Education in Outdoor Settings: The Teacher's Role in More-than-human Curriculum Making

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Declaration

I declare that I have composed this thesis by myself and that it embodies the results of my own research. Where appropriate, I have acknowledged the nature and extent of work carried out in collaboration with others included in the thesis.

Jonathan Lynch

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Abstract

Learning beyond classrooms is becoming more common in formal and non-formal education internationally. Research on outdoor learning and education has focussed on barriers, outcomes, and equity rather than processes or teachers' practice. Despite claims around the importance of natural and outdoor places in education, the ways in which teachers consider and use particular places in preparing for and teaching outdoors is not well understood. Despite calls to do so, non-anthropocentric, posthumanist, and new materialist place theories remain under-utilised in empirical research in this area. Notably, there are only a handful of studies that include any reference to teachers' views or practices with respect to the role of more-than-human elements. The aim of this thesis was to find out from teachers themselves when and how more-than-human elements became harnessed into the planning and enactment of curricula for outdoor learning. A multicase study was employed to inquire into the practice of five in-service school teachers based on place-responsive methods, namely, walking interviews and memory-box interviews. Drawing on postqualitative orientations to analysis, Deleuzoguattarian inspired vignettes produced four findings. In different ways, these teachers' practice emerged through (1) their ability to notice the more-than-human, (2) attending to how their learners noticed and responded to the more-than-human in educational experiences, (3) seeking to become more attuned to the places visited, and (4) supporting the assembling of material, discursive, human, and more-than-human elements together in curriculum making. Implications for teacher education and in-service practice that encourage consideration of the more-than-human in educational practice are signposted. The thesis' contribution provokes new considerations of how outdoor educational provision can be re-oriented to include more-than-human elements. These contributions may be significant in supporting education that could improve human-environment relations and address environmental concerns.

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Chapter 1 Introduction

THE WEB OF LIFE

LIGHT, AIR, WATER AND SOIL ARE THE ELEMENTS OF LIFE,

LIFE IS DIVIDED INTO PRODUCERS, CONSUMERS, AND DECOMPOSERS,

EVERYTHING IS BECOMING SOMETHING ELSE

EVERYTHING HAS A HOME

Steve Van Matre (1972; 5)

This quote brings together aspects of this research with my professional journey in outdoor education. I start this chapter with this quote from Steve Van Matre. He put this statement at the beginning of his text "Acclimatization: A Sensory and Conceptual Approach to Ecological Involvement" (1972). Van Matre's work (1972, 1990), made me consider how I might include the environment in my teaching as a young outdoor educator. I came across this quote in the first years of my outdoor education practice and it acted as a catalyst for my thinking about the outdoors and pedagogy. Around this time, I also started to wonder why some of these ideas were relevant.

The majority of my professional career has been concerned with outdoor education and outdoor learning. My initial interest in the research topic for this thesis can be traced back to the start of my career, working at outdoor education centres in Scotland from the mid-1990s. It was then that I first encountered Van Matre's work and I found his immersive approach to educational activities, one that encouraged learners to engage with the outdoors in material and sensory ways, very inspiring.

What has inspired me to use this quote here is the way in which Van Matre notes that "everything is *becoming* something else [my italics]" (*Ibid*.; 5). Whilst we may be concerned about some of Van Matre's ontology that perpetuates binaries and results in "patriarchal" notions of the environment (Gough, N., Gough, Appelbaum, Appelbaum, Doll, & Sellers, 2003; 51), this quote marks a starting point of my curiosity around place and pedagogy. The phrase 'everything is becoming something else' resonates with how I have come to conceptualise place. Understanding outdoor places and the learning that occurs there as not being static but in a state of constant change, is how place has been understood in this study.

As I was considering PhD study, I reflected on my practice and how it seemed that outdoor education and outdoor learning was difficult to 'design'. For example, some weathers, some locations, some unplanned encounters would take learning off into unplanned directions. It seemed to me that education outdoors was always dependent on variables such as place, materials, and sensory experiences that were difficult to fully plan for beforehand. The Van Matre quote resonates with these reflections on my practice and the research topic in this thesis because it captures the way that I have come to understand the outdoors in a pedagogical sense. Outdoor places are never static and there is always change and unpredictability. As a result, I have often wondered how teaching and learning outdoors could be understood to account for this dynamism and change.

As I embarked on this PhD study, I came to appreciate posthumanist writing in philosophy and education. In posthumanist views of education, the human is decentred and is understood in more relational ways rather than as a discrete autonomous subject. I felt that these ideas connected with the dynamism of outdoor places I had experienced as an outdoor educator. These ideas about place, outdoor learning, and how deeply interconnected everything is, have been strong thoughts in my mind since my early outdoor education practice. It is from these starting points that I situate my interest in this topic and this research.

This introductory chapter defines the context in which this research is situated, why this research is relevant today, and explains the structure of the thesis. I explain the significance of outdoor learning as a feature of education internationally and how place has become a strong conceptual theme within it. I then explain the rationale for the research and the research question. I finish this chapter with an explanation of the structure of the thesis.

1.1 Setting the Scene – Outdoor Learning

Outdoor learning is a significant feature of the current educational landscape in the UK, and internationally. Outdoor learning has become part of many formal education contexts: for example, in England, there is the policy term of Learning Outside the Classroom (Department for Education and Skills, 2006); in Scotland, outdoor learning is a policy term within the Scottish education system (Education Scotland, 2011); in New Zealand, outdoor learning is referred to as Education Outside the Classroom (Ministry of Education, 2016). All of these terms denote curriculum-based learning outside the classroom walls, and their appearance in formal education suggest outdoor learning is a key feature of current education policy. Outdoor learning is also a term that is being used to denote learning that would have fallen under the term of outdoor education in the past. For example, in the UK there has been a "broadening of

the term ‘outdoor education’ towards ‘outdoor learning’” (Higgins, Nicol, Beames, Christie, & Scrutton, 2013; 1).

This research is situated in a time when the importance of outdoor learning is considered important at a policy level in many countries, yet understanding of practice in teaching and learning outdoors is lacking. In the Scottish context of this study, through the development of the Curriculum for Excellence, there has been a commitment to support outdoor learning at a central government level. In guidance documents there is a clear role for outdoor learning in formal education. Education Scotland note that,

> Scotland has a long history of engaging children and young people with the outdoors and the value placed on outdoor learning within Curriculum for Excellence is encouragement to continue, and build upon, that history. Indeed, Scotland is one of only a handful of countries which now explicitly includes the use of the outdoor environment as a necessary approach and context for delivering its education curriculum (2011; 4).

Since the 2002 consultation exercise on the development of the Curriculum for Excellence in Scotland (Scottish Executive, 2004), there have been a range of empirical research studies that have focussed on teaching and learning outdoors in formal and informal contexts. The findings from three of these studies are important to the research context this study is situated within (Higgins, Nicol, & Ross, 2006; Mannion, Doyle, Sankey, Mattu, & Wilson, 2007; Nicol, Higgins, Ross, & Mannion, 2007). These studies were concerned with aspects of teaching and learning outdoors that focussed on young people, teachers, and experiences with natural heritage in outdoor learning.

Nicol et al. (2007) drew upon seven key studies of outdoor education in Scotland to create a summary of recent research with some comprehensive findings. These suggested that outdoor study is used by teachers to enhance and integrate many topics in the Curriculum for Excellence. In addition, they identified that schools and teachers would be best served to take a local approach to outdoor study as each school and location has a range of specific opportunities for relating outdoor study to curricula. More specific work, conducted by Mannion et al. (2007) and Mannion, Mattu, and Wilson (2015) over a 10-year period, identified some detailed features of outdoor provision in Scotland that are important to the rationale for this study. Mannion et al. (2007) found that outdoor provision in Scotland was variable and limited, and that young people’s experiences of natural settings was valued when three dimensions were present; social, activity, and place. One outcome of that research was recommendation 8.3.2: “We recommend that we take a more situated approach to curriculum design and development that allows scope for schools to take advantage of their local contexts” (2007; 83). It is the evidence gathered from these empirical research projects in Scotland that

has contributed to the choice of focus for this research. There is a clear sense of the need for deeper understanding of situated and local curriculum design in education in outdoor settings.

More recent research by Mannion et al. (2015) has found that, over the last 10 years, the level of provision of outdoor learning has not drastically increased, although it has played a key role in the formal curriculum. They found that, since 2007 (Mannion et al., 2007), provision in primary education in school grounds and local areas has increased slightly. Yet, in secondary education in school grounds and local areas there has been a decrease. A goal of this research is to contribute to raising the capacities of educators to use the outdoors successfully in their teaching. If more teachers can develop the capacities to teach outdoors in ways that enrich and enhance education, that would be a worthwhile outcome. Focussing on teachers as a way of increasing outdoor learning provision is a worthwhile approach because teachers play key roles. Mannion et al. (2015) noted that in primary education the class teacher accounts for 75% of the leadership roles in outdoor learning.

1.2 Outdoor Learning is about Place

Within international literature on outdoor learning practice and research, place has been a significant focus as a conceptual frame (Bentsen, Mygind, & Randrup, 2009; Hill, 2013; Mannion & Lynch, 2016; Waite, 2011a). In addition, there has been much discussion about place in the related field of outdoor education research (Brookes, 2002; M. Brown, 2012a; Hill, 2013; Mikaels & Asfeldt, 2017). The focus of place in outdoor learning was a direction that I was attracted to early in this research. The way that place impinged on pedagogy in outdoor learning was an interesting perspective that fitted with my experiences of outdoor education practice.

In conjunction with these connections to my past, I also developed an interest in place and outdoor learning during a few days voluntary work on the Teaching in Nature (Mannion, Fenwick, Nugent, & I'Anson, 2011) project early on in my PhD study. Teaching in Nature was a research project that was concerned with the ways teachers conducted outdoor excursions in local and national nature reserves in Scotland. The aim of the project was to understand, "how teachers gain support and work to enact excursions in practice" (2011; 1). One key finding from Teaching in Nature provided a point of focus for further research. This was to do with teaching strategies where it was found that effective outdoor learning "required some teachers to take account of 'place' in their interventions." (2011; 38). This finding from the Teaching in Nature study informed the focus of this research where I set out to further understand how place could be better understood in teaching and learning outdoors.

1.3 Methodological Context

This attention to place in the fields of outdoor learning, outdoor education and environmental education is informing research in nuanced ways. Within these fields, there are developing trends to see place as not just social or cultural but in ways that also include the non-human. Researchers in these fields who appreciate the non-human aspects of place in education argue that to harness them we need to pay attention to our view of the ontological situation (Clarke & Mcphie, 2014; Malone, Truong, & Gray, 2017). An argument that is becoming more commonly expressed in the literature across education in outdoor settings is that we are not removed from the world, we are part of its constant coming into being. Conceptually, these discourses on ontology have taken inspiration from new forms of materialist philosophy (Coole & Frost, 2010); feminist posthumanism (Braidotti, 2011); anthropological writing (Ingold, 2011); and agential realism (Barad, 2007). These various sources undermine the primacy of humanist views of place, culture, and education. In addition, they argue that we are relationally co-implicated with everything in the world and that the human subject is not a single autonomous being that has privilege rights to all knowledge.

These trends in understanding the ontological situation are useful resources in conceptualising research methodologies that can include the non-human aspects of place in outdoor learning. In this research, I undertook research on outdoor learning that sought to give as full an account as possible for the non-human aspects of place. The trees, mud, sticks and weather were all part of the interconnected relational world that came under the research gaze of this study with the help of new directions in qualitative research that challenge the dominance of humanism.

The implications for this approach to outdoor learning research are significant – for one they challenge the established idea of needing to be 're-connected' to nature. In the literature in outdoor related fields, the concept of needing to 're-connect' to nature, or that being connected to nature is worthwhile, are features. For example, in place-based education (Sobel, 2004; Ardoin. Schuh & Gould, 2012), outdoor education literature (Takano, Higgins & McLaughlin, 2009; Paulus, 2015) and environmental education literature (Williams & Chawla, 2016). More specifically, measuring a 'connection to nature' has become an important research focus for many programmes. For example, The Royal Society for the Protection of Birds who have established a methodology to measure children's connection to nature (Bragg, Wood & Barton, 2013).

Critical positions on the concept of 'connection to nature' are also gaining ground in outdoor fields (McPhie and Clarke, 2015; Bonnet, 2004; Hill, 2013). Popular views on children's connection to nature such as Louv's (2005) work on Nature Deficit Disorder offers a view that

many of the problems facing children today such as health issues, obesity and technology are because children are disconnected from nature. Dickenson (2013), offers a critical view of this and through her research found the problems around children's situation are not caused by "decreased contact with nature but the over-rationalisation, objectification, oppressed emotions, a decreased sense of place and anthropocentrism" (2013; 349). Whilst it seems there is a significant body of work that identifies a need to be re-connected to nature, there are also growing criticisms of this view. The problem this thesis seeks to tackle is signposted in Dickenson's (2013) research where she argues that connection to nature is oversimplifying the problem and that it needs a more detailed and nuanced approach, one that includes a rejection of anthropocentrism among other features.

