there is no high school in the area, so my approach would be something kind of interesting, maybe something gross that, you know, kids can really get interested in and use that as a way of talking about broader conservation and ecology issues.

Experiential approaches were also mentioned frequently (66%, 4/6) when Rangers who were interviewed were asked to describe what quality conservation education looked like to them.

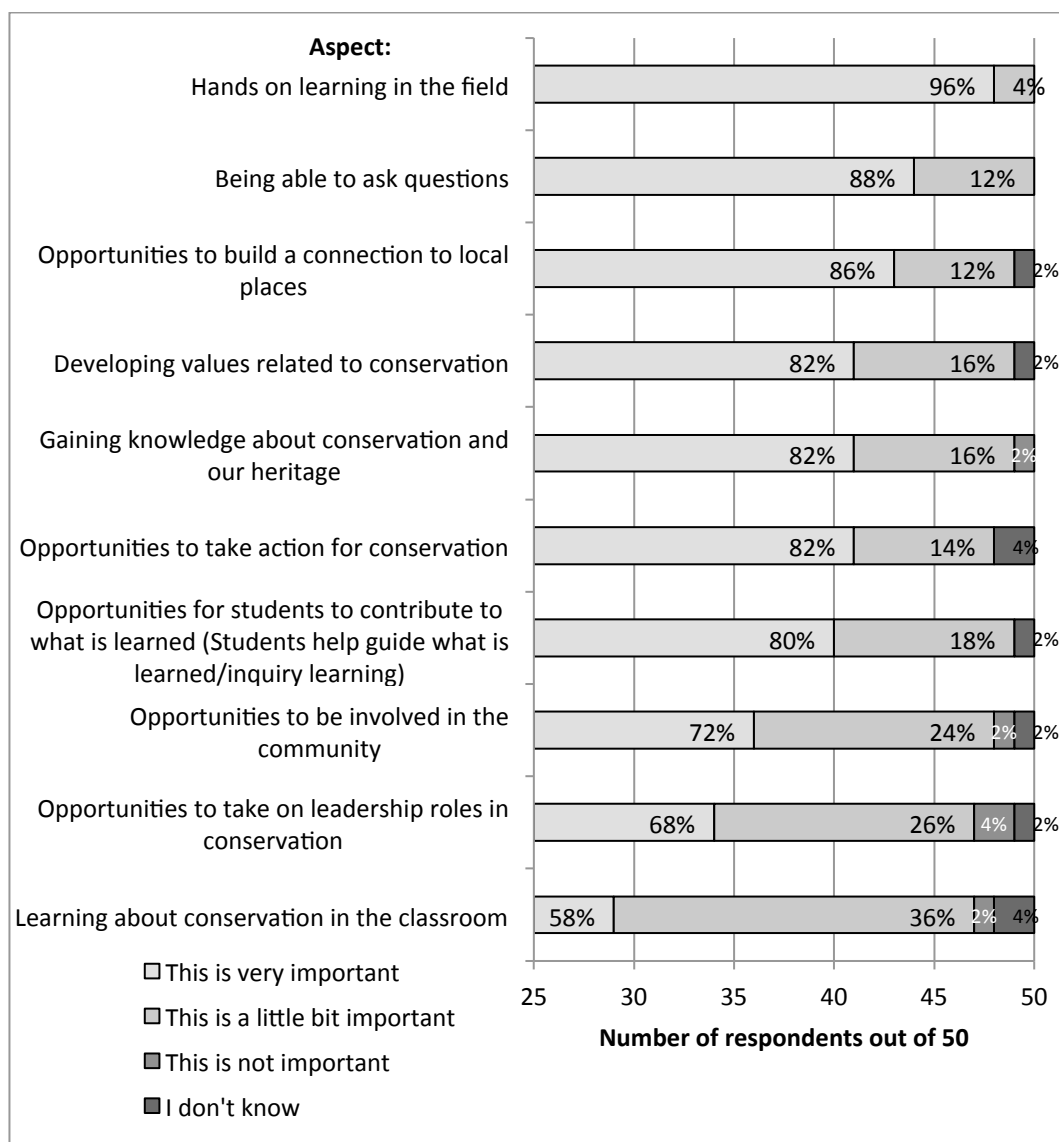


Figure 6: Question 8, importance of aspects of education (n=50)

A preference toward active participation in education was shown through survey responses and interview discussions. Eighty-eight per cent (44/50) of DOC educators said that it was very important that children are able to ask questions in conservation education and 82% (41/50) of survey participants indicated that it was very important for children to have opportunities to take action for the environment (question 8). William Douglas, a DOC educator, explained in an interview that quality conservation education looks like:

Stimulating curiosity and critical thinking and inquiry based learning is really important so letting the kids ask their own questions and come up with their own answers and then exploring those answers rather than just books to fill in like name this bird and that stuff. It will stimulate leadership so as the kids get older the ones that are really fired up there are avenues there to get them involved in conservation work. Ideally it is the links between the different topics that you are doing are constantly being developed so there is an overall big picture of the systems that are involved and developing and ideally somewhere along the way there is some actual conservation work that is happening as well so that could be at the lowest level just planting flax and kowhai at the school grounds to feed nectar birds or building weta homes or whatever but at a higher level it could be actually taking on a project and advocating for it in your community and working with a community partner for that project as well.

The high value given to interactive experience in conservation education combined with the comparatively low value placed on classroom experience (58%, 29/50) further exemplifies DOC educators' perception that being in the field and having conservation experiences are essential. Eighty-six per cent (43/50) of respondents in question 8 reported giving children and young people opportunities to build a connection to local places was very important. For example Riku, a DOC educator, noted in an interview, "I just think there is value to being in the bush, in the natural environment, even if it's not specific to the thing that you are teaching." Contact with nature was seen to be a part of a transformational experience that grounds people. Another DOC educator, William Douglas, explained in his interview that outdoor connection can lead to the attitudes needed for environmental action. He said:

It's the heart opening experiences that are going to change people's minds... if you don't have a direct relationship with the landscape then you know, someone telling you how many stoats or possums there are in the bush is probably not going to make you care. Whereas if you have some sort of experience, it could just be being up close and personal with a kiwi or being in the bush and having some kind of penny drop moment where you realise that is far more important than money, then those are the kind of things that generally change a world view, and then you start to behave differently.

DOC educators' interview comments and survey results demonstrate a belief that hands on experience and a direct relationship to the outdoors can help to cultivate a value system in relation to the environment. Eighty-two per cent (41/50) of DOC educators also said that developing values in relation to conservation was very important (question 8). Some DOC educators (6%, 3/50) who participated in the survey made additional comments that it is not only children that need these kinds of experiences. When the DOC educators were asked what they thought teachers might need for conservation education (question 10), one survey respondent wrote that teachers should "have had a transformational nature experience, and a shift in how they see the world" (R38) in order to do quality CE.

Students gaining knowledge about conservation and natural heritage were also indicated to be important in the survey (82%, 41/50, question 8). When interviewees were asked what quality conservation education looks like to them, some DOC educators (33%, 2/6) discussed that it needed to be "based in up to date knowledge" (William Douglas, interview).

4.3.3 Summary

Rangers were asked to self-identify as someone who worked in education for this study. This generated a list of 67 potential participants who also supplied their position at DOC and their location. At the time the survey was conducted, Rangers who self-identified were working in different positions across the organisation with a fairly even split between work location in urban and rural places. Of the 67 potential participants, 50 DOC educators completed the survey. In order to understand what support DOC educators may need, some background information was gathered to generate context. The majority of survey participants

were women and in mid to late career ages. Most DOC educators had been new to their current role, but not necessarily new to the organisation. Half of survey respondents reported spending 1-20% of their time on education. Since DOC has restructured since the time of the survey, DOC educators may now be working in different positions or reporting to different management lines.

DOC educators expressed a preference for experiential approaches in education. According to findings, some of the approaches preferred by DOC staff included hands-on learning in the field, which may be part of the heart opening experiences that could contribute to developing values around conservation in both students and teachers. DOC educators also said providing accurate, up to date knowledge about conservation and natural heritage were important to conservation education.

4.4 What professional development and support might DOC educators need?

“Building DOC’s capability” is a key theme in the *National Education Strategy Implementation Plan* (Department of Conservation, 2015b, p. 11). In order to foster DOC educators’ capability, professional support opportunities should be offered based on the skills needed and capacity available to do education. Professional support also needs to match the role DOC educators are being asked to fill in implementing DOC’s education strategy. Findings from this study suggest that many of the capabilities DOC educators will need moving forward are ‘softer’ skills like communication, facilitation and collaboration.

4.4.1 Providing hands-on experience outdoors

According to the *Implementation Plan*, one of the ways DOC can contribute to conservation education is through connecting school communities to natural places (Department of Conservation, 2015b). DOC educators who participated in this study showed a preference for hands-on engagement and valued connection to the outdoors, as discussed in section 4.3.2 *DOC educators’ views about education*. Accordingly, providing hands on opportunities outdoors was one of the most commented on features (18%, 9/50) that Rangers said DOC could do to support schools and teachers for conservation education in question 9, which was an open-ended question. For example, one survey respondent wrote that “Providing kura [schools] with opportunities out in their field and contribute to conservation” (R18) would be something that DOC could do.

Although providing these types of experiences was discussed as something DOC could provide, the types of tasks that DOC educators rated feeling the most confident carrying out were based on giving information. When asked to rate how confident they felt carrying out various tasks, they reported giving information about local conservation issues (88%, 44/50), presentations (84%, 42/50) and giving information about local places (82%, 41/50) as the top things they felt confident doing (question 12, figure 7). Although rated with high confidence, less respondents rated feeling confident in encouraging conservation action (76%, 38/50) and taking students on field trips (70%, 35/50). The lowest rating of confidence related to working with teachers. This included recommending resources to teachers (72%, 36/50), taking teachers only on field trips (60%, 30/50) and working with teachers to plan teaching and learning opportunities (58%, 29/50). Interestingly, training teachers also came up in responses (18%, 9/50) as something that DOC could provide to schools in open-ended question 9. For example, one respondent said that DOC could support schools “By giving teachers and schools the support (training, seminars, materials, confidence) to teach the children about conservation. One hour of a ranger with children won't really lead to any ongoing behaviour change” (R15). In order to be able to provide this support, DOC educators may need continued professional support themselves to develop the skills, knowledge and capacity to confidently facilitate CE in the outdoors, especially with teachers.

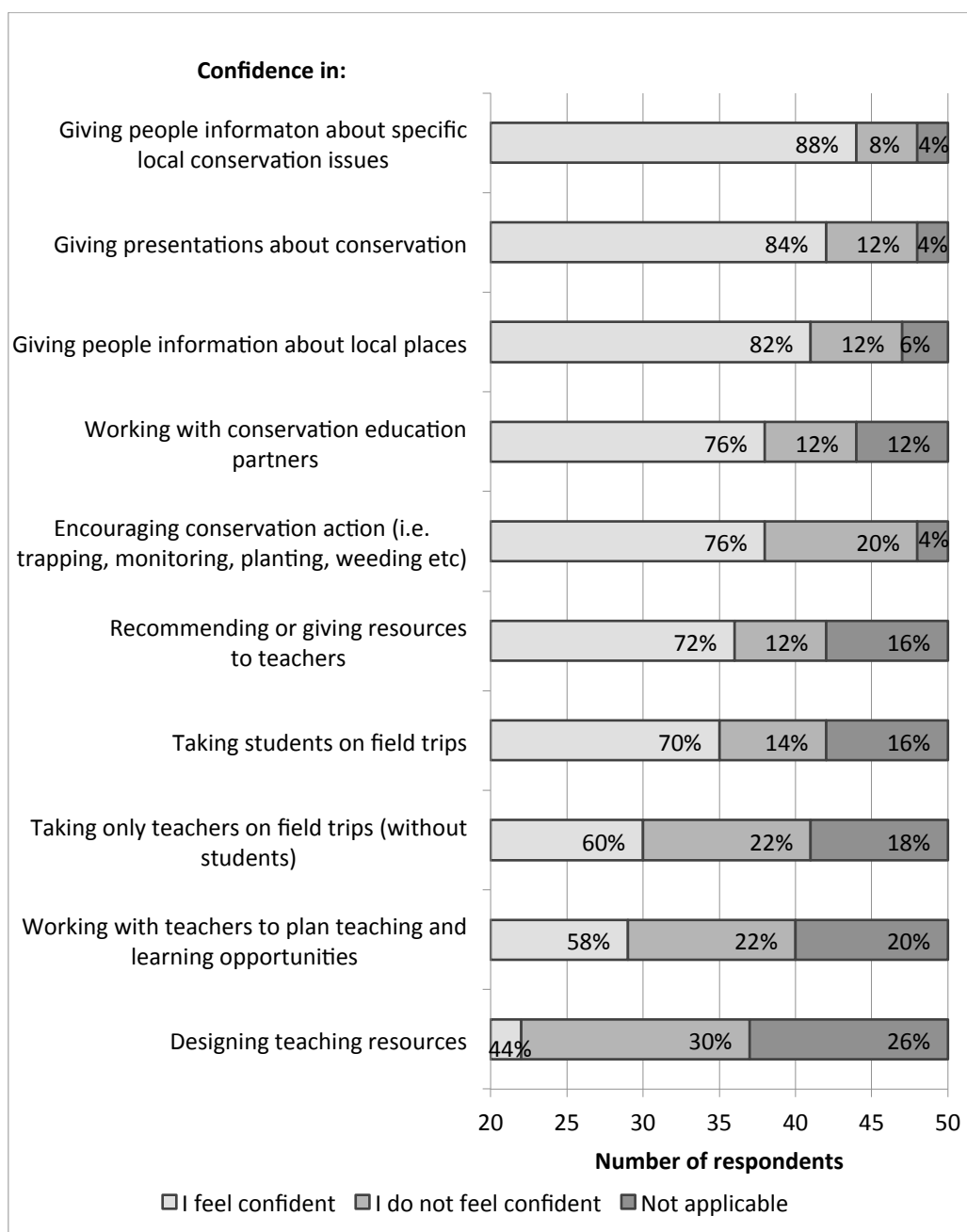


Figure 7: Question 12, self-rated confidence (n=50)

4.4.2 DOC educators' capacity to support teachers

DOC's *Implementation Plan* outlines the aspiration to support a nation of conservation teachers (Department of Conservation, 2015b). Ideally this means teachers have the skills and confidence to use conservation as a lens to view all curriculum subjects. Kerry, a manager explained in an interview that investing in teachers is a way to better serve students:

...if we want to invest in the students we first have to invest in their teachers, because the teachers are the path to the students, so if we don't

have conservation teachers then we are never going to have conservation students. So that is the change or the expansion to the approach from the *Strategy* to the *Implementation Plan* so ... to be able to do that we need conservation teachers, we need confident, capable conservation teachers across the country to be able to give those opportunities and experiences to the students.