Drawing on critical discourses on humanism, notions of 'connection' to nature are being troubled in the literature across outdoor learning and environmental education. Duhn, Malone, & Tesar (2017) explained it well when they wrote how certain anthropocentric views and romantic ideals about nature need to be challenged if we are to understand environmental education in a world we are never *not connected* to:

> A key message being promoted here, particularly to early childhood and primary levels of education, relies on an adult sentimentality regarding urban children's loss of connection to nature … With this popularisation of grand statements about the importance of children's relationship to 'nature', it is timely to consider what influence these views of 'child' and 'nature' might have on the fields of environmental education and its research. Particularly, as these statements are often underpinned quite liberally by a number of key anthropocentric views.
>
> (2017; 1363)

If we are never *not* connected to nature, then this will impact on how we understand planning and enacting outdoor learning. This study seeks to understand the planning and enactment of outdoor learning within such a view.

1.4 Research Aim

The aim of this study was to contribute to knowledge about pedagogy and how the more-than-human[1] connected to that via teachers' sensitivities and responsiveness to place. For this research, I have been influenced by many of the posthumanist debates in human and cultural

[1] The term more-than-human is defined in a later section (Chapter 3, page 66), but for explanatory purposes, here it signifies a way of understanding 'nature' that does not reduce it to something less important than the human. Secondly, the term denotes all that we encounter in 'nature', but rejects *a priori* meaning.

geography on the rejection of the nature/culture binary and saw that the more-than-human (Whatmore, 2002, 2006) was a key term. The more-than-human denotes that the human is in a non-hierarchical position over other bodies and was a useful way to conceptualise the non-human features of place in this research. For Thrift (2004), the nature-culture dualism denies us a nuanced view of how the world can be understood and he sees that we're not set off against an objective world but dwellers within it. For this study, it was important to research outdoor learning from a position of welcoming any capacities in the outdoors. I did not want to limit the research to the social, or the dualistic position of human-nature. As we will see, the research question I settled on was:

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

1.5 Structure of the Thesis

Chapter 2 is a review of the literature which shows a gap in research that this study sought to address. I review the literature in two parts. Part 1 explores the writing on place, education and the outdoors, where I discuss the development of the concept of place across relevant literature in human and cultural geography and education in outdoor settings. I set out how place is defined in this study and show the developments around place in the key fields of education in outdoor settings. The summary of the literature in Part 1 shows that non-anthropocentric views on place hold potential to enrich education in outdoor settings, and especially outdoor learning. In addition, I show that place is an important concept that influences pedagogy in many outdoor-related fields and that planning outdoor learning is not well understood.

In Part 2, I discuss trends in curricula theorising and review the literature on postmodern views of curriculum theory. These domains of curriculum theorising offer critiques to representational ways of knowing and offer concepts of curricula that are relevant to outdoor learning. I then investigate how posthumanist theory informs a view of curriculum as a process of assembling and review more-than-human research in geography and education. In summary, I show that place is a developing feature of many fields of education in outdoor settings. Teachers play an important role in the curriculum planning and enactment of outdoor learning but they are not the only actors. The non-human aspects of place will play a role too, but how this happens is not well understood. I summarise the research gaps that exist and where this study will address these.

Chapter 3 sets out the rationale for the methodology I employed to answer the research question. This chapter begins with a theoretical framing that helps the reader understand key terms and areas of Deleuzoguattarian theory that have informed the methodological choices and analysis. I chose to work with posthumanist theory and postqualitative research resources, with a multicase study methodology (Stake, 2006). The settings chosen to create the multicase study are described and how generalisability has been understood is articulated.

Chapter 4 is where I present the four key findings that are produced in this research. The findings show that teachers' practice of outdoor learning planning and enactment emerged through (1) their ability to notice the more-than-human, (2) attending to how their learners noticed and responded to the more-than-human in educational experiences (3) seeking to become more attuned to the places visited, and (4) supporting the assembling of material, discursive, human, and more-than-human elements together in curriculum making. I have organised the findings chapter into four sections, each of which portrays the findings produced from the data collected. Each of these findings is discussed in depth in Chapter 5.

In Chapter 5, I discuss the considerations the findings have for the broader fields of education in outdoor settings and more-than-human pedagogies. More-than-human pedagogies is a term that I use to denote education in outdoor settings that decentres the human and foregrounds the relational co-implication of humans, matter and the more-than-human. In Chapter 5, I discuss the ways that the four findings relate to, and show new understandings of, how more-than-human pedagogies can be derived. In the final chapter, I show how I have answered the research question and offer provocations that will inform future practice and new directions for research. In the final chapter I outline the contributions this thesis makes to the development of more-than-human pedagogies and place-responsive practice by extending Mannion and Lynch's (2016) manifesto for place-responsiveness.

Chapter 2 Literature Review

Introduction

The literature review is organised into two parts. The first part includes the literature on place and education, education in various outdoor settings and expressions of environmental education concerned with place. The second part of the review is concerned with literature on non-anthropocentric understandings of place and curricula. It includes emerging trends in educational research that are informed by more-than-human geographies. The decision to include this literature was driven by the research question that focussed on non-anthropocentric understandings of place and education as a central concern.

A configurative approach to reviewing the literature was used. Configurative approaches to reviewing literature are iterative and suit topics that are multifaceted. A configurative approach is one that can accommodate exploration and variation in a topic area (Gough, Oliver & Thomson, 2017). There was a need for this approach in this study because place is a multifaceted concept in education with diverse foundational positions. Throughout the iterative process, the research question influenced what literature was searched. As a result, literature was selected for review when it included key terms such as: 'place', 'outdoor learning', 'curriculum planning', 'curriculum enactment' and the 'more-than-human'. The focus on the more-than-human directed me towards literature that was concerned with non-anthropocentric, posthumanist and new materialist understandings of education in outdoor settings and curricula. This meant that literature in education, outdoor related fields and curricula concerned with purely socio-cultural positions were excluded.

The literature included for review in Part 1 reflects the early stages of the research where the topics of place, learning and education were focussed on. As a result, Part 1 starts with this literature and includes nondualist theorisations around place informed by phenomenology and anthropology. Turning to outdoor related fields, I review the literature that includes the growing attention to place across education in outdoor settings. I selected work from theorists who deal with place and outdoor learning in specific key journals such as Journal of Adventure Education and Outdoor Learning, Environmental Education Research, Education 3-13, and Journal of Environmental Education. Place is a significant theme in environmental education and the related fields of place-based education and place-responsive education were important to include. Non-anthropocentric understandings around place were particularly important and place-responsive writing offers key ideas this research set out to build upon.

Throughout the review process, literature was selected on the basis of decisions that were made as the reading progressed. In Part 2, I focus on concepts of curricula within postmodern and posthumanist theorising and what they contribute to nonanthropocentric considerations of place in outdoor learning. Because this research is concerned with a view of place where we are not removed from it, I chose literature that could help to understand curricula in this view of the ontological situation. As a result, the literature on curricula that rejects representational thought and seeks to return curricula to phenomenological experience was found useful. Related to this was literature in posthumanist thinking in education that offers ways to conceptualise curricula that does not separate us from our abundant world. By the end of Part 2, I review literature that is concerned with the more-than-human in educational research that reflects the new materialist position I was becoming more aware of. By including this posthumanist literature, I was able to identify a gap in research around the understanding of how teachers harness the non-anthropocentric dimensions of place in any curriculum planning and enactment of outdoor learning.

I conclude the chapter with a summary of the key arguments and identify the gap in the research that this study will address, followed by the research question. Overall, I show how the harnessing of the non-human features of places in the planning and enactment of outdoor learning are not well understood, yet can lead to enriched learning beyond the aims of a prescribed curriculum.

2.0 Part 1: Place, Education and the Outdoors

Introduction

First, I review the literature on place and education with a focus on the outdoors and show how the term ‘place’ has emerged in the literature in human and cultural geography. Then I show how the concept of place has informed theorising and empirical research in a range of outdoor fields, such as: outdoor education, outdoor learning, and environmental education. A trend in the literature across the outdoor-related fields is that place has been understood in mostly humanist terms. However, non-anthropocentric views of place are gaining popularity, especially to address concerns about the degradation of the environment by humans. Such views of place can also enrich teaching and learning outdoors in ways not fully understood – more research is needed. I then show how the literature in postcolonial outdoor learning and place-responsive education are drawing on place in pedagogical ways. I finish this section of the literature review by exploring how certain views of the ontological situation around place-responsive education offer ways of understating outdoor learning that do not privilege the human. These are new ways of understanding place and pedagogy in outdoor learning and there is limited research on

how these ideas inform practice. This section shows how there is a need for more research on outdoor learning with place that does not privilege the human.

2.1 Place and Education

2.1.1 Space, Place and Education

Starting with the term 'space', Fenwick, Edwards and Sawchuck (2011) explain the effects of a "spatial turn" in social science in the 1990s (*Ibid.*; 11) and how it has influenced educational research. They draw on postmodernism,[2] and critical theory, to consider how space is more than just a static background or container where our lives are acted out. They see it as dynamic and relational with sustained and constant change. As a result, spaces can impinge on learning in how they influence our interactions or relationships. Writing in the mobilities literature in cultural geography, Urry notes "such spatial structuring makes a significant difference to social relations" (2007; 34). One implication of these views on space for outdoor learning is that the outdoors must be understood as more than a blank canvas.

In human geography in the 1970s there was a shift from attention to place over space. The shift can be understood as a rejection of the scientific approach to geography and a move to return human geography to the experience of humans in *places*. Before then, spatial geographers saw humans as just objects that move and interact in space (Cresswell, 2004). In terms of place, Cresswell (2009) argues that "Space becomes a place when it is used and lived" (*Ibid.*; 171). Similarly, Tuck and McKenzie (2015) offer a distinction between space and place that emphasises the importance of *what* occurs in places. Their writing bridges environmental education and indigenous studies and argues that place can be much more than a name or location. Places can be sites of practice and sometimes places "*are* practices" (*Ibid.*; 14); a view also held by Creswell, who argues that places are where we "encounter a combination of materiality, meaning, and practice" (2009; 1).

This attention to materiality can be understood as part of a materialist turn in geography and literature on space and place (Fenwick, Edwards, & Shawchuck, 2011). This return to materiality and mobilities (Urry, 2007) foregrounds place as being not just dynamic, but as hybrid and as a network of relations. The use of the term 'hybrid' portrays the importance of the

[2] Postmodernism is a contested term but is generally understood to refer to a period of cultural thinking that emerged across the mid- to late 20th century that included the rejection of universalist truths. Of importance to this study is the relationship between truth and reality. Postmodern thinkers see the way language is related to truth as contingent. For example, meaning in language is not locked into a single truth but is contextual, i.e., it shifts between social structures, cultural contexts, or places.

non-human and the material in the formation of our subjectivity (Tuck & McKenzie, 2015). In this view, places are *produced* from such networks and are in constant flux; "place is not bounded or separated from flux and networks but arises from them" (Fenwick, Edwards, & Shawchuck, 2011; 11). These views on the theorising of place are important for this study because how the more-than-human in places are harnessed into outdoor learning are of central concern. The sticks, mud, birds, etc. of outdoor places are part of a hybrid place, where materials and practices are pedagogically important. The views of place discussed so far have informed the understanding of place in this research.

In the next section, I show how I came to an understanding of place as a meshwork of relations inspired by the anthropological writings of Tim Ingold (2011). He argues that place is not static and instead it can be understood as a meshwork of relations that are ongoing, in formation, and becoming. Understanding place as meshworked helps us to consider how the more-than-human aspects of place *could be* pedagogical.

2.1.2 Place, Human Experience, and the Meshwork

The focus of this study is outdoor learning; a field of education which deliberately uses the outdoors. As a result, I saw that place was a central concern. Casey argues for the centrality of place to human experience and notes that all our lived experiences as humans are place-based (Casey, 1998). His position is part of a re-assertion to the importance of place in cultural and human geography and critical theory (Cresswell, 2004; Soja, 1989). In Casey's book "The Fate of Place" (1998), he explores the historical attention to place in philosophy and notes the role of the emplaced human in understanding the world. Casey sees this as helping us to "account for the especially human experience of place" (1998; 332). Casey's argument on the centrality of place to human experience is important for this study because it helps us understand that outdoor places can shape our experiences.

In this study, I wanted to research place in ways that could account for the many human and more-than-human aspects that teachers might harness in outdoor learning. These could be materials such as mud, sticks, trees, or weather, such as the wind and rain. Casey's humanist view of place asserts the centrality of place to experience, but for this research it was important to also understand place as material, and as a site for practices. In this research, I saw that it was important to understand place as not just about humans but that accommodates the hybrid and relational positions I noted in Section 2.1.1. Such an understanding of place is informed by some expressions of feminist thought, and in social and critical theory that foregrounds materiality.