DOC educators therefore need to have the accompanying skills and support to work with teachers for conservation education.

Understanding how schools operate could be an important aspect of professional development for DOC educators. Twenty-two per cent (11/50, question 12) of respondents rated working with teachers to plan learning opportunities with low confidence (see figure 7). Anne, a DOC educator, explained in an interview that, “learning kind of how schools work.” would help her provide resources, build confidence and support teachers. In addition, since EE/EfS is not always easy to include in the formal school setting (Cowie & Eames, 2004), understanding the barriers and opportunities for EE/EfS in this setting may help DOC educators do their jobs.

As well as understanding the formal education setting, current thinking in andragogy and pedagogy could help DOC educators work with teachers. Hana, a DOC educator, explained in an interview that without understanding the context of student learning, “The danger is that you just keep on teaching and teaching and teaching it and it becomes less relevant to the actual experience.” In order to be effective, DOC educators should have a basic understanding of adult learning to support teachers as well as how students can learn in a CE context so teachers can support their students.

4.4.2.1 Helping to integrate conservation into schools/across curriculum

If DOC educators are to work with those in the formal school setting they will need accompanying knowledge and skills to make this effective. For example, DOC educators will increase their ability to support and connect with teachers through understanding and communicating how conservation fits in to the curriculum. DOC educators were asked to rate their understanding of environmental education foundations, the curriculum, and how to communicate

the link between curriculum and conservation education (question 11). The survey results show a significant population that reported a lack of knowledge in these areas (see figure 8). For example, 44% (22/50) of respondents said they *did not have a working knowledge* of the New Zealand curriculum and 34% (17/50) rated the same for how conservation fits in to the curriculum. Without a solid grasp on these subjects it makes sense that a combined 60% (30/50) of respondents reported knowing either *a little bit* or not knowing how to communicate how conservation fits in to the curriculum. The self-graded responses from survey question 11 coincide with DOC educators commenting that they would like to learn more about the curriculum (28%, 10/35, question 15) as well as how to train, connect and communicate with teachers (31%, 11/35, question 15) elsewhere in the survey.

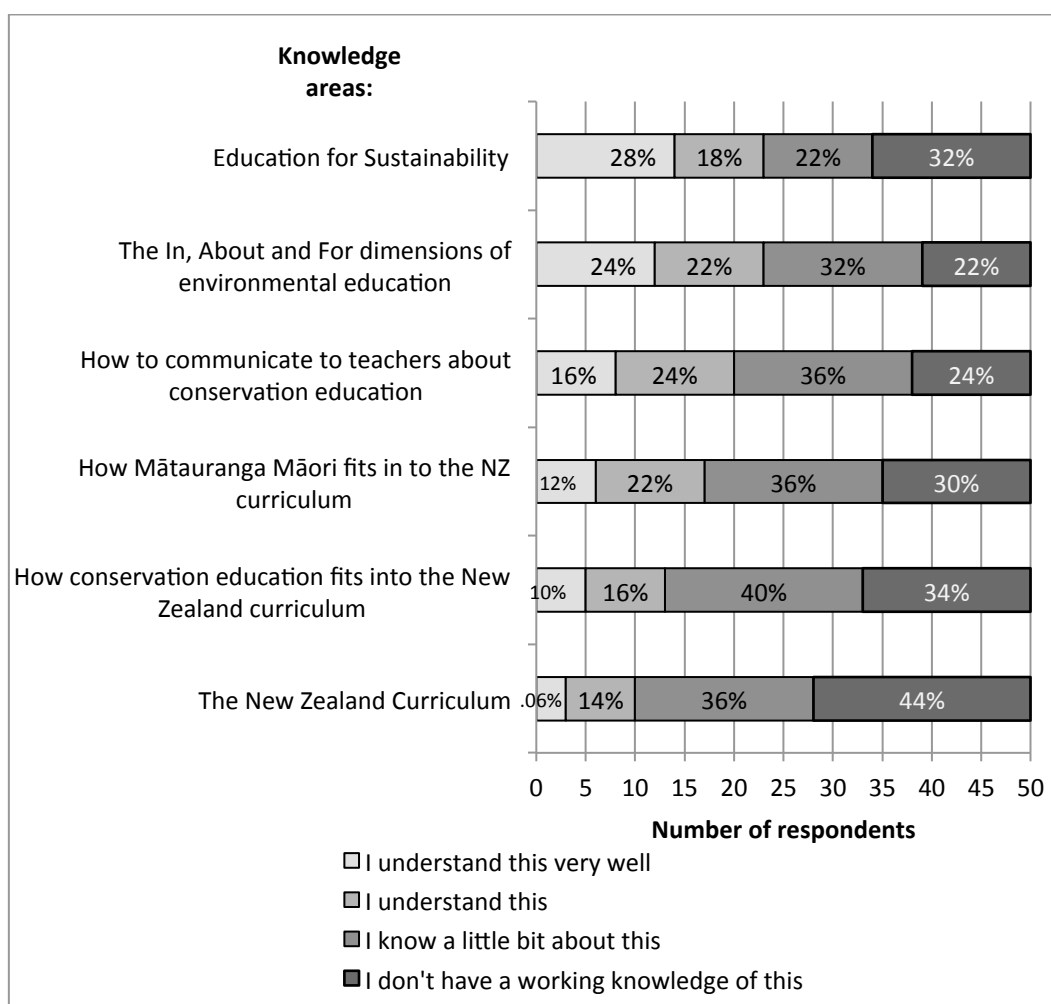


Figure 8: Question 11, self-rated knowledge of formal education areas (n=50)

Having a grasp of the New Zealand curriculum may increase DOC educators' ability and self-assurance when working with teachers. For example, one educator

wrote in the open-response portion of question 15 that they would like to learn more about “NCEA qualifications and curriculum, EEfS [Environmental Education for Sustainability] and how to talk about this confidently with teachers.” (R24), which demonstrates the link between knowledge and a feeling of ability. However, some felt that the proportion of curriculum knowledge that is developed does not have to be extensive. DOC educator William Douglas pointed out in an interview:

I don’t think having a really strong knowledge of the curriculum is that important for us as Rangers, I think that is the teacher’s job. But I think that what we do need to know is what the teachers need to know from us in order to include conservation into the curriculum.

In an interview, Sarah, a manager made an interesting parallel, in saying that:

...the same way that when we are working with business - when we are working with Fonterra we don’t need DOC staff to be global dairy business experts but we need them to understand the sector enough to engage in a meaningful way...

DOC educators don’t have to be experts in teaching or the curriculum in order to contribute to education. They do need to be able to see the relevance of conservation to the curriculum and share this with teachers.

Having a grasp of concepts related to education for sustainability and key *In*, *About* and *For* dimensions of environmental education may also help DOC educators use best practice in education with schools and the community. When asked about knowledge of education for sustainability, a combined 46% (23/50, question 11) of respondents indicated they *understood this very well* or *understood this*. The percentage of respondents who *understood well* to *understood* was almost even with the 54% (27/50, question 11) who indicated they *knew a little bit about* to *not having a working knowledge of* education for sustainability. The same percentages are present for the *In*, *About* and *For* dimensions of environmental education (46%, 23/50 understanding and 54% 27/50 little to no understanding, question 11). Since roughly half of the respondents selected that they did not know a lot about these topics, this shows that additional professional support may be needed to increase DOC educators’ understanding and further utilisation of concepts in environmental education.

4.4.2.2 Teaching and learning resources

Having curriculum-linked teaching and learning resources was frequently discussed in the survey, when educators were asked what DOC can provide (46%, 23/50, question 9) and what teachers need in order to do quality conservation education (56%, 28/50, question 10). Questions 9 and 10 were both open-ended. One respondent wrote that teachers need:

Resources that meet their needs in relation to the curriculum, their students, the age and level, the local area, an understanding of how the resource can be used, resources with variety including text, video etc and a variety of applications from art through maths to social science and drama etc and that have application locally. (R26, question 10)

Survey respondents described resources as being dynamic, relevant and connected to the curriculum across disciplines. They felt that they needed to be able to provide high quality resources as well as be able to support teachers in knowing how to use them. Kerry, a manager, pointed out in an interview that, “we are not just going to say ‘Here is the resource and off you go’, it’s about actually supporting teachers to grow those confidence levels.” DOC educators need to provide quality, curriculum-linked resources as well as on-going assistance to support conservation teachers to use DOC resources.

4.4.2.3 Fostering relationships with teachers

Confidence was discussed (18%, 9/50, question 10) in the survey as something that teachers needed in order to do quality conservation education. Anne explained during an interview, “What we are hearing from teachers is that they hold the view that we are the experts and ... we know more than them and they won’t do a good enough job”. Through extended working relationships, both teachers and DOC educators have the opportunity to contribute their expertise. This may increase both parties’ assurance and willingness to participate in conservation education. Riku, a DOC educator, described in an interview how this worked in his experience:

I haven’t seen much to demonstrate what the curriculum is for either Māori kids or in mainstream schools. So probably we could go and search out but wading through school curriculum is a little bit time consuming. Contacting teachers is probably the first point of call and a much easier way to do it. Part of the reason we took some of the teachers from kura

kaupapa Māori [Māori language immersion school] over was ... for us to share the biodiversity stuff but also the cultural stuff, pa sites and things and then they can relate that back to their curriculum and then the plan was for them to come back to us and sort of have a sit down and sort of work through what they have come up with.

In order to foster these relationships with teachers, DOC educators were seen to require the ability to identify opportunities for collaboration. Rather than being prescriptive in nature, DOC educator William Douglas made the point in an interview that “this is more about place based, how each education provider can be supportive to develop a programme that works for their place and meets their needs and their skill level and their kids.” DOC educators would need a variety of tools at their disposal in order to support place-specific programming.

DOC educators felt they need the skills and capacity to support teachers in a flexible, place-responsive manner. This means being able to share their specialist knowledge as well as identify opportunities for collaboration. DOC educators, who themselves are confident in their appropriate understanding of the curriculum and teachers’ needs, could also foster long term relationships with teachers who then can gain self assurance to use conservation education.

4.4.3 Moving toward a new approach

Since what is represented in the *Implementation Plan* may be a change in the way that education has been done at DOC, some hesitation toward the approach and its application may be present among both DOC staff and partners. Sarah, a manager, pointed out in an interview that, “There is a risk and we went into this knowing that there is a risk that the direction we are moving in can be seen as a withdrawal of support for schools”. Seventy-one per cent (27/38) of survey respondents said that they felt like they could describe DOC’s conservation education approach to teachers and education partners (question 28). However, more would be needed to manage the transition underway. DOC educator Anne added in an interview that:

We are trying to get the message that standing up and talking in front of your kids for an hour might not be – that’s Dial-A-Ranger. You haven’t taught anything in your class, you aren’t an Enviroschool, you know, this and that, how do you tell a teacher that they are a low priority? And that is the concern, we keep getting sucked in to the Dial-A-Ranger thing because

they say, ‘oh, well, no one told us’ or ‘oh, fine, forget it then.’ And then that is one of those two hours that we may have with their children in education gone.

While she expressed support for the new approach in the interview, Anne was still concerned that moving toward a new approach would jeopardise the already small amount of time some children have with conservation if their school is not able to engage with DOC over a longer term. One survey respondent wrote in the open-ended part of question 28 that they could describe DOC’s conservation education approach, “But just moved from cringing to being proud of & believing in the new direction. I wish there was follow up. I fear we are losing teachers by not providing easy help or resources.” (R4). DOC educators thus may need additional support to have the communication ability to explain DOC’s new role in education as well as some tactical ways to keep teachers engaged.

Sarah added in an interview that the “risk exists internally as well” for staff to think the new approach is a withdrawal of support for education. Survey results show that 77% (28/36) of DOC educators would like to use the direction outlined in the *Implementation Plan* in their work, compared to 19% (7/36) that would not. Despite the high number of staff who would like to incorporate this in to their work, some survey respondents (36%, 9/25, question 29) were concerned about the capacity to move toward a new approach. One respondent wrote in the additional comments section of the survey that:

It is coming at a time of yet another upheaval and re-alignment/restructure ... staff are weary of all the change in the last few years in some areas and not necessarily prepared to take on another change: this needs to be seen as a positive and enabling opportunity not another additional task assignment ... (R2)

As this respondent noted, there was a restructure occurring within DOC around the time the survey ran. Since change for some staff is likely to have happened as a result, this could be a stressful situation for some who are being asked to take on different roles and responsibilities.

A considerable amount of support should be given to ensure DOC educators understand the intentions of the *Implementation Plan* and what this means to their

work in order to mitigate negative perceptions internally and externally. DOC educators will need to have the capacity to engage in a process that will help clarify what the strategies outlined in the *Implementation Plan* mean to their specific situation. This may begin by crystalizing what their roles in education are, how to organise their limited time available for education and prioritise what engagement they have the capacity for. DOC educators will also need to have some tools to manage the difficult situations and conversations related to what the public's expectation of DOC education is.

4.4.4 Working in partnership

When asked what they thought DOC could offer to schools and teachers, one of the common themes in the survey (18%, 9/50, question 9) was connected to working with other organisations. One survey respondent wrote that “Working in partnership with other providers; through the EnviroSchools network and other 'culture changers'” (R38) was something that DOC could provide. Working with others is also one of the guiding principles as well as a key theme of the *National Education Strategy Implementation Plan* (Department of Conservation, 2015b). An education manager described the benefits to working in partnership as including shared expertise and responsibility between organisations, legacy potential for projects and having “real-life authentic problems” to solve beyond the school setting (Kerryn, interview).

4.4.4.1 Skills and capacity to work in collaboration

Working in partnership can “increase and leverage resources and provide opportunities that a single organisation cannot support” but fostering and maintaining working relationships presents many challenges (National Park Service, 2011, p. 5). In the survey, many rangers (31%, 13/41, question 13) discussed the effect of their own and partners' limited capacity, making it difficult to work collaboratively. One DOC educator explained in the survey that partners need to have “the funding & capacity or you pass the buck to an empty black hole & nothing is done by the teacher as no time or too hard.” (R4, question 13). Another DOC educator, Hana, explained in an interview that a partner organisation's lack of time was affecting the success of collaborative programming:

So I have seen a number of occasions where there would be an opportunity and because there were no volunteers available that opportunity was lost. And it doesn't take very many of those sort of lost opportunities for a school to be turned off approaching a community group or the Department [DOC] or whoever.

In addition to time, funding and institutional differences also need to be negotiated. One DOC educator in the survey cited potential partner organisations going through “reductions in staffing” and a particular organisation with a “limit[ed] conservation remit, which is increasingly focused on water issues. This does and will increasingly limit collaborative efforts.” (R12, question 13). DOC educators will need the skills and capacity to facilitate strategic partnerships and the flexibility to respond to a myriad of potential barriers to success.

4.4.5 Multicultural values and perspectives

Since Mātauranga Māori (Māori knowledge/wisdom) is one of three principles that guide the *Implementation Plan*, it will be essential for DOC educators to be able to understand Māori perspectives in order to embody them in education work (Department of Conservation, 2015b).

4.4.5.1 Skills needed to incorporate multicultural values and perspectives

DOC educators will need to understand various perspectives of conservation and conservation education in order to incorporate multicultural views into their work. In an interview, DOC educator Anne pointed out that “conservation is a social construct” that “doesn't exist in its own right...” This means that there may be more than one way to think about conservation. DOC educator Riku described the first step to genuinely incorporating Māori views into conservation education is to see what ‘conservation’ means according to various perspectives:

It is not just a case of translating conservation, as is the sort of common practice within DOC, but understanding that there may be something different to Māori. Then, the question is how can we support that? If it has an ethic of care for the environment and if it is supportive of connection to the natural environment from that particular cultural context, then yeah, I think that is a big question for DOC. How then do you not just teach conservation or educate around conservation but understand that there might be a different thing which works differently, has different

assumptions but has enough common ground that DOC can be supportive of it? But to do that you need a level of cultural understanding and familiarity that would allow you to, or allow the Department [DOC] to, or allow people to, some people in the Department [DOC] to work with it (Riku, interview).

It seems important to increase the relevance of conservation to Māori, as Riku went on to explain in an interview:

The use part is obvious: we collect leaves and boil them up but behind that is all the understanding, the underpinning of conservation in the mainstream world and the underpinning of kaitiakitanga [guardianship] in the Māori world. So if you said to most Māoris, ‘Do you want to learn about conservation?’ your response will be lacklustre at best. If you said, if there was some sort of use of something from the natural environment that through that you can educate about an ethic of care and sustainable use and conservation and enhancing the diversity of the place or the health of particular species, like things like translocation or all of those kinds of things, all of that can feed through, but often there has to be that use kind of focus at the start. You know, that is the entry point.

Another pathway to engaging in a meaningful way is using language. This means having the ability to work in English and Te Reo (Māori language) as well as having resources available in Te Reo (Māori language) that reflect Māori views (Riku, interview). One Ranger explained in the survey that, “In our district we have a 50% population that identify to converse in Te reo [Māori language] and a high number of kura reo [Māori language schools]” (R14, question 12) so the ability to engage in the language is necessary. When asked what subjects or skills may help them in their work, some (20%, 7/35, question 15) DOC educators in the survey also volunteered that Te Reo (Māori language) and tikanga (customs) were subjects that they wanted to learn more about.

4.4.5.2 Working with immigrant communities

According to the 2013 census, a quarter of the Aotearoa/New Zealand population was born overseas. The population of Asian ethnic groups in Aotearoa/New Zealand almost doubled over 12 years to reach 11.8% of the population with the next biggest group including Pacific people at 7.4% (Statistics New Zealand, 2013). One DOC educator in the survey made the point that, “we also need to be

able to understand the conservation values and attitudes of other cultural groups... Immigrant communities in particular would be a target group who do not intuitively understand the NZ conservation story.” (R2, question 14). Thus DOC educators working in locations that have immigrant communities will need to have the ability to engage with these groups in a meaningful way.

4.4.6 Evaluation

The *Implementation Plan* explains that research and monitoring should be used to gauge the progress of DOC education programmes (Department of Conservation, 2015b). In the survey, the majority (70%, 35/50, question 21) of DOC educators said that they have goals and objectives for their projects. The majority (58%, 29/50, question 22) of respondents also said that they measure and monitor against these goals. While these numbers are relatively high, survey respondents did indicate that some additional support or skills would help them evaluate their programmes.

Most (60%, 30/50, question 23) respondents said that resources would help them monitor and evaluate their projects (see figure 9). When asked what specific resources would help, 22% (6/27) of DOC educators who offered additional comments described time as the most valuable resource. For example, one survey respondent wrote that they needed “Time to tie the evaluations into the bigger picture of our project is the resource I need the most!” (R9). In addition to time, a small number (11%, 3/27) of survey respondents described needing additional physical teaching and learning type resources.

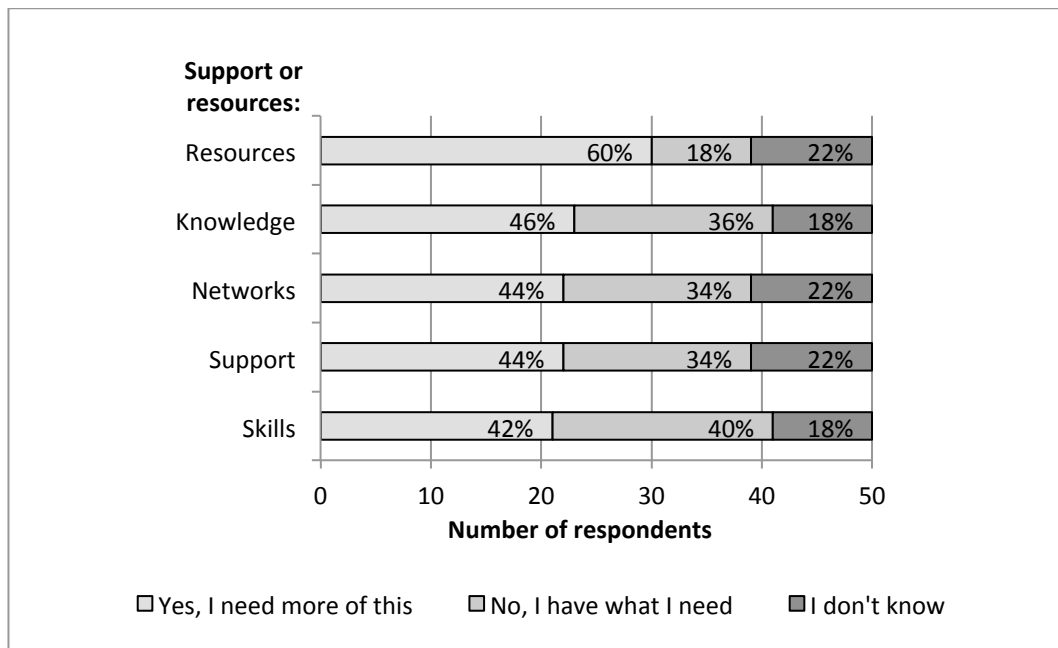


Figure 9: Question 23, support of resources to help evaluate work (n=50)

There was a fairly even distribution of DOC educators who ranked gaining additional knowledge (46%, 23/50), support (44%, 22/50) and skills (42%, 21/50) as being helpful to measure and monitor projects (question 23). In addition to the quantitative section, DOC educators were further asked to elaborate on what would help them successfully evaluate their projects in this question. Fifty per cent (13/27) of survey respondents who contributed to this question wrote comments about needing help to understand what to and how to evaluate. One DOC educator explained that they would benefit from guidance on “What activities need to be measured, how are they currently being measured, what do we actually need to know to determine effectiveness, how do other organisations measure and monitor?” (R39). From comments like these there was a sense of needing some knowledge, skills and support to evaluate programmes. Guidance on how evaluation fits in to a DOC educator’s role is also important since having time to do this was discussed as a barrier.

A similar number of DOC educators ranked knowledge, skills, support and having access to networks as something that they would like more of to help measure and monitor programmes. In addition, 25% (7/27) of respondents mentioned that networks would be helpful when asked to explain specifically what would help them evaluate programming. One DOC educator wrote that, “networks of people working in conservation education to share knowledge and learnings from

monitoring and the best way to do this” (R28) would be helpful. Comments like these indicated that there is a perception that networks can help clarify what and how to evaluate programmes.

4.4.7 Summary

Determining what skills and capacity DOC educators need is an important step to understand what support, professional development or resources should be provided. Questions were asked to help assess what skills and capacity DOC educators need overall and what support may help them in the immediate future. Providing opportunities for DOC educators to gain skills and knowledge related to the new roles they are being asked to fill will help them gain confidence in facilitating conservation education.

DOC educators showed a preference for experiential engagement and said that providing outdoor experiences was something they thought DOC could do to support schools. Conversely, the tasks that DOC educators reported feeling the most confident doing were related to giving information. Less DOC educators reported confidence for encouraging conservation action and taking students on field trips, but the number of confident respondents was still quite high. Professional support may be considered to facilitate *in* and *for* the outdoors in addition to *about* conservation.

The *Implementation Plan* calls for DOC educators to support teachers to utilise conservation education. Among survey respondents, the lowest rating of confidence was related to working with teachers. In addition, a low number of respondents said they had knowledge about curriculum related areas. DOC educators will need professional development in order to understand and communicate how conservation is relevant to the curriculum. Having quality, curriculum linked resources and the training on how to use them would help DOC educators work with teachers.

In addition to these findings, respondents indicated that other skills and capacity might help them do their jobs. DOC educators need to understand various perspectives of conservation in order to authentically incorporate Māori views.

One way to engage meaningfully is through the use of Te Reo (Māori language). Having the skills and capacity to work in partnership will also help DOC educators do their job. DOC educators need to have the ability to facilitate strategic partnerships as well as have the flexibility to respond to issues that may arise relating to partnership. Time, funding and institutional differences need to be negotiated in order to develop effective education collaboration. Time was also discussed as a barrier to evaluating programmes. In addition to having the capacity to evaluate, DOC educators may also need guidance on what and how to evaluate their work in order to develop professionally.

Engaging in a process of professional development and support could enable DOC educators to move toward the new approach proposed in the *Implementation Plan*. DOC educators need to understand the new approach and how this affects their role in education. In turn, they will need the communication ability to navigate through external expectations of DOC's role in education while educating stakeholders on what DOC can offer.

4.5 Support for DOC educators

DOC educators need professional support to help them succeed in conservation education. One survey respondent wrote, “I would happily participate in any training or support offered. I am the key contact for education in my office but I have no experience, guidance or training in how to do it. Help!” (R50, question 16). DOC educators will need immediate support to help them adapt to what has recently been asked of them with the roll out of the *Implementation Plan*. As well, ongoing support should be provided in order to fulfil their roles in conservation education.

4.5.1 Organisational support

Some of the demand for professional development may be due to a lack of support in the past. Kerryn, an education manager, explained in an interview:

There has never been any conservation education for staff. Before people have just found their own way and they have all done it all a bit differently, they all understand it all a little bit differently, so they are going to actually have – there is going to be a consistent approach, everyone on the same page and that is going to provide an opportunity for staff to support each

other too because they are going to have to be speaking the same language and it is going to be collaborative and there is going to be another level of support in place that hasn't been there before.

It is important to have an organisation wide understanding of what conservation education is to ensure that staff are working toward the same goals and have the support they need. Outreach and Education manager, Kerry, explained the need to define education within DOC in order to progress:

In a whole lot of different documents throughout the organisation education is mentioned but it is mentioned as kind of a Band-Aid solution to a lot of problems ... but when you actually question people about what does that look like and what are the expectations about that they don't know so education for a long time has been used as part of a solution to challenges and problems and projects but there hasn't been that next strategic step of actually teasing that out and figuring that out – what that actually should look like.

While it is of the utmost importance for DOC educators to have a unified understanding of what DOC's role is and what conservation education means at DOC, this also suggests that staff working outside education need to have this understanding. In doing so, education can be utilised to its full potential within the organisation and DOC educators can be supported in their work. In question 19 (see figure 10), when asked about if they felt like they had the support they need to do conservation education, more respondents said that they had *a little bit of support* from managers (48%, 24/50), DOC colleagues (52%, 26/50), DOC's partners (38%, 19/50), the community (42%, 21/50) and from teachers (50%, 25/50) than those who reported *a lot of support* or no support. While the number of respondents who said they had *a lot of support* from their managers was almost half (42%, 21/50), an increase in the number of DOC educators who are greatly supported in their education work by their managers may improve conservation education.