The subject-centred, phenomenological worldview is rejected by some feminists who focus on materiality (Barad, 2007; Bennett, 2010). Some go further than critique and, in addition, seek alternative "ways of conceptualizing the human subject" (Braidotti, 2013; 37). Arguing for a different understanding than phenomenology on the ontological situation, these feminist thinkers argue that agency is distributed, they revitalise the material world, and reject oppositional thinking. Coole and Frost (2011; 8) identify one version of this position as 'new materialism' with a worldview that espouses "a monological account of emergent, generative material being". In other words, new materialism can offer a way to understand how humans and matter are not separate but co-implicated in each other's formation. In this research, an understanding of place that includes the more-than-human and the material was needed. These metaphysical concerns have contributed to the understanding of place that I saw as necessary for this study.

Similar expressions of place exist in literature in the fields of cultural geography (Whatmore, 2006) and anthropology (Ingold, 2011). Cultural geographers such as Wylie (2007) have articulated a material and co-constitutive nature of place and landscapes. Similarly, Ingold's (2011) concept of place is particularly useful for this research because he argues for the ontological situation as being non-hierarchical. In other words, humans do not have a privileged, objective perspective. He explains this view of the ontological situation through our perception of the environment. Ingold argues that as humans we are not separated from the world, but instead are points of emergence in a "relational field" (2004; 304):

> In short, organisms [for example humans, bacteria, bees, trees] no more interact with the environment than do individuals with society. Rather, ecological relations – like social relations – are the lines along which organisms-persons through their processes of growth, are mutually implicated in each other's coming into being (2004; 306).

He argues that this strongly influences how we *perceive* our environment:

> In short, to perceive the environment is not to look back on the things to be found in it, or to discern their congealed shapes and layouts, but to join with them in the material flows and movements contributing to their – and our – ongoing formation. (2011; 88).

Ingold's argument is that we are not separate from place, we are intertwined with place in material and co-extensive ways. He seeks to challenge the western cultural notion of the 'individual', detached from the world around it.

From Ingold's writing, I was drawn to how he understood place as a fluid entity where we and the non-human are co-implicated in each other's formation together in a relational field, or "meshwork" (Ingold, 2011; 64). Drawing on the philosophy of Deleuze and Guattari (2004),

Ingold argues that we can understand an organism as a bundle of relations, a "Haecceity"[3] (*Ibid.*; 287). Ingold articulates a view of life, and organisms, as a meshwork of relations. This view of place was important to this research because it helps to understand how place can include non-human life and materials in a co-extensive world. Ingold describes this: "Action, then, emerges from the interplay of forces conducted along the lines of the meshwork. It is because organisms are immersed in such force fields that they are alive" (2011; 64). This concept of place as a meshwork is central to this research and is explored in Lynch and Mannion (2016). In our previous work, we argued that the human and the more-than-human acted within a unified relational field. As a result, agency is not located in people or things but in connections between assembled beings. This view accommodates the non-human components of place as not separate from us but as that with which we are relationally intertwined. In this research, I sought to understand how curriculum making included the human and more-than-human through this understanding of place.

I will return to this topic during a deeper analysis of these issues in the methodology section, but it is important to note that Ingold's work reflects a trend in education and outdoor learning that seeks to challenge a human centric understanding of place (Clarke & Mcphie, 2014; Duhn, 2012a; Somerville, Power, & de Carteret, 2009; Somerville, Davies, Power, Gannon, & de Carteret, 2011; Somerville, 2017).

From the discussion presented in this section (2.1), it seems clear that space and place are important concepts in understanding human experience outdoors and therefore will influence education. The re-vitalisation of materialism, through new materialism, offers an alternative to a human centric view of place. In anthropological theorising on place, Ingold's (2011) position of place as a unified relational field, *a meshwork*, is an important contribution. The meshwork is a way of understanding place where the non-human aspects of the outdoors can be understood as co-emergent.

The significance of these ideas in the literature are important for this research. If we think of the outdoors as part of a meshwork of relations, how do we plan and enact learning there? This question underlines the importance of understanding how the non-human dimensions of place are pedagogically important. Of equal concern are models of education or curricula that are important to consider within this view of place. These concerns are central to this thesis because

[3] A haecceity is a complex term that could be understood as how Deleuze and Guattari (2004; 286) describe a decentred subject in the world. They see the human not as a separate subject, but as relations, affects, location and speed. A haecceity is a way of articulating how we might think of an organism relationally without requiring an external logic or ground.

whilst there has been much theorising about the non-human and non-anthropocentric understandings of place, there has been little research on these concepts in outdoor learning practice. These points contribute to an understanding of the gap in research that this study set out to address. The way other researchers in outdoor fields have considered place is important to consider next.

2.2 Place and Learning: Outdoor and Environmental Orientations

Introduction

In Section 2.1, I showed that place is important in how we understand human experience, which has implications for understanding outdoor learning. I now discuss how researchers and theorists within outdoor education and outdoor learning have used place in a range of ways. These include posthumanist, poststructuralist, postcolonialist, psychological and socio-ecological views of place. I start with outdoor education and explore how place is being researched and theorised in this field. I then discuss the literature in outdoor leaning that refers to place and review empirical research on the planning and enactment of outdoor learning with place.

2.2.1 Outdoor Education

In the field of outdoor education there has been significant attention paid to place in research and theorising. Internationally, place has become an important focus for theorisation of outdoor education pedagogy (Brookes, 2002; Harrison, 2011a; Mannion & Lynch, 2016; Paulus, 2015; Sandell & Öhman, 2013; Wattchow & Brown, 2011); and empirical research (Beames & Brown, 2014; Brown, 2012a, 2012b; Cosgriff, 2016; Stewart, 2008; Sutherland & Legge, 2016; Szczepanski, 2013). This attention to place is part of a noticeable shift in the purpose of outdoor education from a focus of personal and social development towards one that includes environmental education and sustainability (Cosgriff et al., 2012; Hill, 2011, 2013; Nicol, 2007).

Historically, personal and social development of the self through adventure and outdoor experiences has been a key concern in outdoor education. Over time, the incorporation of environmental education within outdoor education has been seen as a necessary development by some (Beames & Brown, 2014; Boyes, 2012; Irwin, Straker, & Hill, 2012; Loynes, 1998). For example, outdoor education has been understood as education that can contribute to "an awareness of, respect for, and love of self … others … and the environment" (Mortlock, 1987;

18). Mortlock sets his personal philosophy out along lines of the self-reliant journey in nature as being central to human growth.

This turn toward place is one response to criticisms where outdoor education has privileged the development of the individual at the expense of nature and people's relationship with community and place (Brown, 2012a; Brookes, 2003a, 2003b; Loynes, 1998). Place is pedagogically important for educating in, about and for the environment. This use of place has emerged strongly from the literature internationally and especially those countries with contested place histories (Cosgriff et al., 2012; Stewart, 2008).

The shift towards the use of place in outdoor education pedagogy owes some acknowledgement to place-based education theorising. Quay and Seamon (2013), note that before the shift towards place, learning *about* the environment was popular to address environmental concerns. They argue that critical place-based education (Gruenewald, 2003) has potential to improve outdoor education pedagogy so that the environment can be thought of as content matter *and* process.

Wattchow and Brown's *A Pedagogy of Place* (2011) is a key text in outdoor education that demonstrates the significant rise in attention to place in this field. These authors theorise about place in outdoor education and identify the importance of the non-human to the pedagogy of place. This direction in their thinking also relates to the role of our perception to how places are pedagogical. Drawing on Abrams, they note:

> In the moment that we perceive our fundamental and constant reciprocity with the world it ceases to be a thing made up of objects. Instead it becomes an unfolding phenomenon and we come to stand within it, alongside all the other beings, as integrated co-members within the land community. (2011; 184)

These authors argue that place includes that which is not human; place is not just social or cultural. Wattchow and Brown (2011) see that attention to place, and the non-human, in outdoor education has significant pedagogical implications, because "outdoor education, is in danger of becoming just another example of this typically placeless approach to curriculum and pedagogy – brim-full of good intent, but exceedingly difficult to put into practice" (*Ibid.*, 2011; 89). Whilst these challenges and considerations of place and pedagogy are important for the field of outdoor education practice, these authors' contributions are more theoretical than empirical.

Some place-based research (Harrison, 2011b) in outdoor education found that there is little empirical research that tackles the gap between theory and practice, and that works deeply with the theoretical dimensions of place. In addition, empirical research on the ways in which place, and the non-human, are harnessed in any outdoor pedagogy, lags behind theorisations. I discuss

what empirical work has been done in these areas in outdoor learning and environmental education in the following sections, but generally it is not well understood, and more research is needed.

Some researchers are working with the non-human aspects of place in outdoor education. Mannion and Lynch (2016) use the term 'more-than-human' in place research and argue for a more primary attention to be paid to place in outdoor education. Resisting a purely humanist view of place, they argue for a place-responsive approach that seeks to move beyond the binary of person and place. Drawing on a variety of influences in anthropological, cultural geography, and posthumanist writing they argue that places and people are relationally emergent (Mannion, Fenwick, & Lynch, 2013). In other words, the human and more-than-human found in places play a role in teaching and learning in the outdoors. How these are included in any planning and enactment of outdoor education is not well understood, however.

To meet the aims of this research, a deeper attention to the theoretical dimensions of place is important. Most of the empirical research in place and outdoor education has used phenomenology and foregrounded human experience. I wanted to research place in ways that took on the theoretical challenge of understanding place to be more than a human-centred phenomenon. Outdoor learning is a growing area of research which has been embraced by some outdoor education theorists and researchers. There are explorations and considerations of place that do not privilege the human in the outdoor learning literature.

2.2.2 Outdoor Learning and Place

In this section, I outline key theoretical developments in the literature relating to outdoor learning and place. I then focus on some issues for the curriculum planning and enactment of outdoor learning with place that emerge from the literature (Section 2.2.3). Outdoor learning has been included in formal curricula at national levels in countries such as the UK because it can positively contribute to children's affective, cognitive and social development. It has been seen to have positive impacts on pro-environmental behaviour (Education Scotland, 2011; Chawla & Cushing, 2007; Kahn & Kellert, 2002; Rickinson et al., 2004). The attention towards place in outdoor learning is driven by similar forces to those discussed in outdoor education, namely to help address environmental degradation and human-environment relations (Beames, Antico, & Ross, 2009; Mannion, Fenwick, Nugent, & I'Anson, 2011). Although Mannion et al.'s (2007) work found that children's experiences of natural heritage were linked to place, later work (Mannion et al., 2010) found that curriculum making in outdoor learning required teachers to pay attention to place.

Much of the theorising with place in outdoor learning in the UK seems to be grounded in the socio-cultural traditions (Beames, Atencio, & Ross, 2009; Rea & Waite, 2009; Waite, 2011a). For example, Waite (2011a) sees place as key in outdoor learning and proposes 'place' as part of a relational triad that includes 'the child' and 'others' (e.g., adults). A socio-cultural perspective will frame place in outdoor learning in a certain way with less concern for the non-human. These orientations to place could be limiting the non-human elements that could enrich outdoor learning if successfully harnessed. How do we welcome the features of the outdoors that are not social or cultural? This question is important for consideration in outdoor learning pedagogy and these are entry points into deepening our understanding of the educational potential of non-anthropocentric views of place.

Some researchers are theorising about outdoor learning in ways that understand place as not just a social-cultural phenomenon. Using posthumanist resources,[4] Quinn (2012, 2013) argues that the "post-human thinkers help to gain a new purchase on the power of the material in human lives: of the agency of animals, land and elements in producing forms of knowing" (2013; 748). Her work amplifies the pedagogical importance of the non-human aspects of outdoor places. Although she is critical of how social inequalities can be shaped by this attention to the non-human there are benefits, she writes:

> This is helpful because, whilst educational research that took the linguistic turn has prioritised language and human relations, post-humanism brings matter to the forefront, in a move that could deepen understanding of outdoor learning. (2013; 739).

This quote is useful to support the rationale for this research because it shows how, by attending to the posthumanist views of place, we can deepen our understanding of outdoor learning.

In countries with contested place histories, place and pedagogy are theorised and researched in ways that do not privilege Cartesian worldviews nor the human subject (Duhn, 2012a, 2012b; Power & Green, 2014; Cameron, 2003a; Somerville, 2007a, 2016). These authors reject the dualism of human-nature and instead see humans as not separate from the outdoors, but as intertwined. I will return to these authors and others more deeply in Section 2.12, but want to acknowledge their rejection of the socio-cultural position as it can hinder the educational potential of outdoor learning. For this research, this is an important point to note because I too rejected a socio-cultural view of place. The understanding of place as relational and where we

[4] Posthumanism rejects the primacy of humanism in cultural theory and philosophy. It is a nascent field with many definitions and expressions. In this study it is used to denote a worldview where the human is decentred, and the ontological situation is understood as being less reliant on human experience for all meaning. In other words, non-humans, materiality, and objects can impinge on our lives in ways we have not yet imagined or fully understood.

are co-emergent with other living things is an area less well-understood in outdoor learning practice. In this research, I sought to further the understanding of how planning and enactment of outdoor learning could take nuanced account of all aspects of place. Research on outdoor learning curriculum and place offers some important issues for consideration in any planning and enactment.