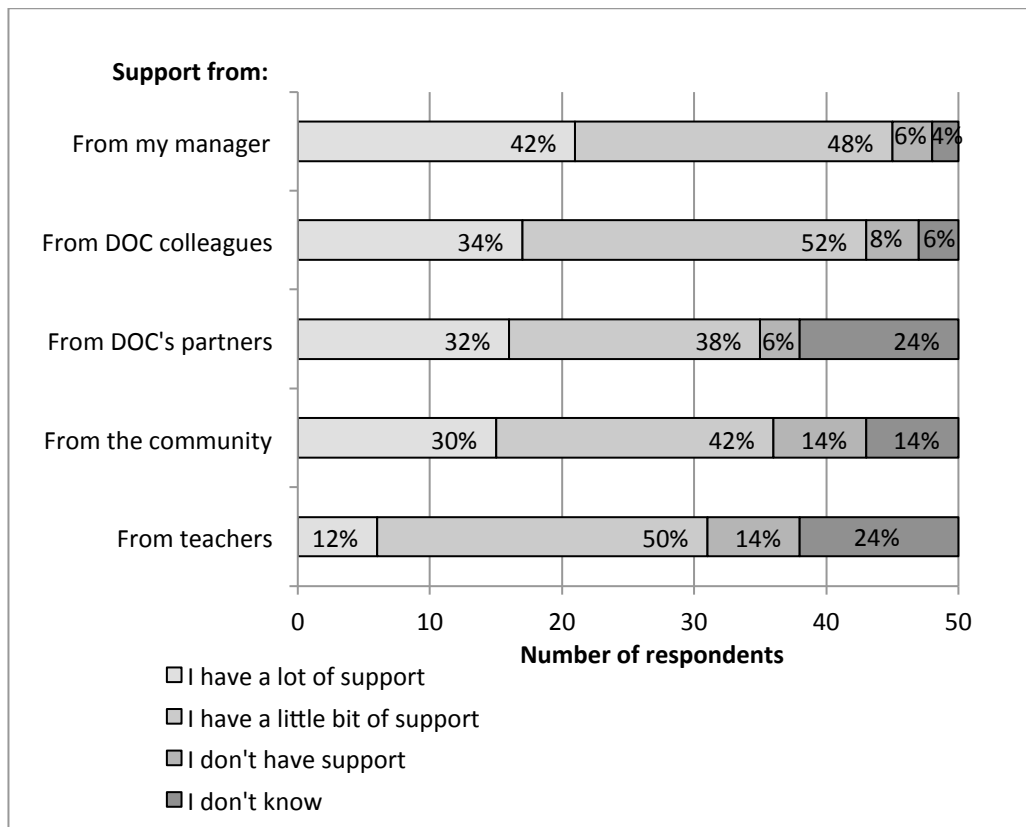


Figure 10: Question 19, where do support for DOC educators come from? (n=50)

4.5.2 Guidance

The *Implementation Plan* is a document that is intended to steer education at DOC (see section 4.2.4 *Outline of the National Education Strategy Implementation Plan*). This is largely philosophical and provides no absolute direction for education at a local level. Sarah, an education manager, explained:

It is not a prescriptive document, so it doesn't give you a ten point checklist, A to Z what to do in conservation education. It does require a degree of interpretation and local application and so that is deliberate, I don't think you can standardise this work. Some people would quite like some instructions, a sort of how-to manual for this work but actually I think that by its very nature and education is very place-based, its very community based, very context based, there is not an approach that is going to work in every community in New Zealand so this is, I feel, the level of detail that you can go to and still be useful for subjects like this and an organisation of this nature.

In order to promote a place-responsive type of education within DOC, this document has been left open to local adaptation.

As a result of the plan being less prescriptive, some DOC educators expressed the need for further support and clarity on what DOC's role in education is and what their jobs should entail. DOC educator, Anne, explained in an interview that while she supported the new direction, additional help was needed:

I think that quite a lot of us seem to be quite committed to that but it is just being able – to be enabled to do that and perhaps it is that enabling step that may be missing. So it is not, the will isn't missing or the commitment to it, I think it just might be some of the enabling steps aren't there at the moment.

William Douglas, a DOC educator, echoed this sentiment in his interview:

I feel like there is probably still a whole lot of different approaches going on about what that means to support teachers and I can see that it is hard for some people to let go of the Dial-A-Ranger thing and not really see what our new role would be, so I guess the main thing is that it is all well and good to say DOC is empowering and supporting a network of conservation educators around the country, but exactly how we are supposed to do that and the skills we are supposed to have in order to do that. I am waiting for more direction from National Office for sure.

While these DOC educators spoke in favour of the new approach to education, additional guidance and pathways would help their work move forward.

DOC educators need the tools and professional support to have a solid grasp of the *Implementation Plan* as a foundation for their own distinct planning in their unique situations. A concerted approach to professional support in education means that DOC educators would be able to work in the same direction nationally while still responding to their place. Having all staff understand DOC's role in education might help DOC educators' work.

4.5.2.1 The changing educational role

Some DOC educators struggled with feeling like there was a lack of clarity on what DOC's messages about education were. In an interview, DOC educator William Douglas pointed out that further understanding of the education role would help clarify new roles:

It is all well and good to say, ‘No more Dial-A-Ranger’ and I totally get that and support that but it is a bit of a process of how we move away from that and how we clarify what our new role is if we are not going directly into the classroom.

Another participant wrote in the survey, “This direction is not one I support as there are too many unknowns that have not been clarified. What are DOC's key education messages?” (R45, question 27). Additionally, there was also a feeling of uncertainty around DOC’s role in education for some respondents. When asked how confident they felt about completing a list of tasks in the survey, one DOC educator commented that:

For me there is a challenge around exactly where DOC’s role in conservation education sits - there are many other partners (and schools) already delivering and I don't think we are quite clear how we fit with them. Where can we best add value? (R37, question 12)

These comments imply that for some the uncertainty around where DOC stands in education can lead to a lack of confidence in working in the education role. As well, a lack of understanding of the *Implementation Plan* may prevent its use.

The approach advocated for in the *Implementation Plan* places emphasis on working with teachers, but does not exempt DOC educators from engaging with youth. However, transitioning toward an approach that reduces student contact may be difficult for some DOC educators. In an interview, DOC educator Amiria said “So yeah I am missing the actual going in to schools. ... I think that, just due to capacity, I think we can’t afford to do that.” Contact with students has been a satisfying part of a Ranger’s job that may provide other benefits as well. Riku, a DOC educator, explained in an interview that this may also inform education work:

Actually, the people I know who are Rangers in this district, when they go out to schools, they really enjoy it and it is a valuable experience for them. It is an enjoyable experience in and of itself, it’s fun hanging out with kids for a morning, but it is also connects the work that we do back into the communities that we are part of. I think it is a nourishing thing for Rangers to do. So it is good for us, it is good for them.

Another DOC educator, Hana, added that contact with children may keep an educator's work relevant. She said in an interview:

People working within DOC in the education area need to have a hands-on, go out and work with kids, even if it is a couple of times a year, because we may be developing stuff which is quite irrelevant, because we are basing it on our memories of what it was like to work with kids 5 years ago. So I think it is really important that we keep our own knowledge current and that means getting out amongst kids. It doesn't mean just reading reports.

During the transition process coinciding with implementing the new direction at DOC there may be some confusion around what the nature of contact with students should be like. Kerry, a manager, explained in an interview:

They can be rock stars with the teachers as opposed to being rock stars with the students, and they are still going to be in a coaching/mentoring/leader role, but they are going to perhaps be doing it differently ... we're not saying you are never going to work with students but what we are saying is it probably won't be working in the classroom. It will probably be in a more applied learning kind of way out in the field, doing something real.

Some further consideration of expectations around what kind of contact with students and teachers may be important to clarify how this fits in to a DOC educator's work. This would allow DOC educators to identify appropriate, valuable interactions with schools for the benefit of conservation education and job satisfaction.

4.5.3 Internal networks

Developing a common understanding of the *Implementation Plan* throughout DOC was a theme that emerged for DOC educators. For example, Anne explained in an interview that, "there is such a range I am suspecting around the country at the moment that we perhaps need to get a little bit more on the same page." Other DOC educators (13%, 4/30) also commented that in order to incorporate the ideas in the *Implementation Plan* into their work, they would like more of a shared understanding. One survey respondent wrote they would like, "Discussion of the intent of the [*Implementation*] Plan so we have a shared perspective and need to adapt priority areas of the [*Implementation*] Plan to meet local needs &

circumstances.” (R2, question 27). This survey respondent suggested that in order to do education work, further clarity and support would be needed within DOC for staff. Similarly, another DOC educator responded to this question by writing that they would like:

Socializing it together with me and my manager in the same room, so that we have the same understanding of its meaning and intent. After this we can have a conversation about what the [*Implementation*] *Plan* means to my everyday work support needed to move into the new direction. (R24, question 27)

In addition, one survey respondent wrote that, “In my experience there is a massive disconnect between the team at [national office] education and education portfolio holders at place. There needs to be a better network of DOC education staff and the DOC education team.” (R46, question 29). Having a common understanding between national, regional and local staff of what the *Implementation Plan* means seems important in order for DOC to move in the same education direction.

4.5.4 Learning opportunities

In considering their education work, DOC educators showed a preference toward face-to-face networking and learning opportunities. When asked in the survey what training and support might help them do conservation education, one respondent wrote that they would like to “Have regular huis [gatherings] with other DOC staff working in education, both regionally and possibly nationally to ensure consistency and to share ideas and knowledge.” (R28, question 16). Fifty-eight per cent (29/50) of respondents said that a DOC national or regional hui (gathering) would be a helpful type of support (see figure 11, question 20). Additionally, 78% (38/49) of DOC educators said in-person workshops would be very helpful to their conservation education work. By contrast, only 20% (10/49) of respondents said that the more remote option, teleconferencing workshops, would be very helpful.

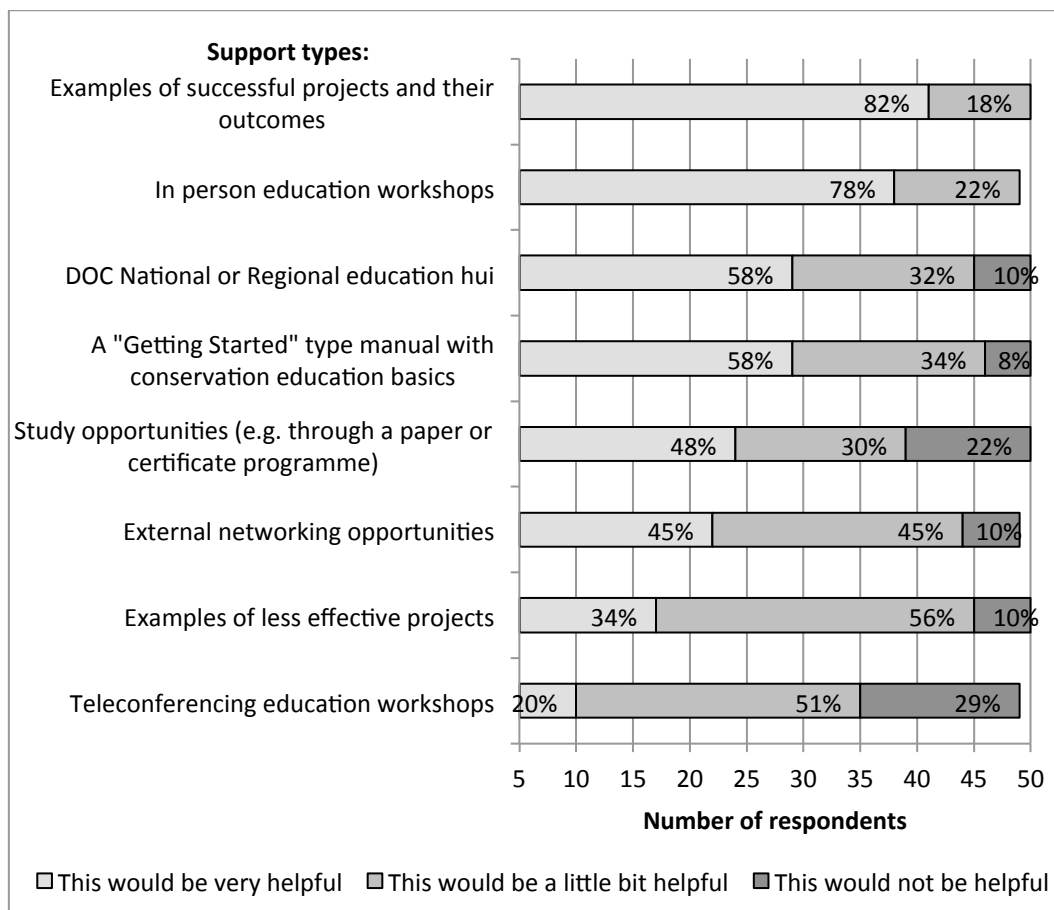


Figure 11: Question 20, types of helpful support (n=49 or 50)

Being able to learn from case studies was another area that came up as a potential aid to DOC educators' work. In addition to face-to-face learning opportunities, the highest rated option (82%, 41/50) for what would help CE work was being given examples of successful projects (see figure 11, question 20). When asked what would help them incorporate the new direction outlined in the *Implementation Plan* into their work, one DOC educator in the survey wrote that:

More linkages with successful conservation education around the country that aligns with this direction. In particular a detailed analysis of what made these work well so they can be easily replicated, avoiding the same mistakes being made over again or an ineffective approach being taken. (R25, question 27)

A DOC educator, William Douglas added in an interview:

I think case studies are good too. I think like, here is how we successfully implemented the new DOC education strategy in this scenario and this scenario and this scenario – that is the kind of thing that would be really useful I think.

Detailed case studies or examples of successful projects may help DOC educators see how elements of conservation education have been adapted to different situations. These could be delivered in a variety of ways. As discussed previously, internal networking opportunities would help facilitate sharing ideas and knowledge. As well, examples could be provided through a ‘Getting Started’ type manual, which was rated to be very helpful by 58% (29/50) of survey respondents (question 20).

4.5.5 Accessibility and use of teaching and learning resources

Rangers need further support regarding teaching and learning resources. When they were asked to rate how confident they felt about completing different tasks, 40% (8/20) of additional comments made were related to resources (question 12). Resources were discussed in terms of their accessibility and delivery.

Formerly, teaching and learning resources were often created at local places by DOC educators (Kerryn, interview). Kerryn, a manager, pointed out that:

There was a lot of duplication and repetition as well, so one office might, for example, pull together a resource on podocarp forests because that is what local teachers have asked for and then the office down the road says, ‘hmm, we could do with that resource. We will make our own’.

This un-coordinated, local development has led a number of teaching and learning resources to be inaccessible to the wider DOC educator network. One survey respondent commented that:

Within any given DOC office there is a huge quantity of information on the shelves, on the desktop, and in the heads of the rangers. The staff working in the education roles do not always have access, or even know about all this information. (R34, question 12)

When asked what support or training might help them, one DOC educator wrote that they would like to know “What resources does DOC have access to, what should we or could we give to teachers?” (R24, question 16). Some Rangers (20%, 3/15) who made additional comments about what resources would help them do their job wrote that having access to shared resources would be a benefit (question 20). Ideal resources were described in the survey as being connected to the curriculum, in Te Reo and reflective of Māori worldviews (question 12). Having

access to these quality teaching and learning resources was seen to facilitate a DOC educator's ability to provide conservation education.

Not only do DOC educators need access to teaching and learning resources, but they also need to know how to use them. One DOC educator in the survey commented that, "We have resources ... we are always spending our energy on developing new resources... we have failed to adequately resource the delivery of resources." (R20, question 12) Another wrote in the survey that it would be helpful to have, "A comprehensive course for Rangers on how to deliver conservation education using our available DOC resources." (R17, question 16) Comments like these suggest a need to increase DOC educator's ability and confidence to use quality teaching and learning resources.

Providing professional support to DOC educators on how to use teaching and learning resources would allow them to pass on this information to teachers. Kerry, a manager, commented in an interview that:

It can't just be a resource that sits in a silo, it has got to be – there has got to be professional, like teacher education wrapped around that and we have actually got to support teachers to understand it and to use it and feel comfortable if they are going to use it.

Well-designed resources include the resource itself, as well as professional support for both DOC educators and teachers in their use.

4.5.6 Support to incorporate Māori perspectives

As discussed in section 4.4.5 *Multicultural values and perspectives*, DOC educators need to have the skills and understanding to authentically consider Māori perspectives in relation to conservation education. Accordingly, DOC educators will also need professional support in order to do this. DOC educator, Riku made the point in an interview that this needs to be supported nationally. He said:

I think there needs to be clearer support from the top down. Otherwise, you are at the whim of whoever is next above you. The ladder sort of thing. So, if they happen to be supportive and then resources can be allocated, time can be allocated and that kind of thing. If they are not supportive or they just don't understand or maybe don't see the relevance or the

importance of it, then it is more difficult to have the resources or time allocated, or they may be allocated sort of reluctantly which defeats the whole exercise.

While she wanted to incorporate the values and stories associated with Māori world-views, Reagan, a DOC educator, felt that she did not have the support to do so. She explained that:

There are really strong values and stories attached to a lot of the species that we work with here, and at the moment most of our education is focused on the ecology bit, but I think it would be great to take a more holistic approach to it and incorporate that cultural aspect into our education work when we do go and talk to the kids. That is an area in which I think we don't do enough and I don't think there is enough support for DOC staff.

DOC educators showed that they were interested to learn more about Māori world-views and using Te Reo (Māori) language, as discussed in section 4.4.5.1 *Skills to incorporate multicultural values and perspectives*. Clearer planning would be needed on how to offer this, as one survey respondent felt that the *Implementation Plan*, “really needs to define how Mātauranga Māori [Māori knowledge/wisdom] is going to contribute to the *[Implementation] Plan* and not just have it in there as a paragraph and nothing else.” (R18, question 29) Respondents felt that in order to authentically include Māori world-views and engage Māori in conservation education, professional support should be provided to enhance DOC educators’ understanding and ability.

4.5.7 Time investment for moving toward a new approach

One of the “driving pieces of rationale” for changing the way that DOC facilitates education is to “achieve better and higher quality outcomes from a limited resource” (Sarah, Outreach and Education manager, interview). There is tension between the new approach to DOC education and the amount of time available for DOC educators to do this work. Although the new approach is intended to best utilise DOC staff’s limited time, the reality is that the nature of the work being asked is intensive. DOC educator, William Douglas, explained in an interview:

I know part of the intention of this new education strategy is to free up more DOC time because – to stop us from going out directly face-to-face with all these schools. We could spend every day, every year doing and

still not get to every classroom probably. We are trying to move away from that so we have got more capacity and deliver at a higher level but there is still a lot of work involved to work out what that is.

As noted in section 4.3.1.4 *Time spent on education*, half (50%, 25/50) of the survey respondents said they spent between 1-20% of their time on education. Anne, a DOC educator, reaffirmed this point in an interview when she said:

There is a lot of assumed knowledge on behalf of the Department [DOC] for our Rangers. We are largely working in isolation, so that is another thing that is not factored in. And it is *part* of our job, it is not our whole job as well. I'll go to a school, and then turn around and negotiate ... for a big dairy farm down in the valley or something, so we have to have a way of doing this that is really pragmatic.

In the survey, another DOC educator wrote that additional time would be a support type that would help them in conservation education work:

The time to do a good job with schools and community groups that are genuinely interested in learning about the environment and/or taking action for the environment. Education often takes a backseat when it comes to fulfilling everyday DOC work (R24, question 20)

The issue of staff time in education is recognised among Outreach and Education staff. Sarah, a manager, explained in an interview:

We know that we are never going to have massive teams of dedicated full-time educators all around the country. We know we are always going to have pressure in terms of staff time and how much money we can put into this, so we are trying as hard as we can to advocate for an approach that really maximises the value of the resource that we have got.

Even so, staff time will be an issue for DOC educators moving forward. One respondent asked for more recognition of this in the survey:

Managers and DOC colleagues are great to work with and support as much as they can, when asked. However, a better understanding by colleagues and managers of the sheer scope of what's involved in coordinating wide-scale, ongoing education with communities would possibly enable us to share our tasks more and lead to a more coordinated approach throughout the team. (R9, question 20)

This respondent felt that an increase of understanding of what goes in to education by other staff would help secure the time needed for conservation education.

4.5.8 Summary

A coordinated plan for education at DOC has not existed until recently. Accordingly, professional support to do education work has also been generally absent. The approach laid out in the *National Education Strategy Implementation Plan* is not prescriptive and requires DOC educators to interpret how to apply it to their location. Many DOC educators have read and understand the *Implementation Plan* but report requiring additional help to see what DOC's role in education is and how this applies to their work. They see that guiding and enabling steps need to be made in order to avoid confusion about the direction intended for education at DOC. Internal networking and case studies of successful projects would help DOC educators get on the same page and better understand how to adapt their education work.

DOC educators indicate a need for access to quality teaching and learning resources as well as training on how to use those resources. Understanding how to use centralised DOC resources would allow DOC educators to pass this learning on to teachers. Support in terms of a resource suite and resource training would then allow DOC educators to better support teachers.

Many DOC educators discussed their desire to incorporate Māori world-views into conservation education. In addition, learning Te Reo Māori language was mentioned as an area for professional learning. In order for DOC educators to do this, support needs to be mandated to make time for training and development.

Some of the rationale for the approach outlined in the *Implementation Plan* was to get better outcomes from the limited capacity DOC has for education. However, respondents believe the new approach will require significant amounts of time. In the short term, the culture of education is changing for DOC staff, which demands time and capacity. In addition, DOC educators will be required to help reorientate external expectations around education. Applied over a longer term, the approach also has the potential to be time-intensive. This may need to be addressed as the

majority of DOC educators may well be juggling multiple priorities in their workloads.

4.6 Chapter Summary

Historically, DOC has not had a coordinated approach to education. To set goals and objectives for education, the *National Education Strategy 2010-2030* was created. This document outlines the aspirational goal of having one million conservation kids connecting with nature by 2030. Conservation kids will be engaged with DOC *In, About* and *For* the environment in order to develop action competence. Through utilising these approaches, the ripple effect of conservation engagement is seen to go beyond children into other areas of community.

Since the *Strategy* is largely aspirational, the *National Education Strategy Implementation Plan* was created to set a more applied tactical direction that could be useful at a local level. The *Implementation Plan* outlines how conservation education should be done through key principles, themes and general implementation planning. These are intended to be guides for education work and do not provide prescriptive steps due to the place-responsive manner of the new education approach. Because of the interpretive nature of the *Implementation Plan*, and because this represents a shift in what is being asked of DOC educators, it is possible that professional support including professional development, support and resources may need to be offered to DOC educators.

Assessing who DOC educators are and what they may need to do conservation education was an important step in determining the needs of these educators. Rangers (n=50) who self-identified as someone who worked in education for DOC and who wanted to share their opinions and experience in DOC and education responded to the survey. DOC educators who signed up for the survey came from various parts of the organisation. The members of the pre-survey list were equally distributed between urban and rural locations. Respondents were evenly distributed in the time they had been at DOC from 6 months to over 20 years, with a slight bias toward recent appointments. The majority of survey respondents had been in their current role between 6 months to 2 years, showing that many DOC educators may be new to their position but not new to the organisation.

The new approach to education proposed in the *Implementation Plan* represents a cultural shift in education. A potentially uncomfortable transition phase may coincide with this as DOC educators help manage both internal and external expectations around what education means for DOC. Survey respondents expressed a need for further clarity and guidance on what DOC's role in education is and what their work in education should now be comprised of. They expressed the need to have a solid grasp of what the *Implementation Plan* means for the organisation as well as how it will manifest in their unique location. Support and communication inside DOC were seen to be things that could aid the transition process.

Developing a common understanding within the organisation was one theme that DOC educators said would help move into a new approach in education. Internal networking opportunities would allow staff to work in the same direction while adapting programming to their unique location. Findings suggest that organisation wide understanding of conservation education and the time that goes in to it could help raise the profile of DOC educator's important work. DOC educators also said being given examples of successful projects and detailed case studies would help them comprehend the practical characteristics of quality conservation education.

DOC educators showed a preference for hands-on learning and interactive forms of engagement. There were clear values around the importance of contact with the outdoors for both children and adults. Connection to the environment was seen to contribute to the creation of an ethic of care for nature. Having up-to-date information about conservation and natural heritage was also seen to be very relevant. There was an emphasis on hands-on types of engagement, however, survey respondents reported being the most confident giving information. If DOC educators were to help facilitate a connection to the outdoors and to place, additional professional support might be needed to increase their confidence in working with people in the environment with an action orientation.

Up-skilling teachers in conservation education is one way to better serve students, according to the *Implementation Plan*. DOC educators are now being asked to

facilitate with teachers for long-term outcomes in education. Compared to other tasks, DOC educators reported the lowest level of confidence working with teachers in various ways. DOC educators felt that they need to understand how conservation fits into the curriculum and the communication skills to explain how this is relevant to teachers.

The issue of authentically incorporating Māori views into conservation education was discussed among study participants. According to some DOC educators, one way to do this would be to understand various perspectives of conservation and education. DOC educators showed interest in learning Te Reo (Māori language) and tikanga (customs) in order to incorporate Māori views into their education work at DOC. DOC educators expressed an interest in up-skilling in these areas, but felt that more support was needed to do so.

DOC educators reported that connecting with other organisations could help their conservation education work. Working in partnership can strengthen programmes through organisations sharing resources, opportunities and responsibilities. Fostering and maintaining collaborative relationships also presents challenges. Some DOC educators discussed barriers to working in collaboration including funding and capacity among different partners.

Evaluation could help DOC educators improve their education work. The majority of survey respondents said that they had goals and objectives for their projects and that they measure and monitor against them. However, other DOC educators said they needed help to understand what to and how to evaluate during and after programmes.

For most DOC educators in the survey, education was one of multiple priorities that were being juggled. One of the main objectives for changing the way that DOC engages in conservation education is to get higher quality outcomes out of a limited resource. While many DOC educators discussed supporting the new approach, it was also noted that this would take time to develop. The education strategies included in the *Implementation Plan* are time intensive. Time was discussed as a barrier to establishing external partnerships, working

collaboratively with teachers and evaluating programmes. With these findings presented, the implications, concluding thoughts and recommendations are discussed in the final chapter.

Chapter 5 Discussion, Conclusions and Recommendations

5.1 Chapter overview

This chapter provides a synthesis of the literature and findings from this interpretive mixed methods study. The implications of the Department of Conservation's (DOC) education policy as it relates to staff as well as DOC educators' views on what would help them do their work are considered. To begin, discussion is made of the findings with regard to the research questions that were presented in chapter one. Concluding points are then made followed by recommendations for professional support for DOC educators.

5.2 Discussion of findings

The research questions in this study are related to the professional needs conservation educators might have and that would enable them to facilitate quality conservation education (CE). The term 'needs' refers to the professional development, support and resources that could enhance CE work. Professional development might be any facilitation that allows staff to increase knowledge or improve skills. Support could include organisational leadership and coordination, internal and external networks, mentoring or peer coaching, and the provision of professional development and time to do conservation education. Resources could comprise both physical teaching and learning material, and time and budgets. To determine what could be put in place to support educators, sub-questions were aimed at identifying what national DOC staff perceived DOC educators to need as well as what DOC educators said they had and need. The findings are now discussed in the context of the research questions.