2.2.3 Outdoor Learning: Issues for Planning and Enactment

Research in outdoor learning has produced findings that influence our understanding of the planning and enactment of outdoor learning. It is known that pedagogy needs to change when we go outdoors but details on this are not well understood. For example, indoor teaching strategies are applied outdoors where they might be less relevant. In the UK, Maynard and Waters (2007) found that teachers chose indoor pedagogical strategies for teaching and learning outside. They also noted outdoor learning was a predominantly a teacher-directed activity that was intended to develop the learning of subject knowledge and skills. In Sweden, Fägerstam (2012) found similar issues where outdoor learning was used to confirm indoor learning. However, teachers in her study did find that place was pedagogically useful to provide some new knowledge and inspiration.

Research in the Danish version of outdoor learning, Udeskole,[5] has found it contributed positively to children's wellbeing and social competencies (Mygind, 2009). In addition, that pedagogy needs to be adapted when working outdoors (Mygind, 2009; Bentsen, Mygind, & Randrup, 2009). Bentsen, Mygind, and Randrup (2009) cite Stelter, who notes that "the natural setting can act as a catalyst for change in pedagogical methods" (2005; 34). Ballantyne and Packer (2002, 2006, 2009) found similar issues in their research in Australia within more traditional outdoor environmental education centres. They identified the need for more research on teaching strategies that suit learning in natural environments.

This gap in research noted, outdoor learning that is well planned, enacted and followed up from field work can contribute positively to classroom-based learning in science and related subjects. In a national review of outdoor learning research, Rickinson et al. (2004) found the setting, or place, of learning can affect learners' emotions. They note there needs to be more research on "'teachers' and outdoor educators' conceptions of 'the outdoor classroom', and the curricular aims and pedagogical strategies that they see as important for effective teaching therein" (2004;

[5] Udeskole is an orientation to outdoor learning that has roots in progressive education and the holistic education of the child (Bentsen, Mygind, & Randrup, 2009).

55). The findings of these research projects suggest that the setting or place is an important pedagogical component of outdoor learning but is not well understood.

From the theorising of place in outdoor learning so far discussed, and empirical research on the significance of place in outdoor learning pedagogy, there are some important points to highlight. Firstly, the attention being paid to posthumanist views on place have potential to deepen our understanding of outdoor learning. Secondly, research shows that teachers' strategies for planning and enacting learning when it is done outdoors needs to be better understood. These gaps in current understanding of outdoor learning will be addressed through this research. In environmental education there are significant trends in research that show attention is being paid to the importance of non-anthropocentric views of place in learning outdoors.

2.3 Environmental Education: Nature, Culture, and Place

Annette Gough describes how environmental education became a distinct field of education in the 1960s to inform the public about the growing awareness of environmental degradation (A. Gough, 2013). The literature on environmental education that has informed this research has been selected from a much larger body of work. In this section, the literature which explicitly focussed on place is discussed. This includes: socio-ecological education, education for sustainability, poststructuralist environmental education, sense of place, place attachment, and place-based education. Place is understood in diverse ways in environmental education and the literature in this section is concerned with non-anthropocentric views of place, the material aspects of place, and how place is inseparable from human existence. These views of place are harnessed in environmental education to articulate our interconnectedness with the earth and how human-environment relations might be important to education *for* the planet, not just *about* the planet. These include how local knowledge becomes more important than grand universal truths, or how our interconnectedness with the more-than-human world is central to the flourishing of all species on the earth.

2.3.1 Socioecological Education and Education for Sustainability

One area of the environmental education literature that foregrounds place is socio-ecological education. Socio-ecological education is about grounding issues of concern about the environment in everyday life (Kyburz- Graber, Hofer, & Wolfensberger, 2006). Understanding environmental education as a social and ecological issue means that learning is always bounded by culture and place (Brown, Jeanes, & Cutter- Mackenzie, 2014). McKenzie (2008) sees value in the socio-ecological dimensions of place through intersubjective experiences and the

affective domains (McKenzie et al., 2013). These socio-ecological approaches to environmental education are working pedagogically quite deeply with place but are still humanistic.

It is useful to identify Gruenewald's (2003) work here because he has contributed to theorising in socioecological education with non-human aspects of place. His work spans socioecological education, critical pedagogy, and environmental education theorising (Greenwood,[6] 2009; Greenwood, 2013). He argues that all education should be conscious of place so that we can become accountable to the places we inhabit and what we find there in terms of the non-human. He writes:

> The result is that we live in a world where human-human, and human-world relationships are poorly understood and increasingly strained. It is in "places" that these relationships are experienced and where they can, potentially, be examined and shaped through the process of education. (2003; 641)

In general terms, his contribution to environmental education theorising argues for the foregrounding of our relationships with places that are not just about humans (I will address Gruenwald's work more deeply in Section 2.3.4 on place-based education). The relationship we make with places can shape the kind of world we end up with. Similar concerns exist in the field of education for sustainability.

The genesis of the term 'Education for Sustainability' came about from a change in terminology at the United Nations Conference on Environmental Development in 1992 (A. Gough, 2013). The change in term reframed environmental education towards sustainability drawing in the social and cultural as well as existing ecological relationships. Bonnett's (1999, 2004, 2013) writing in this field is useful to the aims of this research because he sees places and nature in non-anthropocentric ways. Importantly, he shows some important implications for education through how we might understand ourselves in relation to the natural environment.

Nature for Bonnett has a primordial and foundational quality which impinges on our subjectivity; it can shape our lives and sensibilities. He argues that at the heart of education for sustainability is the question "What understanding of nature and our relationship to nature and the environment should we invite pupils to participate in?" (2004; 136). By asking this question, Bonnett foregrounds the importance of how nature is understood in education for sustainability. This question is also at the heart of this thesis in relation to outdoor learning because how the outdoors is understood is central to any purpose of education outdoors. In educational terms, he

[6] Formally, Gruenewald.

calls for a "receptive-responsive rather than rational-assertive" (2004; 139) approach to curriculum.

In summary, Bonnett's ideas are important to consider in this research because he sees places as being able to impinge on our experiences in ways that are not just cultural and social. Also, the educational implications he puts forth require us to ask ontological questions about the outdoor places we educate in. It is these questions that have shaped the focus of this research as I sought to understand outdoor learning as something which will include the human and non-human aspects of place.

2.3.2 Environmental Education, Poststructuralism and The Decentred Subject

Early proclamations of environmental education focussed on the dualistic relationships between 'man' and 'nature'. More recently, the attention to place in the environmental education literature is being used to challenge dualistic and western modes of understanding that separate humans from nature (McKenzie et al., 2009). In the research literature, these challenges have come from postmodern and poststructuralist thinking (N. Gough, 2013). Poststructural theory challenges the way binary thought and discourses create and maintain power structures in society and culture. Thinking with poststructuralism changes our understanding of learning and knowledge as not fixed or stable.

Drawing on poststructuralism in his writing, Noel Gough is particularly critical of the knowledge systems of western thought in environmental education and the way that universal truths are proclaimed (N. Gough, 2004, 2007, 2009). For this research, his work is important to note because it shows how rejecting western views of the ontological situation affirms the importance of knowledge constructed in local places. For Gough, he argues we should see worthwhile approaches to knowledge construction as those which "authentically demonstrate their localness" (N. Gough, 2013; 41). Gough is arguing for the importance of *local* knowledge traditions, not universal truths. He sees these are helpful in environmental education because they are not having to be scaled up and translated for global discourses on environmental destruction.

Similar questions of how we understand nature, truth, and the ontological situation, are present in the poststructuralist inspired contributions to environmental education by Davies (2013). She argues that humans are not separate from all other forms of existence, and therefore we are always co-implicated with others such as the non-human. The implications of her views for environmental education are that

> The initial question becomes, between teachers and their students, what is this place we are *constituting with,* [my italics] and in relation to, each other? (2013; 482).

These ideas are important for this study as they show the different pedagogical possibilities that exist when we see ourselves and place as not separate. Across education for sustainability and environmental education, both Bonnett and Davies ask important educational questions. They ask us to consider how we understand nature and how we are constituted with place. These questions have significant implications for this research because we can apply them to outdoor learning. If we understand outdoor learning and place in co-constituted ways what might this be like in practice? How do outdoor learning educators currently harness place in their practice? The answers to these questions are central to the aims of this research.

The importance of how we view the ontological situation is of interest to an interdisciplinary group of researchers that have environmental education as a key concern. Theirs is the "common worlds" perspective (Taylor & Giugni, 2012; 108). The view of the ontological situation that is put forth from this research group is that children and learning are co-extensive with entangled worlds. To understand humans and others in this way offers new understandings for dealing with the environmental crisis. These researchers are focussed on decentering the human and challenging anthropocentric notions of place. Drawing on material feminist writing, these researchers argue that we are not separate from nature and that to respond to the challenges of the Anthropocene we need to focus on relational ways to think and act (Duhn, Malone, & Tesar, 2017). The Anthropocene is a term that was suggested to define our current geological epoch (Crutzen, 2002), an epoch that is distinct because of the magnitude of negative human influence on the planet.

The ideas put forth by these researchers have been useful to this study because they call on educators to respond to the Anthropocene in ways that are more than just about developing "well-meaning stewardship pedagogies" (Taylor, 2017; 1449). They argue for a paradigm shift in educators' worldviews that looks beyond humanist principles. Taylor (2017) argues that current sustainability debates focus on a human stewardship argument; that humans are the main change agents to arrest climate change and environmental degradation. The 'common worlds' perspective asks instead that we try and see *what is already going on* in our world where we are intertwined with the more-than-human. In this research, this is similar to how outdoor learning could be conceptualised, and the 'common worlds' perspective is one that I will return to at the end of the chapter in Section 2.12.2 in discussing the more-than-human.

In summary, place has become a focus in empirical research and conceptualisations of environmental education to counter the privileging of a western epistemology that objectifies

nature and promotes dualisms. These views have contributed to environmental education in ways that show promise for similar use in outdoor learning. Decentering the human subject, accepting a non-anthropocentric view of place, would be useful to consider in outdoor learning to harness the non-human aspects of place. They are also worthy areas of further research for outdoor learning. Such calls for further research along these lines are being expressed in environmental education and education for sustainability research (Clarke & Mcphie, 2014; Gough, 2016; Mcphie & Clarke, 2015). This research seeks to contribute to the understanding of how outdoor learning and place might improve human environment relations in similar ways to those found in these forms of environmental education.

2.3.3 Sense of Place and Place-attachment

Place-attachment and Sense of Place are terms found in environmental education theorising and empirical research that emphasises the human connections and bonds we make to places. Sense of Place is one domain of research, and theorising, that is important to note in this study. Ardoin, Schuh, and Gould (2012; 584) conceptualize sense of place as "four distinct but inter-connected dimensions – biophysical, sociocultural, political-economic, and psychological". Explored significantly by Altman and Low (1992), sense of place has been harnessed by environmental educators to explore how psychological bonds to place may develop into a sense of care for places. Psychological theorising with place has limited use for this study, but the process of developing 'bonds' with places that can lead to a sense of care is important to acknowledge.

Place-attachment is a similar field of research and is understood as having the potential to effect change in environmental understanding and behaviour, especially through interdisciplinary approaches (Devine-Wright, 2013; Manzo & Devine-Wright, 2014). Recent trends in theorising in place-attachment literature notes how the material aspects of places are important to attend to. Commenting on the limits of discursive practice in place-attachment research, Di Masso, Dixon, and Durrheim (2014) note that "in short, future research needs to grapple with the problem of interrelating linguistic practices with other embodied and material practices through which place attachment is constructed" (2014; 82).

In relation to this study, the literature in these two fields show how places can be very significant in supporting levels of attachment and care to places. These are aspects of outdoor learning that could be pedagogically important beyond any prescribed, or formal, curriculum aims. The importance of the material aspects of place are also of note. Overall, the theorising, and research, in these two fields show how places can be involved in the development of an ethic of care of the environment.

2.3.4 Place-based Education

Place-based education brings together concerns found within strands of environmental education, critical pedagogy and outdoor and experiential education. It has been developed within a variety of orientations; from a psychological approach (Ardoin, 2006; Ardoin et al., 2012), to critical approaches to globalization (Gruenewald, 2003; Gruenewald & Smith, 2008) and a concern with local politics and 'connectedness' to the local community (Meichtry & Smith, 2007; Smith & Sobel, 2010).

Place-based education has been theorised in ways that show the importance of a local approach to curriculum design. Sobel argues for a localization of curriculum, a "curriculum speciation" (2004; 11), one that *evolves* to a local setting. He calls it "a theoretical framework that emphasizes the necessary interpenetration of school, community, and environment, whether it's urban, suburban or rural" (2004; 11). Sobel's argument is worth noting because he shows how *local* places can be powerful components worth harnessing in the curriculum. That noted, we should heed Nespor (2008), who critiques place-based approaches, arguing that they can neglect to detail how places are constituted and can overly-simplify notions of community and place.