5.2.1 Perception from a national DOC perspective

Several key themes emerged from looking at a national DOC perspective, with data drawn from document analysis and interviews with DOC education managers. These themes include policy influences on education practice, provision of organisational support to educators, and provision of professional development opportunities.

The first of the themes relates to how DOC's direction and education policies might affect DOC educators. DOC has recently put a plan in place to coordinate

and strategize their participation in education. The *National Education Strategy 2010-2030 (Strategy)* (Department of Conservation, 2011a) outlines a vision for education at DOC that supports a participatory, multidisciplinary approach that emphasises real world experiences. Participatory engagement (for example, see Fien et al., 2002; Heimlich, 2010; McGregor, 2004), multidisciplinary (for example, see Brewer, 2001; Ministry for the Environment, 1998; Takacs et al., 2006) and place-based (for example, see Brewer, 2002a; Hill, 2013; Vaske & Kobrin, 2001) align with best practice described in the literature and are approaches advocated for through DOC's education policy. The *National Education Strategy Implementation Plan (Implementation Plan)* (Department of Conservation, 2015b) aims to provide some pathways for staff on how to put the *Strategy* in to practice. DOC's strategic direction is to increase the value placed on conservation, so it is appropriate that the pedagogy described in these documents is oriented towards approaches to Environmental Education/Education for Sustainability (EE/EfS) that also aim to foster experience in, develop values for and positive attitudes toward, the environment. This pedagogical approach is appropriate for a conservation organisation since values and attitudes have been shown to influence environmental behaviour, especially among those with a strong connection to nature (Aswathy et al., 2012; Bogner, 2002; Chawla, 1999; Flowers, 2010; Vaske & Kobrin, 2001). DOC management indicated that DOC's role in education is a brokering and enabling role aimed at engaging community, stakeholders and youth in conservation, and that it is also a leading central government agency, working with other government agencies to improve the way that EE/EfS is working as a whole. This position and the approach to education outlined in the *Implementation Plan* may represent a change for some staff, who may not be confident working in an enabling role, especially with teachers. Additional professional support for DOC educators working in this space may be required to effectively enact this new direction.

The second theme addresses the need for organisational support for DOC staff working in education. Support should be made available that facilitates DOC educators in their work as well as for the organisation as a whole to understand and value how education fits in to DOC's conservation mission. This corresponds to 'Building DOC's capability', one of the themes of the *Implementation Plan*

(Department of Conservation, 2015b). According to a manager, education has often been used as a quick engagement remedy in the past rather than a concerted, informed effort. It is notable that similar organisations to DOC are described in the literature as utilising education and outreach to serve environmental outcomes rather than educative ones (Braus, 2009; Fien et al., 2001; Foster-Turley, 1996). The hazard of focusing on environmental results through EE/EfS rather than educative ones may not only compromise the quality of education, but can also cause education within a conservation organisation to be neglected or devalued (Ardoin & Heimlich, 2013). In order to avoid this, leadership and commitment to education among conservation organisations needs to be recognised from senior levels. This support has been shown to influence the ability to implement best practice in EE/EfS/CE (Braus, 2009; Fien et al., 2002; National Park Service, 2011). In addition to advocating for best practices through policy, adequate training of practitioners, time/funding and strong evaluative evidence to support CE work needs to be in place (Ardoin & Heimlich, 2013). Decision-makers with a solid understanding of the pedagogy and best practice behind quality EE/EfS/CE will be better equipped to make choices to enhance conservation education work as well as support non-formal educators. Having organisation-wide understanding of current pedagogy and best practice could help secure short and long term planning for DOC educators' professional development, support and resources.

Finally, in addition to having organisational support for education, DOC educators also need professional development to help them develop skills and knowledge. This also relates to 'Building DOC's capability' since providing professional development, support and resources to DOC educators will facilitate their participation in best practice and ultimately their contribution to DOC's objectives. The *Implementation Plan* suggests that several areas of capability are needed for DOC educators. One of the themes of the *Implementation Plan* is 'Conservation education teachers' (Department of Conservation, 2015b). Professional support is therefore needed to help DOC educators understand how schools work and the conditions that can help teachers utilise conservation in the classroom in order to work in partnership. Historically, teachers have relied on non-formal educators to do EE/EfS, so putting these educators in a positive position to support the formal education sector is essential to see educational advancements (Bolstad et al., 2015;

Cowie & Eames, 2004; Peffer & Bodzin, 2010). In addition, one of the key principles from the *Implementation Plan* is “Mātauranga Māori” (Māori knowledge/wisdom) (Department of Conservation, 2015b, pp. 7-8). This suggests that DOC educators will need to be able to explore and integrate Māori perspectives throughout conservation education. DOC has an obligation to fulfil Treaty of Waitangi responsibilities (Department of Conservation, n.d.-c), which could be facilitated through staff becoming bi-culturally aware and showing appropriate consideration in developing a relationship with Iwi (tribes) (Hodges, 1994). Furthermore, the definition of education outlined in the *Strategy* is in alignment with the use of the *In*, *About* and *For* dimensions of EE/EfS, place-based education and an action competence approach. These approaches are seen to support best practice in EE/EfS/CE, (Barker & Rogers, 2004; Brewer, 2002a; Jensen & Schnack, 2006; Ministry of Education, 2015) requiring DOC educators to have an understanding of the concepts and how to put them into practice. One education manager made the point that dealing with values, connection to place and different perspectives, as is promoted through best practice in EE/EfS/CE, can be a complex process. In order to build capacity for action-taking, professional support is needed for CE practitioners (Braus, 2009). Concern over length of time to achieve best practice skills through professional development in a formal teaching setting has been expressed (Paul & Volk, 2002). The literature and findings show that understanding and implementing EE/EfS/CE and working with people on environmental and social issues will require a substantial amount of ongoing professional support.

5.2.2 Perception from a DOC educator’s perspective

Key themes that related to DOC educators’ perspectives included the need for professional development to implement the type of education being advocated at DOC, what types of professional support might be useful for them and the types of resources that were most valued by study participants. These themes are now discussed below.

Participants indicated several needs for professional development and support. Firstly, the findings suggest confidence to facilitate education *in* and *for* the environment should be increased. Many DOC educators reported that they preferred hands-on, participatory forms of engagement and indicated that they

saw a value in being in the outdoors. For example, 96% (48/50) of survey participants signified hands-on learning in the field was a very important aspect of education, and 86% (43/49) reported giving children and young people opportunities to build a connection to local places was very important (question 8). However, the types of tasks that DOC educators rated feeling the most confident carrying out were based on transmitting knowledge such as giving information about local conservation issues (88%, 44/50, question 12). This is consistent with what the literature suggests CE practitioners' strength may be (Bainer et al., 2000; Jickling, 1997; Taylor & Caldarelli, 2004). In order for CE practitioners to go beyond an information-based approach to learning, literature suggests educators need an understanding of learning theory, current education research (Ardoin & Heimlich, 2013) and the additional skills that may help to facilitate problem solving or action taking processes (Bowling, 2013). The findings show that DOC educators value hands-on engagement and connection to the outdoors, which could act as an essential base for further professional development to work with teachers *in*, *about* and *for* the environment.

Secondly, DOC educators who took the survey indicated a low level of confidence in working with teachers. For example, only 58% (29/50, question 12) of respondents said they felt confident planning teaching and learning opportunities with teachers. In addition, these DOC educators did not report a high amount of knowledge of the school curriculum. Only 10% (5/50, question 11) said that they understood how conservation fits in to the curriculum *very well*. The number of DOC educators who feel confident working with teachers may be boosted if their curriculum knowledge was increased, including how conservation and Mātauranga Māori (Māori knowledge/wisdom) fit in to the curriculum, as well as key concepts in EE/EfS.

One support type that DOC educators indicated would be helpful was guidance and clarity. Some DOC educators made the point that these are needed in order to practically apply the approaches outlined in the *Implementation Plan*. The majority of respondents (72%, 36/50, question 24) in the survey had read the *Implementation Plan* and a similar percentage (77%, 28/36, question 26) indicated that they would like to use the direction outlined in the *Implementation Plan*.

While most DOC educators showed a general level of receptiveness to the approach outlined by the *Implementation Plan*, comments also signalled that they needed additional support to put it into practice. One DOC educator explained in an interview that she was committed to the approach, but felt that more enabling steps needed to be in place in order to bring it into her work. Other DOC educators also made comments about wanting to participate in professional development. This shows a willingness to engage in professional support, which is an essential prerequisite in adult learning (Zepeda, 2013). Something that might enable DOC educators is having a well-defined understanding of DOC's role in education. Comments in the survey and interviews suggest that some DOC educators were unclear on DOC's role in education and how aspects of the education role fit in to their schedules while they balance other priorities.

In the survey and interviews, some respondents suggested establishing strong internal networks as something that would help form a common understanding of DOC's place and objectives in education. Forming bonds and trust among professional networks has been seen to aid in developing shared goals, meaningful collaboration and life-long learning among these types of professional communities (National Park Service, 2011; Youngs & King, 2002). Related to this, many survey participants also indicated that in-person education workshops (78%, 39/50, question 20) would benefit their education work. At least one periodic face-to-face workshop per year was discussed in the literature as a support type that other non-formal educators found helpful (Ardoin & Heimlich, 2013; National Park Service, 2011; Velardi et al., 2015). In addition, since the approach that is being advocated for in the *Implementation Plan* needs to be adapted for each unique situation, the majority of survey participants indicated that examples of successful projects (82%, 41/50) would be helpful for them to hear about. This is consistent with Ardoin and Heimlich's (2013) finding that case studies assisted the educators in their study. Supporting internal networks and offering case studies could help to establish common understanding of education at DOC and enable DOC educators to bring the approach outlined in the *Implementation Plan* in to their work.

Internal networks were also discussed as something that could offer DOC

educators guidance on knowing how and what to evaluate in a programme (25%, 7/27, question 23). Establishing clear goals and participating in on-going evaluation of CE work can help keep a programme on track (Fien et al., 2002; Flowers, 2010; Jacobson & McDuff, 1997; National Park Service, 2011) and ensure that outcomes are in line with an organisation's mission (Heimlich, 2010). The majority (70%, 35/50, question 21) of DOC educators said that they have goals and objectives for their projects, but less (58%, 29/50, question 22) reported that they measure and monitor against them. There was a fairly even distribution of DOC educators who ranked gaining additional knowledge (46%, 23/50), support (44%, 22/50), and skills (42%, 21/50) as being helpful to measure and monitor projects (question 23). Most (60%, 30/50, question 23) respondents said that resources, such as time, would help them monitor and evaluate their projects.

DOC educators discussed what resources would most help them fulfil their work in education. Ideal teaching and learning resources were described in the survey as being connected to the curriculum, in Te Reo Māori language and be reflective of Māori worldviews (question 12). Having access to quality teaching and learning resources, as well as getting professional development to understand how to use resources, were both seen to be something that would facilitate a DOC educator's ability to provide CE. Time was also discussed as a valuable resource. One of the reasons for aligning education at DOC with best practice in EE/EfS is to get higher quality outcomes out of a limited education resource (Sarah, Outreach and Education manager, interview). While working toward DOC's new aspirational goals may increase efficacy in achieving both environmental and education outcomes, the approach could also take a lot of time to develop and implement. Half of the DOC educators who participated in the survey reported spending only 1-20% of their time on education, so they are balancing education with other priorities. Concern among DOC educators regarding the amount of time available for education work was present throughout the study. Literature shows that time was a factor for CE practitioners in terms of implementing best practice in environmental and conservation education (Ardoin & Heimlich, 2013; Bowling, 2013; National Park Service, 2011; Slattery & Lugg, 2002; Stern et al., 2012; Young, 2001) such as the ability to evaluate programmes (Jacobson & McDuff, 1997; Norland, 2005) and form long term partnerships (Cowie & Eames, 2004;

National Park Service, 2011). Best practices were also found to be more prevalent at national parks in the US with more full time equivalents devoted to education (Bowling, 2013). As a result DOC educators may be facing considerable pressure to achieve education outcomes with a capacity that does not meet the scope outlined in the *Implementation Plan*.

5.3 Conclusion

There is an opportunity to use conservation as a medium to facilitate quality education *In, About and For* the environment that aims to engage in a process to see positive environmental and educational results. It should be noted that participating in this type of environmental education practice presents many challenges, as well as opportunities. A review of literature shows that researchers and practitioners have been saying similar things about environmental education andragogy/pedagogy and practice in the Western world over the past 40 years. Although examples of progress in this area are promising, their impact has not been enough to reverse many of the environmental problems we face today. Challenging and changing the social norms that have placed the environment and human well-being in peril is a complicated effort. Engaging in an environmental education process can be a formidable task, so professional support for the educators is critical. The following conclusions can be drawn from this study about the professional support needs of non-formal educators working for DOC.

There is a clearly articulated approach to education at DOC through the *Implementation Plan*, which has a general level of support among staff. However, DOC educators have experienced some difficulties putting the approach outlined into practice. Findings and literature suggest that increasing organisation-wide support and understanding of best practice in EE/EfS as well as increasing the capability of DOC educators may help this.

The education policy put in place at DOC, DOC managers and DOC educators agree that conservation education in Aotearoa/New Zealand should reflect DOC's Treaty of Waitangi obligations and authentically incorporate Māori views into conservation education work. DOC educators feel the need to have greater support in order to do this.

DOC educators reported feeling the most confident giving information, and the least confident working with teachers. The findings suggest that DOC educators may need professional support to work with teachers and facilitate *in* and *for* the environment as well as *about* it. Some professional support types that were rated highly and that could help DOC educators gain confidence in these areas include having strong internal networks, participating in in-person workshops and learning from case studies.

The literature suggests that increasing DOC educator's ability to participate in on-going programme evaluation could increase success. In order to do this, DOC educators reported needing to know how and what to evaluate in a programme. Time would also need to be allotted in a DOC educator's schedule to measure and monitor education programmes.

Although the *Implementation Plan* was put in place to get higher quality outcomes out of a limited resource, the approach advocated takes time to put in place. Time to do education work was found to be a highly valued but sometimes limited resource among DOC educators. Patience therefore may be required in implementing the desired educational changes or alternatively an increase of time for this work will be needed.

5.4 Recommendations

Short and long term planning for professional support should be in place to lift DOC educators' work in education as well as the EE/EfS sector as a whole.

Support should be offered in the following areas to enable staff to work in education:

- Ensure there is organisational valuing and understanding of education, especially among leadership so the support and resources needed to do education work are provided.
- Establish what DOC's role in education is among those working in that space (as well as throughout the organisation).
- Provide guidance as to how education fits in to DOC educators' roles.

- Facilitate internal networks so DOC educators can learn from and support each other.

The following areas should be included in professional development for DOC educators:

- How to uphold DOC's Treaty of Waitangi obligations in education and authentically incorporate Māori views into conservation education.
- How schools work, including what teachers need, how conservation fits in to the curriculum, how Matāuranga Māori (Māori knowledge/wisdom) fits in to the curriculum, and how to communicate with teachers.
- Key dimensions of EE/EfS, action competence, place-based education and examples of how these can be implemented.
- How and what to evaluation in education work.

The most valuable resource found was time:

- Consideration should be made as to the amount of time required to uphold best practice in education at DOC.
- Time needs to be allotted in DOC educators' work to do things like evaluate programmes, reflect on practice and form partnerships.

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APPENDICES

Appendix A: Example emails from national staff

Email to Partnership and Services Managers

CC'ed	Directors
To be sent out	Monday 29 June 2015
Sent by	Manager
Subject	Professional Development Research Project Conservation Education
	On Thursday 2 July the Outreach and Education Team will be inviting staff to register their interest in a research project focussing on DOC's Conservation Education professional development needs. Professional development for staff involved in Conservation Education is important and understanding our needs in this area is key to our success. This project is a component of the recently launched Conservation Education Implementation Plan. The research project will be carried out by an independent University of Waikato Masters student Valerie Bianchi, and all information gathered through the survey and follow up interviews will be kept confidential. The Outreach and Education Team will work with the Capability Development Team to apply the learning to future staff development opportunities. Staff will be invited to register their interest in the research project by following a link in the front page intranet story. Please encourage your team to read the story and register to participate in the survey if their work includes any aspect of working in Conservation Education.
Text	

Email to Community Engagement Unit

CC'ed

To be sent out Monday 29 June 2015

Sent by Manager

Subject Professional Development Research Project | Conservation Education

On Thursday 2 July the Outreach and Education Team will be inviting staff to register their interest in a research project focussing on DOC's Conservation Education professional development needs.

Professional development for staff involved in Conservation Education is important and understanding our needs in this area is key to our success. This project is a component of the recently launched Conservation Education Implementation Plan.

Text

The research project will be carried out by an independent University of Waikato Masters student Valerie Bianchi, and all information gathered through the survey and follow up interviews will be kept confidential. The Outreach and Education Team will work with the Capability Development Team to apply the learning to future staff development opportunities.

On Thursday 2 July all staff will be invited to register their interest in participating in the research project through following a link in the front page intranet story.

Email to Rangers involved in Education

CC'ed

To be sent out Tuesday 14 July 2015

Sent by Manager

Subject Professional Development Research Project | Conservation Education

Kia ora koutou

Last Thursday 2 July the Outreach and Education Team invited you to participate in a research project focussing on DOC's Conservation Education professional development needs.

For those of you who missed the front page intranet story on Thursday 2 July, or simply haven't got around to registering for the research project, it is not too late.

Please register your interest in participating in the research project by signing up to the upcoming survey. You can follow this link to register your interest.

Text

Professional development for staff involved in Conservation Education is important and understanding our needs in this area is key to our success. This project is a component of the recently launched Conservation Education Implementation Plan.

The research project will be carried out by an independent University of Waikato Masters student Valerie Bianchi, and all information gathered through the survey and follow up interviews will be kept confidential. The Outreach and Education Team will work with the Capability Development Team to apply the learning to future staff development opportunities.

Please get in touch if you have any questions about the research project, or contact Valerie directly if you have specific questions about the survey and follow up interviews.

Appendix B: Email to participants

Subject line: Conservation education survey open today!

Tēnā koe,

Thank you for volunteering to participate in the survey about conservation education professional support! Your input will help shape what professional development, support, networking and other opportunities are considered for conservation education staff as a part of DOC's commitment to build internal capability in this specialist area.

The survey should take about 30 minutes to complete.

Follow this link to start the survey:
<https://www.surveymonkey.com/r/MHMTFVQ>

Please let me know if you have any questions.

Ngā mihi,

Valerie

Valerie Bianchi

ValerieBianchi@gmail.com

021 069 6434

Appendix C: Reminder email

Subject line: Conservation education survey thank you

Tēnā koe,

Thank you to those who have completed the survey about conservation education professional support! Your input will help shape what professional development, support, networking and other opportunities are considered for conservation education staff as a part of DOC's commitment to build internal capability in this specialist area.

The survey will be open until the first week of September. For those who have not completed the survey, you can follow this link to start:
<https://www.surveymonkey.com/r/MHMTFVQ>

The survey should take about 30 minutes to complete.

PLEASE NOTE: By completing and **submitting** the survey you are agreeing to participate in my research. If you do not submit the survey, this means you are not agreeing to participate and the opinions expressed in your survey are not usable. More information about this can be found at the beginning of the survey.

Please let me know if you have any questions.

Ngā mihi,

Valerie

Appendix D: Closing email

Tēnā koe,

Thank you to those who have completed the survey about conservation education professional support!

For those who have not completed the survey, you can follow this link to start: <https://www.surveymonkey.com/r/MHMTFVQ>

The survey will close this Friday, 4 September.

Once the survey closes, I will begin to contact people who have indicated that they are interested in participating in a short interview. Because of time constraints, I will only be able to interview a small number of people. I will select people at random from various locations around the country. Please accept my apologies if you have said you would like to do an interview and are not contacted.

PLEASE NOTE: By completing and submitting the survey you are agreeing to participate in my research. If you do not submit the survey, this means you are not agreeing to participate and the opinions expressed in your survey are not usable. More information about this can be found at the beginning of the survey.

Please let me know if you have any questions.

Ngā mihi,

Valerie

Appendix E: Interview invitation

Tēnā koe,

This is Valerie from the University of Waikato. I got your name as someone who would be interested in participating in an interview following the survey that I organised in August about conservation education professional support. Thank you for volunteering to participate in the interview! This will add valuable depth to the survey that many took in August.

If you choose to participate, you will be interviewed individually (duration up to 20 - 30 mins). With your permission, I would like to audio-tape the interview to obtain a good record of our conversation. If recording occurs, I will provide you with a transcript of the interview for you to check for accuracy and to approve use of your data. Interviews will be via phone, video conferencing or in person when possible. Data collected during the study may be used in writing reports, publications or in presentations. I will not use your name or the names of other participants in any publications or presentations. You can decline to be involved in the research without prejudice, and can withdraw any or all data you have provided in the interview up to two weeks after being sent a transcript of your interview for checking and approval. If there is a withdrawal, we will destroy any data gathered from you.

If you are still interested in participating in an interview, please let me know. I would like to do these interviews between 23 September – 9 October, but if you do not have time during this period please let me know so we can schedule a later date in.

Please let me know if you have any questions.

Ngā mihi,

Valerie

Appendix F: Document analysis questions

1. What is DOC's role in conservation education?

Specific question: What is the DOC strategy for conservation education?

2. What are DOC's conservation education goals?

3. What pedagogical underpinnings are being used to guide DOC conservation education?

Specific question: What is the pedagogical underpinning expressed by the *DOC Strategy*?

4. Who is involved in conservation education?

5. What is conservation education best practice according to DOC?

6. How should best practice be implemented according to DOC?

7. What resources are needed to do this?

8. What does DOC education policy recommend Rangers contribute to conservation education?

9. Is there synergy between what DOC policy suggests and what Rangers believe they need to facilitate quality conservation education?

Appendix G: Survey

Hi, my name is Valerie and I am studying for a Master of Education degree at the University of Waikato. For my thesis project, which has the full approval of Ben Reddiex, Director of Community Engagement at DOC, I will be conducting a study to understanding your needs as a conservation educator. I hope the findings will help DOC understand what knowledge, support and professional development you may need so that targeted opportunities and resources can be used to achieve conservation goals.

Your involvement consists of completing this survey, which should take about 30 minutes of your time. If you would like to add any other thoughts or comments you can also volunteer to do a short 20-30 minute interview following the survey. Doing this will add depth to the information given in the survey and will help paint the picture of conservation education at DOC. If you have not already indicated that you would like to do this and are interested to do so please contact Valerie at valeriebianchi@gmail.com.

This survey is anonymous and any identifying information you might make in any of your responses, such as reference to a location, will be removed. Surveys are being done with a private SurveyMonkey account. Survey responses will not be seen by anyone, including any DOC staff, except for myself until all identifying features are removed and data is in an aggregated form. Data collected during the study may be used in writing reports, publications or in presentations. I will not use your name or the names of other participants in any publications or presentations. I will make sure that all the information gathered from you is stored securely. You can decline to be involved in the research without prejudice.

By taking this survey you agree to give your consent to the use of the information you provide for this study. Since this study is anonymous it will not be possible to remove your survey responses after you complete the survey. If you need any more details about the project, or issues arise for you during the project, please contact me [Valerie: valeriebianchi@gmail.com]. If I am unable to resolve your concerns, you may contact my supervisor, Dr. Chris Eames: c.eames@waikato.ac.nz; 07 838 4357.

Demographic information

1. Please indicate your age in years (18 and under, 19-25, 26-35, 36-50, 51-65, 66+)
2. Please indicate your gender (M/F/Other)
3. How long have you worked for DOC?
 - less than 6 months
 - between 6 months and 2 years
 - between 2 and 5 years
 - between 5 and 10 years
 - between 10 and 20 years
 - more than 20 years
4. How many years have you been in your current role?
 - less than 6 months
 - between 6 months and 2 years
 - between 2 and 5 years
 - between 5 and 10 years
 - between 10 and 20 years
 - more than 20 years
5. Please estimate how much time in your position you spend on education? (0%, 1-20%, 21-40%, 41-60%, 61-80% and 81-100%)

Questions about conservation education

6. Thinking about the last 12 months, how often did you carry out each of these roles? (I didn't do this, I did this a little bit, I did this a lot)
 - Working with teachers to plan teaching and learning opportunities
 - Taking students on field trips
 - Taking only teachers on field trips (without students)
 - Giving people information about local places
 - Giving people information about specific local conservation issues
 - Encouraging conservation action (i.e. trapping, monitoring, planting, weeding etc)
 - Giving presentations about conservation
 - Designing teaching resources
 - Providing teaching resources
 - Working with conservation education partners
 - Is there anything else you would like to add?
7. In the past 12 months, what topics have you focused on for your conservation education work? (e.g. endangered birds, pests, wetlands, etc.)
8. How important do you think the following are to children and young people for conservation education? (I don't know, this is not important, this is a little bit important, this is very important)
 - Learning about conservation in the classroom
 - Opportunities to take action for conservation
 - Gaining knowledge about conservation and our heritage
 - Being able to ask questions
 - Hands on learning in the field
 - Opportunities to take on leadership roles in conservation
 - Opportunities to build a connection to local places
 - Opportunities to be involved in the community

- Opportunities for students to contribute to what is learned (Students help guide what is learned/Inquiry learning)
- Developing values related to conservation
- Are there any other aspects of conservation education that you think are important?

Questions about best practice and formal education

9. How do you think DOC can best support schools and teachers?
10. What do you think teachers need in order to do quality conservation education?
11. Please rate your knowledge of the following by clicking the appropriate button (I don't have a working knowledge of this, I know a little bit about this, I understand this, I understand this very well)
 - The NZ curriculum
 - How conservation education fits in to the NZ curriculum
 - How Mātauranga Māori fits in to the NZ curriculum
 - How to communicate to teachers about conservation education
 - The In, about and for dimensions of environmental education
 - Education for Sustainability

Questions about capability (Support, knowledge, professional development)

12. In the role you are currently being asked to fill, how confident are you to do the following tasks? Please indicate by clicking the appropriate button: (Not applicable, I feel confident, I do not feel confident)
 - Working with teachers to plan teaching and learning opportunities
 - Taking students on field trips
 - Taking only teachers on field trips (without students)
 - Giving people information about local places
 - Giving people information about specific local conservation issues
 - Encouraging conservation action (i.e. trapping, monitoring, planting, weeding etc)
 - Giving presentations about conservation
 - Designing teaching resources
 - Providing teaching resources
 - Working with conservation education partners
 - Is there anything else you would like to add?
13. What would help you work more collaboratively with partner organisations in conservation education?
14. What learning about different cultural groups, if any, would help you do your conservation education work?
15. Is there something that you would like to learn more about, or a skill that you would like to develop, that would help you achieve conservation education goals? (No, Yes)
 - If yes, what would you like to learn more about?
16. Is there any other training or support that would be helpful for you in your education work?