How places are constituted in place-based education relates to how the term 'nature' is understood. Whilst Sobel or Smith may see place as dominantly social, Gruenewald is one writer who conceptualizes place-based education from a critical and less humanist position (Gruenewald, 2003; Gruenewald & Smith, 2008). Gruenewald and Smith's (2008) work differentiates place from community, stating that place-based education should be non-anthropocentric and include the nonhuman world. Although their work is set within a critical pedagogy tradition, their acknowledgement of place as "more-than-human" (Gruenewald & Smith, 2008; 143) is an important shift. Gruenewald and Smith (2008) see place as *including* the non-human, and the more-than-human. This shift is important to this study because of the concern to view place in these non-anthropocentric ways. It is a consideration of the ontological situation that leaves room for the non-human and the more-than-human in pedagogy outdoors.

From these strands of theorising and research in various expressions of environmental education it seems that place is being considered in many ways. Place is being used as an important pedagogical frame across subfields in environmental education, and there is a trend of educating with place to articulate our interconnectedness with the planet. This has potential to develop care for places and link the local to the global. For this research, how place can impinge on outdoor learning is central to its aims, especially the more-than-human dimensions of place. The more-than-human is gaining attention in educational research such as the 'common worlds' perspective and some place-based education. However, it is still a developing field with more research needing to be done.

2.4 Postcolonial Influences in Outdoor Learning

Postcolonial discourses in outdoor learning are important to include in the scope of this research because they challenge 'neutral' understandings of place and can re-assert the importance of indigenous epistemologies (Somerville et al., 2009; Somerville et al., 2011; Stewart, 2008). For example, Tuck, McKenzie and McCoy (2014) challenge any culturally neutral position on place. What they call "land education" (*Ibid.*, 1) is a response to the concerns of neutrality in place-based education. They argue that land education re-affirms indigenous epistemologies and challenges colonial influences.

The contributions of Somerville and others (Somerville et al., 2009; Somerville et al., 2011; Somerville, 2010) in postcolonial writing and research in outdoor learning is noteworthy. These authors assert the importance of intimately knowing local places to address global environment issues. They argue that local places must be a starting point, as "through place it is possible to understand the embodied effects of the global at a local level" (2009; 10). Educationally, they argue that place is an important framework for integrating subjects and areas of the curriculum to address environmental issues.

Somerville (2008), notes how her place pedagogy is inspired by Gruenewald's (2003) critical pedagogy of place, but she rejects the dualisms he uses.[7] Instead, her postcolonial pedagogy of place attempts to create something new from the space between binary oppositions. Informed by feminist poststructuralism in her work with Aboriginal people, Somerville came to see the landscape as the third subject. A deep embodied connection seen as an ontology of becoming-other (in the space between self and a natural world). This is a relational position where the self is always in formation; it's a rejection of the fixed humanist subject. By understanding the self as always in formation, as becoming, then we are in a "reciprocal relationship with objects and landscapes, weather, rocks and trees, sand, mud and water, animals and plant, an ontology founded in the bodies of things" (Somerville et al., 2009; 10). This reconceptualised concept of place pedagogy has three key elements: our relationship to place is constituted in stories and other representations; place learning is local and embodied; and deep place learning occurs in a contact zone of contestation. As a result, Somerville (2007b) sees the local leads to an understanding of the global through what *place can do*, more than what it is.

[7] Gruenewald (2003; 8) used the terms "Decolonisation and Reinhabitation" to define the 'breaking down' of ideas that harm places (decolonisation) and the building up new ways of thinking (reinhabitation) that are positive towards place.

In addition to this non-anthropocentric understanding of place Somerville and Green (2011) note how there is little empirical research on the pedagogy of place-based education and ecological learning. These authors found in their study that place has the potential to affect learners in meaningful ways

> These subjectivities in place are being formed differently compared to how they might be formed in the classroom. Through their engagement with place, children are becoming different learners in the world, knowing their world differently. (2011; 30).

This quote identifies the richness of learning that is available to be harnessed with a non-anthropocentric understanding of place in outdoor learning. It also hints at the different strategies for planning and enacting outdoor learning that might be required. This is something these authors note in later work on sustainability education as a collaborative and community-based practice that involves the materiality of local places. They note that "these characteristics move beyond the possibility of standardised recipe-based approaches for teachers" (Green & Somerville, 2015; 842).

Postcolonial influences in outdoor learning offer ways of conceptualizing place that do not privilege western epistemologies. By rejecting these paradigms and taking a non-anthropocentric understanding of place there are rich pedagogical possibilities that can be harnessed. It also is evident that within theorising and research in this field, place can be understood to *produce* learning and changes in subjectivities. In other words, learning can come about *through* place, not just about place. As a result, outdoor learning can contribute to rich educational outcomes if place is harnessed in certain non-anthropocentric ways. In addition, how we might plan and enact outdoor learning within these diverse ways of understanding place seems to be complicated and not well-known. These conclusions further develop a case for this research that the practice of outdoor learning with non-anthropocentric views of place is worthwhile, but complex.

2.5 Place-responsive Education

The term 'place-responsive' is growing in popularity in research and theorising across outdoor-related fields of late. For example, in: outdoor education (Cosgriff, 2016; Wattchow & Brown, 2011); learning for sustainability (Paulus, 2015; Tooth & Renshaw, 2009); education in outdoor settings (Mannion & Lynch, 2016); primary geography education (Dolan, 2015); socio-ecological education (Wattchow et al., 2014); and outdoor learning (Green & Somerville, 2015).

Wattchow and Brown's (2011) key text, and later chapter (Brown & Wattchow, 2016), use the term 'place-responsive', drawing on Cameron's postcolonial position on education (2003a). Cameron (2003a, 2003b) seeks to centralise the ecological perspective of place and puts forward the term 'place-responsive' to argue that we should be more than 'sensitive' to place; we should be 'responsive' to it. His responsivity toward place is about a dynamic relationship with place. He notes:

> Place is not the mere passive recipient of whatever humans decide they wish to do upon the face of it. The land is an active participant in a very physical sense … it [sense of place] includes a growing sense of what the place demands of us in our attitudes and actions (2003a, 176).

For Cameron, this includes being open to other people's stories of place (*Ibid.,* 194) and the aspects of place that are not human.

Whilst Wattchow and Brown offer ways to undertake programme design in their book, they do not address any curriculum concerns in detail. Employing phenomenology, they focus on the felt and embodied encounters in place. In terms of educational design, Wattchow and Brown (2011) see that any outdoor educator needs to design "a responsive negotiation between participants and place" (*Ibid.,* 191). They suggest four 'signposts' for doing this:

1. Being present in and with a place.
2. The power of place-based stories and narratives.
3. Apprenticing ourselves to outdoor places.
4. The Representation of place experiences.

(Wattchow & Brown, 2011, 182).

Although these are useful guiding principles, Wattchow and Brown (2011) acknowledge that no place-responsive pedagogy has yet to be proposed, enacted, or evaluated based on empirical evidence. This acknowledgment further supports the need for this research to deepen our understanding of place-responsive pedagogy outdoors.

Brown (2012a) did undertake an exploratory study in two schools in New Zealand on how teachers employed a place-responsive pedagogy. His findings highlighted the way a cross-curricula approach to learning was encouraged in a place-responsive pedagogy. Additionally, there were signs of enrichment of learning as well as the sharing of untapped expertise. These findings show some evidence for how learning can be positively enriched through place-responsive pedagogy. In terms of how we plan for a place-responsive approach, this is not fully

understood. The study reported in this thesis does not take a phenomenological approach. Instead, as we will see, place-responsiveness is inquired into via a new-materialist ontology and methodology seeking to provide a different kind of contribution.

The previous empirical work that has been done includes research in Scotland on teachers' planned and enacted nature excursions as part of outdoor learning. Through empirically derived findings, Mannion, Fenwick and Lynch (2013) suggest that a place-responsive pedagogy involves explicitly teaching by-means-of-an-environment with the aim of understanding and improving human-environment relations. Their research proposed that:

> flexible, creative and place-responsive teaching approaches devised to meet environmental education ends will usefully emerge through embodied experiences in places based on consideration of the ontological view of nature and culture as coextensive and contingent. (2013, 805)

Their attention to the view of the ontological situation draws on posthumanist and poststructuralist inspired understandings of distributed agency and self. They argue that places, people and activities are interconnected processes. The implications for planning nature excursions are:

> while teachers do play a key role in assembling curricular experiences – they are key players when difference arises through lived transactions within places – they are not the sole agents of curriculum making. (*Ibid.*; 805)

Their argument is that place-responsive teachers need to attend explicitly to the role of places – the socio-material, contingent events, and relations between humans and other species – in their educational endeavours. Their research was particularly important to this study as it formed a platform for which I could more deeply explore the role of place in teachers' curriculum planning and enactment. In general, place-responsiveness is a nascent area of inquiry but a burgeoning one. As a result, place-responsive education is a useful source of literature and research for this study as it has highlighted the educational potential that exists in place-responsive outdoor learning, but how it might be planned and enacted is not well known.

2.6 Summary of Part 1

In Part 1, I have shown how place is important for education when we understand it as central to human experience. Drawing on influences from anthropology and poststructuralism I have also discussed how we can understand place as our immersion in a unified relational field, or meshwork (Ingold, 2011). This offers a nuanced way to understand place in outdoor learning that sees humans and the more-than-human as co-extensive. I have shown how places can be

understood as pedagogical in ways that are not limited to social or cultural means, but that also include the material and the more-than-human.

I have shown how place is used across many outdoor fields to do various tasks, for example: break down dualisms, assert the situated aspects of learning, and attend to environmental concerns. A significant feature of the use of place across the literature in Part 1 is that it has been employed to help address concerns about environmental degradation. This seem most useful pedagogically when a non-anthropocentric understanding of place is considered. It is also important to note that there has been more theorising in these trends than empirical research. This study will contribute to deepening our understanding of how a non-anthropocentric understanding of place can be harnessed usefully in the practice of outdoor learning.

From the literature on outdoor learning, place impinges on pedagogy significantly in that teaching strategies change when education goes outdoors. These changes in pedagogical strategies include notions of curriculum. There is evidence that researchers are turning towards a view of place that understands the ontological situation as that where we are co-extensive with the more-than-human. How we might plan and enact outdoor learning to accommodate this view is not well known. For example, as humans we negotiate places with other beings and the more-than-human. If we are co-extensive with the more-than-human, then how do they impinge on outdoor learning planning and enactment? The research undertaken in this study seeks to understand this more.

Overall, I have shown how place is important in outdoor learning pedagogy and non-anthropocentric views of place have potential to enrich outdoor learning if harnessed. Currently, teachers employ indoor strategies for outdoor learning and use it to meet the aims of prescribed curricula. The practical aspects of planning and enacting outdoor learning curricula with place are not well understood. This is especially so within place-responsive education which rejects the notion of place as a neutral backdrop. Extending the ideas from Mannion et al. (2011), I wanted to understand how outdoor learning can be understood in ways that acknowledge the assembling of curricula with other agents outdoors. How do educators work with place in the planning and enactment of curriculum for outdoor learning? How might we research this if the ontological situation is one where we are immersed within a unified relational field? These questions identify key issues from the literature reviewed so far that highlight gaps in our understanding. This research sought to address this gap in the research of the practice of curriculum planning and enactment with more than human in outdoor learning. The question that is now relevant is: what models of curricula exists that other researchers have used in place and outdoor learning?

2.7 Part 2: Curricula and Outdoor Learning – What Could Outdoor Learning be For?

Introduction

In Part 2, I draw attention to central concerns of curricula important to this research. Firstly, I show the trends in curricula theorising that include a shift away from representational knowledge and a return to the body in curricula via phenomenology. These views of curricula are born in part from postmodern thinking in education that challenges the idea of a universal truth. I discuss the implications of these perspectives on the planning and enactment of curricula including how they are reliant on certain views of the human subject and representational knowledge. I also define the curriculum term I have used within this research, the 'prescribed curriculum'.

Secondly, I discuss the current theorising around the role of the teacher in the practice of curriculum planning and enactment in education in outdoor settings. Teachers play an important role in curriculum planning and enactment but they are not the sole actors. The more-than-human found in places will act upon these processes too. How these are harnessed in the planning and enactment of outdoor learning is not well understood. I show how theorising in outdoor learning and curricula has been developed in phenomenological and posthumanist directions that challenge anthropocentric ideas of place. How posthumanist views of education offer possibilities to enrich outdoor learning is also discussed. Some posthumanist versions of curricula go beyond human-centric views of place and create new understandings of what outdoor learning could be for. These include learning that integrates curricula and could improve human-environment relations.

Posthumanist thought builds on earlier theorists in education such as John Dewey and his version of pragmatism. Dewey's pragmatism was concerned with a philosophy of education that rejected dualisms such as object/subject and rejected *a priori* truths. Dewey understood that truth comes from the testing of our ideas in the world we are in transaction with (Biesta & Burbules, 2013). In other words, we are not separated from the world we are seeking to understand, and knowledge is built up from our engagement with the world (Dewey, 1966). Whilst posthumanism can be understood as a project influenced by many sources such as cultural theory, science, feminism and philosophy it builds on some features of pragmatism. For example, the production of knowledge is understood as a process that includes an active engagement with the material world. However, posthumanism goes further and challenges a reliance on just language and representation in any production of knowledge (Barad, 2007; Braidotti, 2013).

The importance of understanding how we make sense of our environment through a material engagement with the world is another feature of posthumanist thought that has a legacy in the work of key foundational theorists. The ecological psychologist James Gibson (1979) argues that our perception of the environment comes about through an immersion in the environment, not separate from it. Ingold (2011) makes use of Gibson's (1979) work as he argues for the importance of understanding perception as part of our movement in an environment:

> Gibson insisted that perception is the achievement not of a mind in a body, but of the whole organism as it moves about in its environment, and that what it perceives are not things as such but what they afford for the pursuance of its current activity (2011; 11).

Some posthumanist thought in education draws upon these ideas around the ontological situation and our perception of the environment where we are not removed from the world (Sonu & Snaza, 2016). Posthumanism is more than just an extension of the educational philosophy of Deweyan pragmatism and Gibson's view on perception. Posthumanist thought has roots in the challenges put to humanism that fail to address issues of class, gender and race that these earlier theorists overlooked. The rise of posthumanist thought can be partly attributed to the sense of despair about the project of humanism that emerged after the Second World War (Braidotti's, 2013).

Throughout this part 2 of the literature review, I highlight the educational possibilities for outdoor learning that can exist if we harness non-anthropocentric aspects of place such as the more-than-human. Current research suggests, however, that how we might plan and enact outdoor learning with the more-than-human is poorly understood.

2.8 Trends in Curriculum Theorising

In this section I discuss important trends in the literature on curriculum theorising that are important to the non-anthropocentric views of place I identified in Part 1. These are focussed on postmodern views of curricula and how these inform ways of understanding knowledge and truth as situated and not universal. This literature has informed the direction of this research because it offers ways of considering curricula that could accommodate the more-than-human.

Postmodern views of curricula have informed this research because of the way knowledge and difference are handled by theorists in this domain of thought. I acknowledge the contribution to curriculum theorising by authors such as Kelly (2009) and Ross (2000) who see curricula as content, instrumental/objective or process. These definitions are helpful in understanding the ways in which we conceptualise curricula can influence the aims of education. However, for

this research, the models of curricula that go beyond the dualism of content vs. process and that are less socio-cultural are more important. First, I discuss some general considerations of curricula that help to understand the shift towards postmodern curricula theorising.

A curriculum can shape all aspects of teaching and learning because it plays a significant role in the control of knowledge and the social order. The shape of curricula can be influenced by many factors, such as social, critical, and political. Commenting on the curriculum landscape in the UK, Goodson (2005) identifies the shift from progressive education in state schooling around the 1970s to standards-based testing and the market forces that prevail today. He sees this as a response to a growing economic world order (Goodson, 2005) and educating for the workplace. One result of these forces internationally is a move towards national curricula planned with an objectives-based teaching approach to fit with standards-based testing (Ross, 2000). For example, John (2006) notes how national curriculum planning in England is likely to be influenced by a linear-rational planning processes similar to the Tyler model (1949).

In Scotland, with a history of more progressive education than England (Paterson, 2003), the Curriculum for Excellence (CfE) (Scottish Executive, 2004) has been identified as being somewhat different and more process driven with strengths around flexibility (Priestley & Humes, 2010). Priestley (2013) also notes that, although the CfE has flexibility and room for teachers and schools to organise learning, how to do this in practice is difficult.

Planning learning in modern schooling involves the consideration of more than a linear-rational model, or a focus on learning objectives. The influence of curricula extends beyond these structural components and there are informal forces at work that can influence learning and teaching in powerful ways. One such force is the "hidden" curriculum, which Illyich describes as:

> We are rather concerned to call attention to the fact that the ceremonial or ritual of schooling itself constitutes such a hidden curriculum. Even the best of teachers cannot entirely protect his [sic] pupils from it. (Illyich, 1971; 20)

If we pay attention to this complexity it makes further sense to consider Goodson's views on curriculum as he notes:

> One of the perennial problems of studying curriculum is that it is a multifaceted concept constructed, negotiated and re-negotiated at a variety of levels and in a variety of arenas. (2005; 229)

With curricula being a multifaceted issue, for this research it was important to understand curricula in similar ways that I understood place. In my search for understanding how any

models of curricula for outdoor learning could accommodate the more-than-human, I was drawn to postmodern theorising.

Postmodernism is a contested concept and is hard to define (Doll, 1993). In curricula terms, Doll argues that postmodernist expressions of curricula are about a shift from an externally prescribed course of knowledge to "a personal transformation" of the learner (*Ibid.*, 1993; 4). As a result, externally prescribed cannons of knowledge are undermined. Noddings (2012) argues that, in postmodern thinking in education, truths are seen as not universal, they have a local dimension (Noddings, 2012). The idea of a local truth is one that is formed or understood through the fact that we are always *situated* in a context. Noddings (2012) argues that the subject can be thought of as a *constituted subject*; constituted from the times and situations we live in. She writes: "As *situated* [original italics] knowers, much of what we know has been constructed in a very weak sense. We are products of our times and situations – in short, we are *constituted* [original italics] subjects" (*Ibid.*; 130). For this research, these positions on curricula have strong implications for understanding curriculum outdoors because they identify the relationships between knowledge and context, and this will include place. In other words, the context we are in, the places and environments, must also influence knowledge and truths.

A related issue that emerges in the postmodern critique of universal truths is that of how we might understand the formation of knowledge with a constituted subject. This is the process of knowledge creation from reality; epistemology. If the subject is constituted in ways that include our "times and situations" (Noddings, 2012; 130), how do these ideas settle with the formation of knowledge? How have curriculum theorists responded to these problems?

Some educational philosophers see significant implications in this problem, which they see as one of representation. A representational view of education is a product of the philosophical problem of the representation of reality. This problem is one that Colebrook (2005) explains through the readings of Foucault and Heidegger. The philosophical work of these authors around representation tried to understand how existence and being are separate from language. The 'problem' of representation is about how we cannot know something *in itself,* and instead we need to rely on how it is represented in forms such as language or culture to come to know it. In other words, things cannot be known as of themselves, but in the way in which they are re-presented to the subject. Therefore, any representation is influenced by *the process of representation itself*. Colebrook explains:

> Because knowledge is received from without it must be taken up [by the subject] and re-presented. What can be known is therefore determined and delineated by the representational powers of the subject. (2005; 1)

One feature of this problem is how do we really know about something from language alone? Theorising in postmodern areas of curriculum have taken these issues into account through a challenge to the representational problem. I will discuss how a group of curriculum theorists sought to work with phenomenology as a way to resolve this, but first it is worth discussing the implications of representation in terms of education.

Osberg and Biesta (2008) argue that modern schooling is based on a representational epistemology and that this is inadequate because knowledge is not separate from the world. It cannot be completely picked up in one situation and applied fully to another (Osberg & Biesta, 2008; Osberg, Biesta, & Cilliers, 2008). Representational epistemologies mean we are always seeking connections between the world and what we know. These authors see this as "spatial understandings" (*Ibid.*; 222) because we need to constantly check our mental understanding with the objects of those understandings in the real world:

> However, we find we can never be sure that our representations correspond to the real world because every test of our representations simply results in more representations. To attempt to argue for realism at the level of representation is to be locked into a world of representations. (*Ibid.*; 222)

Responses to the problems of epistemological representation and curricula have been the focus of some postmodern curriculum theorists. Postmodern curriculum theorists such as Ted Aoki and David Jardine have sought to overcome these problems by returning to the importance of the lived experience and phenomenology. These authors' contributions are discussed in depth in the next section (Section 2.9).

Broader developments in curriculum theorising that responded to the problems of representation are those borne from a movement of curriculum reconceptualization (Pinar, 1978). In the 1970s there was a weakly defined group of academics called the reconceptualists who sought to reconceptualise what curriculum is, "how it functions, and how it might function in emancipatory ways" (1978; 211). Pinar argues that the purpose of a curriculum is "*understanding*" (2004; 187). He sees this as being different from a focus on the absorption of fixed and predetermined knowledge (representational knowledge), and to do so we need to make curriculum a verb; to turn it into action. He argued that curriculum thought of as a verb is a curriculum that changes "as we are changed by it" (Pinar et al., 1995; 848). It is, he notes, "a complicated conversation" (2004; 188). Drawing on the writing of Ted Aoki, Pinar writes: "Curriculum as conversation, in this formation, is no conveyer belt of 'representational knowledge'" (2004; 189). This dynamic interplay between curriculum and knowledge that privileges understanding over a final truth offers a way to imagine outdoor learning that is open and emergent. These concepts of curriculum are useful to this research because they show how

a curriculum could be understood to accommodate the unplanned, the unknown and emergent learning that occurs outdoors.

For this research, these theorists articulate ways to understand curricula as more than just finite knowledge that is representational. If we are to understand outdoor learning with the more-than-human in ways that can enrich education, then these curricula theorists help to do this.

Some of these ideas of curriculum as conversation have been employed in curriculum inquiry in environmental education by Gough (2009), who sees it as a fruitful model to challenge western scientific thought and anthropocentric forms of environmental education. In summary, postmodernism theorising in curriculum is useful to inform how curriculum can be understood in this study and I am interested in those influences that are about place and human-environment relations.

2.9 Phenomenological Curricula and Outdoor Learning

Drawing on literature from the curriculum reconceptualists and postmodern curricula theorising, there are some models for curricula that relate to outdoor learning with the more-than-human. Of particular interest are theorists who ground their understanding of the curriculum through the emplaced body and phenomenology. In Magrini's (2015) book on new approaches to curriculum as phenomenological text, he notes the reconceptualists were concerned with post-Husserlian views of existential phenomenology. This phenomenology was used to re-affirm the human experience of education, and to return it to a lived experience (Magrini, 2015; 7). Like Osberg and Biesta (2008), and the problem of representation discussed in Section 2.8, Magrini (2015) discusses how contemporary education sets up the subject as being removed from the world.

Phenomenological turns in curriculum theorising set to *return the subject* to the world as something we are immersed within, not removed from. This has implications for how the environment or situation is understood, Magrini notes:

> Rather than *environment,* phenomenology wants us to rethink the context for and the situation of learning in terms of a discourse between individual and the world, one in which the subject, rather than being set at an objective remove[d] from the world, is immersed in the world. (2015; 27)

Magrini goes on to note another key point about the environment that is important for this study:

> The problem with viewing the curriculum in terms of biological "environment" is that it reduces education, which we would hope represents a transformative and formative

> experience for our students … Aoki's (2005) phenomenology of education insists that we open ourselves up to the possibilities of thinking and discoursing in terms of embracing a multiplicity of ways to experience, know, and understand the world. (*Ibid.*)

Magrini's work is useful to this research because he argues that being immersed within the world, not separate from it, is important for a non-representational view of curricula. This has significant connections to the way place and curricula is understood in this research, as a meshwork of relations (Ingold, 2011) (see Section 2.1.2 in this chapter).

Another key curriculum reconceptualist was Ted Aoki, who took a phenomenological understanding of curriculum embedded in the everyday life of teachers and learners (Pinar, 2004). He saw a school curriculum was really a tension between two curricula: the curriculum that was devised and constructed outside the school (within a bureaucratic hierarchy) is the "curriculum-as-plan" (Aoki, 1993; 259); and the curriculum that is present in the multiplicity of the classroom is the "lived curriculum" (1993; 259). Pinar (2004), explains well that the educational point in Aoki's work is to dwell in the space between the plan and lived curriculum. The curriculum that opens up there is in 'conversation' between the teacher and the children in the space of the classroom. Aoki's work is important to this study because it identifies how complicated and unknown a curriculum can be, and that planning learning through outcomes and objectives can be an impoverished view of teaching and learning. I see that outdoor learning could be an enriching educational practice with consideration of the ideas of curricula put forth by the reconceptualists.

The curriculum theorists who work with these phenomenological resources reflect a trend to re-assert the human through lived experience back into curricula. How possible is this with the more-than-human? One answer lies in how nature is understood in any model of curriculum. Margini (2015) argues that contemporary education sets up the subject as removed from the world. The term Margini uses is "metaphysical instrumentalism" (2015; 78). This is where nature is seen as something to serve humans needs, in an instrumental way. Magrini offers a posthumanist challenge to this subjective view through Jardine's work on an integrated curriculum.