Questions about support

17. Do you feel like you are able to offer conservation education guidance and support generally or in your area of expertise to: (Please indicate by clicking the

appropriate button, I don't know, I am not able to offer support, I can offer a little bit of support, I can offer lots of support)

- DOC colleagues
- Conservation education partners
- Teachers
- Community members
- Students

18. What support/skills/experience do you feel you are able to offer?

19. Do you feel like you have the support you need to do your job in conservation education? Please indicate by clicking the appropriate button (I don't know, I don't have support, I have a little bit of support, I have a lot of support)

- From DOC colleagues
- From my manager
- From DOC's partners
- From teachers
- From the community

20. What type of support do you think would help you do your conservation education work? Please indicate by clicking the appropriate button: (This would not be helpful, This would be a little bit helpful, This would be very helpful)

- A "Getting Started" type manual with conservation education basics
- DOC National of Regional education hui
- Examples of successful projects and their outcomes
- Examples of less effective projects
- In person education workshops
- Teleconferencing education workshops
- External networking opportunities
- Study opportunities (e.g. through a paper or certificate programme)
- Is there any other support that would help you do your job?

Questions about evaluation and monitoring

21. Do you have goals and objectives for your conservation education work? Yes/No/I don't know

22. Do you measure and monitor against these goals and objectives? I don't know/No/Yes

- If yes, please explain how you measure and monitor

23. In order to monitor and evaluate your projects, would you like more: (Please indicate by clicking the appropriate button: I don't know; No, I have what I need; Yes, I need more of this)

- Skills
- Knowledge
- Support
- Networks
- Resources
- If you would like any of these, what specific skills, knowledge, support, networks or resources would help you measure and evaluate?

Questions about the DOC education Implementation Plan

24. Have you read the DOC education Implementation Plan? I don't know what this is/No/Yes
25. Please briefly describe the direction outlined in the DOC education Implementation Plan in your own words.
26. Would you like to, or do you, use this direction to drive your work? Yes/No/I don't know
27. What do you think would help you incorporate this direction into your work?
28. Do you feel like you can describe DOC's conservation education approach to teachers and conservation education partners? Yes/No/I'm not sure
 - If not, what would help you to be able to describe DOC's conservation education approach to teachers and conservation education partners?
29. Is there anything else you would like to tell us about conservation education in DOC?

Thank you for taking the time to participate in this survey. If you would like to add any other thoughts or comments you can also volunteer to do a short 20-30 minute interview following the survey. Volunteering to participate in an interview will add depth to the information given in the survey and will help paint the picture of conservation education at DOC. If you have not already indicated that you would like to do participate in an interview and are interested to do so please contact Valerie at valeriebianchi@gmail.com.

Appendix H: National staff interview questions

About the participant

1. What is your role in DOC? What other roles have you had in DOC previously?
2. How long have you been in these roles?

Developing the education strategy and implementation plan

3. What instigated the current strategy and new implementation plan for conservation education? How long have they been in place?
4. Who was involved in formulating the strategy? How were staff consulted during the process of developing the strategy and implementation plan?
5. Were teachers or other partners consulted during the process of developing the strategy and implementation plan? Do you think the proposed approach to conservation education is supported by teachers?

Principles of the education strategy and implementation plan

6. What do you see as DOC's role in conservation education today?
7. How do you think the National Strategy and Implementation plan show this role??
 - a. Does this represent a change in direction? Why was there a change?
8. What do you think DOC is looking to achieve with its conservation education? Knowledge development, attitude change, behavior change, action competence or something else?
9. What do you think "investing" in students means as suggested as the education approach in the Implementation Plan?
10. What other policies does DOC have that supports its education goals and objectives?
11. What approaches to conservation education are recommended by the National Strategy and Implementation plan?
 - a. What approaches to conservation education are being advocated for?
 - b. How do these approaches affect students and teachers?
 - c. How do these approaches affect DOC educators?
 - d. Why are those approaches preferred?
 - e. How are those approaches seen to support DOC's conservation education goals?

Dissemination

12. To the best of your knowledge, how were the National Strategy and Implementation plan made known to staff?
13. What do you believe is the expectation for the policies to be read and used by DOC staff?

Who will be involved?

14. Who is expected to be involved in conservation education for DOC under the National Strategy and Implementation plan?
15. How are these people expected to contribute to conservation education to achieve DOC's goals?
16. How might these staff be allocated time for conservation education work within their job roles?

Support

17. What kind of support is being advocated for DOC conservation educators to facilitate quality education?

18. What is the nature of the support that is being planned for DOC conservation educators? (one day work shops, long term engagement?)
19. What resources do you think DOC conservation educators need to facilitate quality conservation education for DOC?
20. What resources are being prioritized to support conservation education within DOC?
21. What are the key competencies that you think DOC conservation educators need to achieve goals and facilitate quality conservation education under the National Strategy and Implementation plan?
22. Are there any topic areas that you suspect will be the focus of needed professional development for DOC education staff?
 - a. Do you think DOC education staff are currently able to empower teachers to deliver conservation education?
 - b. Do you think DOC education staff are currently able to teach teachers about conservation?
 - c. Do you think DOC education staff are currently able to communicate how conservation education fits in to the curriculum to teachers?

Outcomes

23. How do you expect that progress towards DOC's educational goals will be monitored/evaluated?
24. How will DOC education staff be involved in the monitoring/evaluation of their educational work?
25. Do you foresee any challenges for DOC conservation educators under the new strategy?
26. Do you foresee any challenges for DOC as a whole under the National Strategy and Implementation plan?

Appendix I: DOC educator interview questions

1. Can you tell me about your role at DOC? What percentage of your time roughly do you spend doing education work for DOC? What sorts of things do you do?
2. Have you gained any qualifications or had specific professional development in education?
3. Prior to your current involvement with education, have you previously worked in an education field? If so, what was it? How long ago?
4. In your education work for DOC, how would you describe your general approach to educating? Why do you take that approach?
5. How confident do you feel in your education work? Do you get support to do your conservation education work? How do you feel about the support you receive?
6. What does quality conservation education look like to you? Or In your education work for DOC, what do you hope to achieve? Why is that important to you?
7. How do you think you could tell if you are doing a good job in your education work? How do you set aims and goals for education programmes? What do they connect to? How do you know when you achieve them?
8. Rangers who took the survey discussed providing DOC resources to teachers. Do you think that is important? If so, why? And what sort of resources?
9. Rangers who took the survey said they wanted to learn more about the school curriculum. Do you think that is important? If so, why? What would you want to know?
10. Rangers who took the survey also said they should give support to teachers. Do you agree? How do you see yourself supporting teachers?
11. How do you envisage Maori views being represented through DOC conservation education?
12. How important do you think developing values is for conservation education? How do your own environmental values influence your work in education?
13. Some of the survey responses gave me the sense that Rangers need some clarification about aspects of the Implementation Plan and DOC's education message. Are there aspects of the Plan and DOC's education message that you feel should be clearer?

Appendix J: Ethical approval

Dr Karsten Zegwaard

Chair, Human Ethics Faculty of Science and Engineering

Te Pūtāiao me te Mātauranga Pūkaha
The University of Waikato
Private Bag 3105
Hamilton, New Zealand

Telephone 64-7-838 4892
Email k.zegwaard@waikato.ac.nz



THE UNIVERSITY OF
WAIKATO
Te Wānanga Wānanga o Waikato

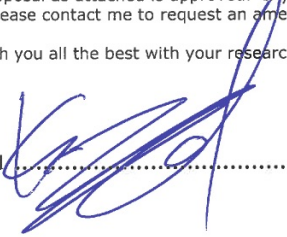
To: Valerie Bianchi
Date: 10-June-2015
From: Karsten Zegwaard
Subject: Ethical approval for research
Application # #FSEN/TEMS-2015-7

Dear Valerie,

The Faculty of Science and Engineering Human Research ethics sub-committee has considered your proposal "*A Needs Assessment of Conservation Educators within the Department of Conservation*".

The proposal as attached is approved. If you wish to vary the terms of the approved application in any way, please contact me to request an amendment.

We wish you all the best with your research!

Signed 

Date: 10-6-2015

Appendix K: Director of Community Engagement consent letter

Technology, Environmental, Mathematics and
Science Education Research Centre

He Rangahau toi Tangata
The University of Waikato
Private Bag 3105
Hamilton, New Zealand

Telephone 64-7-838 4035
Facsimile 64-7-838 4272
Email tems@waikato.ac.nz



18 June 2015

Dear Director of Community Engagement,

My name is Valerie and I am studying for a Master of Education degree at the University of Waikato. For my thesis project I will be conducting a study to understand the needs of conservation educators. I would like to invite Department of Conservation (DOC) staff for whom you are currently in a position of leadership to participate in the research study. I hope the findings will help DOC understand what the of their staff involved in education roles needs may be so that targeted professional development and resources can be applied.

Three points of data collection are being proposed. Firstly, I would like to interview (Your staff member) and (Your staff member) who can provide a national perspective of education. They may be interviewed individually (duration up to 30 - 60 mins) or as part of a group (duration up to one and a half hours) depending on their choice and convenience to them. With their permission, I would like to audio-tape the interview to allow a good record to be obtained of our conversation. If recording occurs, I will provide them with a transcript of the interview to check for accuracy and to approve use of their data. Interviews will take place at a location of mutual convenience. Following these interviews, DOC staff who are participating in the education space will be invited to take an online or paper survey about their needs, beliefs and practices in education. Ideally we would like to have about 100 volunteers for this with at least 40 completed surveys. The survey should take about 20-30 minutes to complete. These participants will then be invited to do a 20-30 minute interview if they would like to add any other thoughts about education. Ideally two to three people would volunteer for this interview. The procedures outlined above will be followed for these interviews. All participants will be voluntary members of the study and their informed consent to be involved will be sought. They would be free to decline to be involved.

Data collected during the study may be used in writing reports, publications or in presentations. I will not use your name or the names of other participants in any publications or presentations. I will make sure that all the information we gather from you and from participants is stored securely. You can express a wish for your group not to be involved in the research without prejudice.

I would appreciate your agreement to approach your group's members as described. If you need any more details about the project, or issues arise for you during the project, please contact me [Valerie: valeriebianchi@gmail.com]. If I am unable to resolve your concerns, you may contact my supervisor, Dr. Chris Eames: c.eames@waikato.ac.nz; 07 838 4357.

Yours sincerely, Valerie Bianchi

Appendix L: National Outreach and Education manager consent letter

**Technology, Environmental, Mathematics and
Science Education Research Centre**
He Rangahau toi Tangata
The University of Waikato
Private Bag 3105
Hamilton, New Zealand

Telephone 64-7-838 4035
Facsimile 64-7-838 4272
Email tems@waikato.ac.nz



18 June 2015

Dear National Outreach and Education Manager,

My name is Valerie and I am studying for a Master of Education degree at the University of Waikato. For my thesis project I will be conducting a study to understand the needs of conservation educators. I would like to invite Department of Conservation (DOC) staff for whom you are currently in a position of leadership to participate in the research study. I hope the findings will help DOC understand what the of their staff involved in education roles needs may be so that targeted professional development and resources can be applied.

Three points of data collection are being proposed. Firstly, I would like to interview Kerry Penny who can provide a national perspective of education. She will be interviewed individually (duration up to 30 - 60 mins). With her permission, I would like to audio-tape the interview to allow a good record to be obtained of our conversation. If recording occurs, I will provide them with a transcript of the interview to check for accuracy and to approve use of their data. Interviews will take place at a location of mutual convenience. Following these interviews, DOC staff who are participating in the education space will be invited to take an online or paper survey about their needs, beliefs and practices in education. Ideally we would like to have about 100 volunteers for this with at least 40 completed surveys. The survey should take about 20-30 minutes to complete. These participants will then be invited to do a 20-30 minute interview if they would like to add any other thoughts about education. Ideally two to three people would volunteer for this interview. The procedures outlined above will be followed for these interviews. All participants will be voluntary members of the study and their informed consent to be involved will be sought. They would be free to decline to be involved.

Data collected during the study may be used in writing reports, publications or in presentations. I will not use your name or the names of other participants in any publications or presentations. I will make sure that all the information we gather from you and from participants is stored securely. You can express a wish for your group not to be involved in the research without prejudice.

I would appreciate your agreement to approach your group's members as described. If you need any more details about the project, or issues arise for you during the project, please contact me [Valerie: valeriebianchi@gmail.com]. If I am unable to resolve your concerns, you may contact my supervisor, Dr. Chris Eames: c.eames@waikato.ac.nz; 07 838 4357.

Yours sincerely, Valerie Bianchi

Appendix M: Interview consent letter

Date 2015

Dear Potential Participant,

We are writing to invite you to participate in a research study that we are conducting at The University of Waikato. This study is about understanding the needs of conservation educators. We hope our findings will help DOC understand what the pedagogical position of those staff working in education and what their needs may be so that targeted professional development and resources can be applied.

We would like to involve you in this study. As a conservation education practitioner, we would like to interview you regarding your perspective on education. If you choose to participate, you will be interviewed individually (duration up to 20 - 30 mins). With your permission, we would like to audio-tape the interview to allow us to obtain a good record of our conversation. If recording occurs, we undertake to provide you with a transcript of the interview for you to check for accuracy and to approve use of your data. Participants will own their own raw data on the interview tapes and transcripts and the researchers will own their interpretation and analysis of the data. Interviews will take place at a location of mutual convenience or via phone or video conferencing.

Data collected during the study may be used in writing reports, publications or in presentations. We will not use your name or the names of other participants in any publications or presentations. We will make sure that we store all the information we gather from you securely. You can decline to be involved in the research without prejudice, and can withdraw any or all data you have provided up to two weeks after being sent a transcript of your interview for checking and approval. If there is a withdrawal, we will destroy any data gathered from you.

We would appreciate your consent to be involved as described. If you need any more details about the project, or issues arise for you during the project, please contact us [Chris: c.eames@waikato.ac.nz, 07 838 4357; Valerie: valeriebianchi@gmail.com]. If we are unable to resolve your concerns, you may contact our Director, Professor John Williams: jwilliam@waikato.ac.nz; 07 838 4035.

Yours sincerely

Chris Eames and Valerie Bianchi