Jardine (1997, 1998) takes a view on curriculum that is inspired by phenomenology but is also spiritual and ecological. He argues for an integrated curriculum that is not abstract, cleaved from the world, but is "*earthen"* (1998; 75). He sees teaching as being about introducing children to the authority of the earth because we dwell on the earth with children. In his view, an integrated curriculum is concerned with more than just whether a curriculum is about process, objective, or content. He sees an integrated curriculum as "an ecological and spiritual

matter, involving images of our place and the place of children on this 'precious Earth'" (*Ibid.*; 73). This expression of curriculum put forth by Jardine (1998) informs how curricula can be understood with the more-than-human. By grounding the curriculum in the Earth, Jardine is removing the subject boundaries that are assigned in education. In particular, Jardine identifies that we are of place and place makers.

For this research, what is so important in Jardine's view of curriculum is how he sees it as something that requires a responsiveness with the world. In addition, he notes that the human is not the kingmaker of this knowledge. When he thinks about the outdoors and when he is there he writes:

> The Earth becomes, not an object displayed according to forms of human understanding, but a home that embraces. I can become, as ecology suggests, deeply conversant with things, listening, asking, responding, withholding my actions, and acting with a sense of care for what I act upon, knowing that what I act upon will have an intimate say in how the conversation will go. (Jardine, 1998; 120)

From this theorising about curricula that is based within a non-representational view of education, there are important points to consider for this research. Firstly, that outdoor learning could be an enriching educational process that goes beyond just meeting the needs of a prescribed curriculum. From Magrini, we see it could be a process of embodied learning in a field of relations. From Jardine, it could be education about the earth, through our responses to the earth. These models of curricula offer ways of imagining how outdoor learning could be an important educational endeavor that achieves more than linking to indoor teaching and learning or meeting cross curricular aims. To consider these issues more deeply, I will explore the role of the teacher. How a curriculum is understood is related to how learning can be planned and enacted. The literature on curriculum planning has traditionally put the teacher at the center. Taking the ideas of curriculum noted in this section the role of the teacher becomes less clear.

2.10 Curriculum Planning and Enactment – The Teachers' Role and the Prescribed Curriculum

With the ideas around posthumanist and phenomenological curricula offering ways of appreciating how outdoor learning could be enriched, it is important to return to the practices of planning, enacting, and the teachers' role. This is because any curriculum will need to include the teacher in the planning and enactment. The literature on these processes has informed this research in key ways. In the literature on curricula planning and enactment, the importance of the teacher is a dominant theme (Elliott, 1998; Connelly & Clandinin, 2000; John, 2006). Similarly, Kelly (2009) notes that because teachers adapt curricula to their specific situations and needs, their role in curriculum interpretation and enactment is central.

Tyler's work (1949), is an approach to curriculum planning and enactment which has dominated literature on curricula for some time (Elliott, 1998; John, 2006). It is considered a rational and linear curriculum planning process that is driven by learning objectives or outcomes. The learning objectives or outcomes are also used to evaluate any learning. As a result, the planning approach is linear and tied to assessment (Marsh, 2009). Noting several problems with this model, Marsh (2009) argues that it assumes teachers always start their curriculum planning with objectives, which may not always be the case. In addition, Kelly (2009) notes this model fails to acknowledge other curricula that effect learning, such as the hidden curriculum that can permeate the culture of school. Considering the range of ideas of curricula so far discussed, I see that the linear-rational approaches to planning oversimplifies the process and does not account for place.

For this study, it was necessary to understand how the curricula in outdoor learning could be conceptualised in ways it could be researched. The curriculum for outdoor learning is an important focus in this research and needed to be defined. As I have noted in this review so far, there are many different ways we can understand curricula. These might be from progressive education where some teachers' interpretations of curriculum inform a curriculum as practice (Grundy, 1987), or by grounding the importance of experience in the lived curriculum (Aoki, 1993). The aim of this research was to understand the curriculum for outdoor learning that was planned and enacted in practice. I wanted to understand what happens in places with teachers, pupils and the more-than-human in any curriculum for outdoor learning. So that I could undertake research in this area, I wanted to use a construct of curriculum that was tangible. I chose to base my ideas of an outdoor learning curriculum on the *prescribed curriculum*.

The term 'prescribed curriculum' has been chosen for this research to denote the curriculum that teachers work with in their practice of outdoor learning. The use of the term implies that there is a formal curriculum that is prescribed to schools and educators. For example, in Scotland this is the Curriculum for Excellence (Scottish Executive, 2004). The prescribed curriculum is a term used in research to denote the curriculum that is created at a national level, and that schools and educators work with in practice. Researchers in Scotland (Miller, Edwards, & Priestley, 2010; Priestley, Edwards, Priestley, & Miller, 2012) use this term to denote the prescribed curriculum "as that inscribed in unit descriptors and outcome statements" (Miller et al. 2010; 225).

In addition to these researchers' views, the term 'prescription' did seem to relate to the way outdoor learning is articulated in curriculum documents and in the policy literature. In curriculum documents in the Curriculum for Excellence, outdoor learning is noted as being

interdisciplinary and useful for extending learning. In the support and guidance documentation on outdoor learning from Education Scotland it is noted that:

> Learning outdoors is not an end in itself. It is a means to enable learning and deliver outcomes across the whole of the curriculum through developing the values, purposes and principles of Curriculum for Excellence (Education Scotland, 2011; 2)

In this quote, there are forces of prescription at work that will 'deliver outcomes'. In similar ways, Beames et al. (2012) in their book on outdoor learning for practitioners articulate how outdoor learning should meet the needs of curricula when they write:

> Taking classes outdoors should be seen as an extension of, or indeed integral part of classroom activities used to meet the curricula and other needs of students. (Beames et al., 2012; 7)

This is not just a feature of the situation in Scotland. In other developed countries such as New Zealand, similar prescription of the curriculum of outdoor learning is noted in guidance and support documents. For example, the Education Outside the Classroom (EOTC) guidelines state that EOTC "is curriculum-based teaching and learning that extends the four walls of the classroom" (Ministry of Education, 2016; 4).

In summary, the term 'prescribed curriculum' was used to denote the teaching and learning that is being undertaken in outdoor learning practice. As a result, I felt it was appropriate to understand what teachers were doing with curriculum as a form of prescription. What were teachers doing outdoors with the more-than-human to meet the needs of a prescribed curriculum? How did place and the more-than-human play a role? These were key questions that were surfacing during the literature review stage.

Whilst the term 'prescribed curriculum' was chosen as a fixed form of curriculum that could be researched within the cases of this study, it is important to acknowledge that any prescribed curriculum is not the end of the matter about how learning is organised. Goodson (2005) notes that curriculum as prescription overly simplifies the task of understanding what is taught in practice. Other research that focussed on planning and enactment of curricula has identified that the teacher is not the only significant factor in this process. Edwards (2011), found the 'journey' towards enactment of the curriculum can *change* a prescribed curriculum. Importantly for this research, he shows how the changes are brought about by non-human actors. Using Actor Network Theory, where agency is distributed across objects and humans, he shows how computers and course materials are involved in the process of changing a prescribed curriculum. These findings are important for this research because they undermine the linear-rational model of planning and suggest that we need to have a deeper understand of the non-

human forces that impinge on curriculum enactment. How planning learning with place takes account of the human, non-human and more-than-human is the section of literature I turn to next.

2.11 The Role of Place in Curriculum Planning and Enactment

There are few empirical research findings on ways to include place in the planning and enactment of education in outdoor settings. What research has been done I discuss here. Some models suggest place as something that can be harnessed through the teacher or the children. One example, situated within a socio-constructivist model by Sandell and Öhman (2013), explores how any outdoor pedagogue will need to consider what landscape is on *offer* when planning outdoor education/recreation with place. They see that we view the landscape as either something to utilize and change (for human benefit), or as something with intrinsic value. They call this a "landscape approach" (2013; 9). In the landscape approach, the development of environmental concerns comes from our contemplation of the landscape and its intrinsic values. They note:

> When the balance is in favour of intrinsic values, the aim is to provide a place for the 'voice of nature'. Hopefully, the outcome of this is a sense of the presence of nature. (2013; 9)

Place, in this view, is something we as humans have control over in how it is accommodated in any planning and enactment. This model suggests place is understood as an ingredient in developing environmental concerns. However, their model privileges the human perspective of the landscape and does not include any ways the non-human aspects of place might impinge on the forces of planning or enactment.

Other significant contributions from empirical research include those by Catling (2013) in primary school geography. Catling identifies curriculum planning and enactment as a process of "curriculum making" (2013; 432), a term that denotes the dynamic nature of making decisions about curricula. Catling's work (2013) identified a role for place in primary school geography curriculum making. He found that teachers used local areas, especially *pupils' knowledge* of local places, for their geography curriculum making. The children tended to have a deeper understanding of the local area than the teachers had. Whilst this example shows a welcoming of children's views of place in the curriculum planning and enactment processes, they are still humanist.

These models of curriculum planning that involve place are still conceptualised from a position of social constructivism; that meaning is sufficiently understood through the lens of culture and society. Researchers working with place in less humanist ways in curriculum making are few. However, Ross and Mannion's (2012) research on curriculum making with a less humanist view of place is one that is useful to this study because they see place as where we are immersed in a world of relations. This takes into account the non-human aspects of place in curriculum making.

Drawing on the idea of dwelling from Ingold (2000), Ross and Mannion (2012) see that we come to know our world through dwelling in it not through mental schemas or representations (after Merleau-Ponty & Heidegger, see Ingold, 2000). As they note, this is a very challenging view of the ontological situation to fit with curriculum making. But, they see the comparison as useful, because:

> Used as a critical frame, dwelling suggests significant departures from contemporary approaches to either product- or outcomes- based curriculum making. It asks teachers, learners, local others and curriculum planners to recognize that we live in and through the world, rather than through representing it. (2012, 310)

These authors argue that places are where relations are made and remade. We make sense of the world through these relations. What might curriculum planning and enactment look like in practice with teachers and more-than-human others? These ideas of a relational view of the ontological situation and curriculum making are not deeply understood and support the need for this research.

Ross and Mannion's ideas around curriculum planning were informed from empirical work (Mannion et al., 2011) and are further expressed in work that I contributed to (Mannion et al., 2013). The findings from the later work on place-responsive education were discussed in part in Section 2.5, but at this juncture are worth returning to here. They note significant implications for future research:

> Importantly, we suggest place-responsive pedagogy is based on a view that place plays a key role in any educational endeavour alongside social factors. One way to theorise place-responsive pedagogical events is as emergent assemblages. By this view, place-responsive pedagogy is enabled as educators and learners respond to emergent changes and differences found in a unified relational field (Ingold 2000) of self, other people and the environment. Within this framing, teachers can play a role in curriculum assembling, *but other entities, such as the weather and other species, will play a role too* [my italics]. (2013; 804)

This quote is important to the rationale for this research because a central aim was to further understand how these other entities are harnessed into teachers' curriculum planning and

enactment of outdoor learning. This research aims contribute to the gap in understanding of place-responsive teaching strategies in terms of planning and enactment of outdoor learning. A focus for this was the more-than-human.

2.12 Curriculum Planning and Enactment as a Posthuman Practice: Assembling learning with the More-than-human

The literature and research that I have explored to this point in Part 2 has included contemporary views of curricula that relate to outdoor learning and non-anthropocentric understandings of place. In summary, I have shown that:

- Curriculum is a multifaceted issue. Constructs of curricula from various contemporary literature areas reject knowledge as representation. These constructs of curricula inform how we could accommodate non-anthropocentric views of place in outdoor learning.

- Teachers play an important role in the curriculum planning and enactment of outdoor learning but they are not the sole actors. The more-than-human found in places will act upon these processes too. In addition, the ways the more-than-human is accommodated in outdoor learning practice is not well understood.

The final part of this review of the literature discusses several strands of theorising and research in outdoor learning that are posthumanist. I also discuss more-than-human research and theorising in fields of geography and education in outdoor settings. In this section, I use the literature to discuss some ways we can understand outdoor learning curriculum planning and enactment as posthumanist and as a process of assembling. To begin with I discuss the terms ‘posthumanism’ and ‘assemblage’, and how these are important to consider for this research.

2.12.1 Assembling learning

Posthumanist-informed thinking and research in outdoor learning is useful to the rationale for this study. Writers in this field seek to find ways of understanding how teachers might accommodate the more-than-human in outdoor learning that rejects social constructionism. Posthumanism is a developing field with authors working with different versions of a posthuman ideal. Posthumanist positions on research that are of interest to this study are taken by academics working with non-representational Deleuzoguattarian philosophy (Braidotti, 2011; Whatmore, 2002). Whatmore (2002, 2006) is concerned with challenging the liberal human subject and her work undermines the primacy of humanist views. In doing so she creates greater understanding of how animals and the more-than human impinge on and implicate us in

contingent worlds. Her work has informed how nature is understood in this study via the term 'the more-than-human' (see Section 3.3.2).

The challenge to a liberal human subject is a key concept within a Deleuzoguattarian-informed posthumanism; where the human is decentred. Deleuze and Guattari's (2004) ideas around the human, and human thought, are worth detailing here at this stage of entering posthumanism. For Deleuze, meaning and human life are shaped by forces outside of us. This means he saw the human point of view as something that is *produced* from "our languages, our genes, our bodies, our desires, historical forces, social forces" (Colebrook, 2002; xiiii). In other words, the human is decentred because it is constituted by many things. As a result, we can understand the human as an assemblage of these constituent parts. This is a challenging way to understand the human which has emerged from within Deleuzoguattarian philosophy, a philosophy that rejected the idea of holism. Colebrook (2002) clearly articulates the concept of a human assemblage as "genetic material, ideas, powers of acting and a relation to other bodies" (*Ibid.*, 2002; xx). In pragmatic terms, an assemblage can be made up of relations that could be human, non-human, conceptual, discursive and material.

When these ideas are taken into posthuman theorising about outdoor learning, the more-than-human aspects of place are all relevant at the ontological level. As a result, the rocks, mud, weather, teacher become constituent parts of an assemblage. Such an assemblage is defined by what *it does*, not what *it is* (Colebrook, 2002; Masny, 2014). Within this posthumanist view, the relations we enter into with other bodies are not fully known beforehand and are not limited by discursive means. To use the idea of an assemblage gives us the freedom to conceive of outdoor learning with the more-than-human in ways we may have not fully imagined yet.

Next, I review the key literature and empirical research that has sought to understand place and curricula as a posthuman practice of assembling learning. Finally, I discuss other researchers who have used the more-than-human as foci in ethnography and those who draw on it in learning.

Researching in early years and the outdoors, Duhn (2012a) argues for a pedagogical view of place as that which is materially and discursively assembled. For Duhn, as she notes;

> Place and pedagogy are assemblages. A pedagogy of places assembles and folds into places of pedagogy. The parts that make up an assemblage are contingent; they plug into other assemblages and form new assemblages within the existing one. (Duhn, 2012a; 104)

From the position of place as assemblage, new possibilities open up for educational pedagogy. Duhn sees the potential of understanding places as assemblages is to explore critically our

relationship with issues of care for the planet in local, regional and global terms. Other authors bring together the material and discursive in posthuman writing and reconceptualise learning as a non-linear and rhizomatic,[8] a process that takes places within and between assemblages (Taylor, Blaise, & Giugni, 2012).

There is a subfield of posthumanism called new materialism that is being used by researchers and theorists to understand children's worlds as not just social but relational and material (Hultman & Lenz Taguchi, 2010; Quinn, 2013; Rautio, 2013b). New materialism is concerned with giving matter more attention in how it can shape our worlds and understanding. This has come about from a rejection of privileging of language in our meaning making. New materialism is seen as part of the general posthuman project of rethinking humanism after the linguistic turn and espouses a "monological account of emergent, generative material being" (Coole & Frost, 2010; 8).

Writing within new materialism, Rautio (2013a) highlights the importance of the material in learning and that "the interest is in how humans and nonhuman animals continually create the conditions for each other's existence" (Rautio, 2013a; 447). In other work, she explored how children carrying stones in their pockets was a frame for understanding that we *are nature* and *not separate from it*. She describes these as "autotelic material practices" (Rautio, 2013b; 400), which are not instrumental. From a new materialist perspective, how children carry stones in their pockets could give new insights into how we could understand outdoor learning, as she explains:

> A Deleuzian and a new materialist take on this would be to claim that we cannot be but always already related to all of our material surroundings, organic and inorganic, and not just related but constituted by it. And most poignantly: these relations are as much influenced by behaviour and existence of other co-existing bodies as it is by our intentional or unintentional actions. (2013b; 402)

How we might deepen our knowledge of outdoor learning practice that takes account of the behaviour and existence of co-existing bodies is a central aim of this study. Clark and Mcphie (2014, 2016) and Clark (2017) have found much interest in the new materialist turn and how it changes how we might understand outdoor learning and environmental education. They critique sustainability education that relies on degrees of *being connected* to the environment. They try and bring us back to the ontological world of becoming-with what we are immersed in; where

[8] 'Rhizomatic' is a Deleuzoguattarian term that I explain, and use, in Section 3.1.4 (Chapter 3) and later in Section 3.15 (Chapter 3). Briefly, it denotes a building process that is not predictable.

there is no separation from the environment. These authors argue that "all education move to a place-responsive pedagogy of expression" (2016; 1018). Their contributions to pedagogy are mostly theoretical and the lack of empirical work in new materialism and outdoor learning is a strong argument for studies such as this one to be undertaken.

Other posthumanist writers, for example, Snaza and Weaver (2015), reject predefined categories of curriculum and instead posit that what can a body can do is more useful than what it is in learning. Snaza and Weaver give an example of how a primary school curriculum conceptualised through gardening is full of posthuman possibilities of seeing humans and other life as interconnected and co-emergent. An outcome of their view is a focus on the "non-dissociable nature of these relations" (2015; 8). They see that learning outcomes or planning aims are not so relevant in posthumanist education. Instead, they see that posthumanist education can do more than contribute to a global economy and consumption of goods. They argue that:

> The posthuman challenge is to give up on planning in order to actualize the kinds of potential indicated by a Spinozist immanent ethics: We don't know yet what a body can do, nor do we know what we as beings who are used to thinking of ourselves as 'human' are capable of. (Snaza and Weaver, 2015; 3)

This quote articulates how, if we see outdoor learning in these posthumanist terms, then it could be full of possibilities that could be enriching.

These posthumanist and new materialist approaches to education offer opportunities to see outdoor learning as education with the world, not education as removed from the world. We are always in relation to the world and this offers rich educational possibilities. The way we can purposefully harness the relations that we are intertwined with in place needs to be better understood in outdoor learning. This research sought to understand more deeply how to plan and enact outdoor learning intertwined with place and the more-than-human.

2.12.2 The More-than-human

In the broad field of relational geographies (Castree, 2000), there is a subfield that is concerned with more-than-human geographies. In this field, the human-nature or nature-culture binary is rejected and instead it is argued that we are relationally intertwined with the more-than-human, the material world and other species (Brown & Dilley, 2012; Demeritt, 2005; Gibbs, 2009; Lorimer, 2010; Panelli, 2010; Whatmore, 2006). Bell, Instone, and Mee (2018) conducted ethnographic research that investigated the performative and creative nature of encounters with the more-than-human. They developed a more-than-human methodology called "engaged witnessing" (*Ibid.*,136) that accounted for the co-fabrication of research materials *with the*

researcher and research process. By focussing on the more-than-human through engaged witnessing, these researchers argue that they were able to "allow for an appreciation and awareness of the transformational and affective nature of more-than-human research" (*Ibid.*,143). In other words, the more-than-human that was encountered outdoors was able to shape the research process. This finding hints at the ways we are relationally intertwined with the more-than-human.

In similar ways, Pitt (2015) took the more-than-human as foci in ethnographic research attending to the agency of plants in a community garden. Focussing the ethnography on the more-than-human gave a nuanced understanding of how plants were treated by humans. By researching with the more-than-human as foci, they were able to identify the agency of the plants. Pitt found the role of the human was still important however, because of the plant knowledge needed to be able to garden effectively. This is an important point to note that any human/more-than-human separation is hard to work with in research. Blaise (2016), found similar challenges in how she engaged with the more-than-human in early childhood research. Working with postqualitative research (see Chapter 3, Section 3.4) she identified how attending to the more-than-human bodies of an art installation created unsettling responses in her. As she tried to make sense of the artefacts and her responses, she found these hard to appreciate and work with without returning to a human-centric view. Was it her "desire to 'know'" (*Ibid.*, 624), or the agency of the artefacts? These were questions she felt compelled to ask. Overall, it seems that the more-than-human in research can help to understand the nuanced and intertwined nature of our existence. How have researchers used it in learning, especially in the outdoors?

In studies of children's geographies in early years, the more-than-human has been used as research foci (Blaise, 2016; Malone, 2015; Taylor & Pacini-Ketchabaw, 2015). I explored some contributions of these researchers in Section 2.3.2 because they are working with non-anthropocentric views of place, but discuss their attention to the more-than-human here. Researchers in children's geographies have drawn upon the more-than-human, posthumanism and new materialism in ways to understand the nuanced relationships between young children, the outdoors and play. The use of new materialism in early years has also informed more relational understandings of pedagogy with children who are too young for text-based data collection (see Hultman & Lenz Taguchi, 2010).

Researching in the 'common worlds' perspective (see Section 2.3.2), Taylor and Pacini-Ketchabaw (2015) position the child as not separate from the environment but within a "heterogeneous, and interdependent multispecies common world in which we all actually live" (*Ibid.*, 509). For these authors, they see the relations between the more-than-human and human actors are where learning emerges. It is how these authors see the more-than-human as being

able to shape our common worlds that is important for this research. If we see the ontological situation in these ways then we will be staying open to "the possibility that other species and life-forms shape us in ways that exceed our ability to fully comprehend" (*Ibid.*, 515). From their research I see that the more-than-human is able to shape learning and can offer a nuanced view of educational practice in outdoor learning. As a result, I was drawn to the more-than-human as foci in this research.

The implication of these research approaches with the more-than-human have resonance with education for improved human-environment relations. Malone (2015) sees that the environmental education movement is still trying to 're-insert' the child into nature in the hope that they will want to save the earth from environmental destruction when they are older. Instead, by drawing on new materialism and posthumanism, and by decentering the human subject, she sees that:

> By shifting away from the child in nature as the only agential body and focusing on the materiality of child bodies and the bodies of other nonhuman entities as relational assemblages allows a new imagining for children and their encounters with nature. (*Ibid.*, 20)

This quote is useful to end this section because it articulates ideas that are key in this research. In this research, I set out to further understand outdoor learning with the more-than-human. Taking the more-than-human as foci could open up new ways to understand the educational possibilities for outdoor learning. As a result, how outdoor learning is organised, planned, and enacted are key concerns for this research.

In summary, the more-than-human has been used as a focus in research to understand more deeply the intertwined relational nature of our existence with all that we encounter in the world that is not-human. It has been used to challenge the privileging of the human subject and to more fully appreciate the relations we are inseparable from in the world. Early years educators see the more-than-human as foci for how learning is shaped via these relations and what occurs as learning in the relationships between the more-than-human and human.

For this research, these are very important points to acknowledge because they show how taking the more-than-human as foci in research has potential to deepen our understanding of the educational aspects of the outdoors that are not human. The sticks, mud, moss, and wind all have potential to shape learning, but how this is understood in practise is not well known. These points for consideration build a strong case for the need for this research. How teachers harness the more-than-human in their planning and enactment of curricula for outdoor learning is not

well understood. Yet, from the research reviewed in this section, it would seem that the more-than-human would be very useful foci in which to do this.

2.13 Summary of Part 2

In this section I have shown how there are epistemological views of knowledge, inspired by postmodernism, that reject universal truths and see truth as local and situated. The result of these views is that we can see education as more than just about abstract knowledge and facts and more connected to local contexts and personal transformation. The reconceptualists sought to challenge this representational view of knowledge and via phenomenology they argued that any curricula should not be removed from the world. For this research, these are important views of learning to consider because they suggest that there is rich educational potential in outdoor learning, especially in how knowledge can be understood as situated and intertwined with the more-than-human.

These are important considerations for this study where place is understood as a field of relations we are enmeshed within. The work of Aoki and Jardine show that there are ways of understanding curricula as rich, intertwined with the earth, and that are less concerned with fixed learning aims. Traditional views of curriculum planning have been centred on rational-linear models but in this research, I see curriculum planning needs to be more than that, especially if we want to accommodate the ways of knowing that Jardine suggests.

Other researchers have shown how planning with place is worthwhile and that it can be mediated through the educator or the child. These approaches do not accommodate the full range of agents that can impinge on learning outdoors. The potential for the non-human aspects of place to impinge on learning has been identified in research but how this is planned and enacted in practice is not well understood.

If we see curriculum planning and enactment as a posthumanist practice based on the concept of assemblage proposed by Deleuze and Guattari (2004), then we are able to imagine how the non-human aspects of place can take a role in learning outdoors. Taking an assemblage view offers new ways of understanding outdoor learning. If we are immersed in a field of relations, never removed from the world, then other bodies too can influence our relations with the world that are important for human-environment relations. For this research, how these other bodies can impinge on and shape outdoor learning planning and enactment becomes a worthwhile focus for research. These processes are not well understood in outdoor learning in particular.

Finally, the more-than-human is a developing area of research that acknowledges our intertwined relations with the non-human. Research that has taken the more-than-human as a

focus, has found it can identify the non-human agency of plants and other life in educational processes. The separation of the human from the more-than-human is difficult, and this is one difficulty that is inherent in this research. I explain how I sought to work with these issues in the next chapter on the methodology (Chapter 3).

In summary, we can understand curricula as a dynamic process that is not fixed and that is intertwined with our relations with the earth. These ideas of curricula offer ways of seeing how outdoor learning can be enriching beyond meeting the needs of a prescribed curriculum. How we plan and enact such a view of curricula that is dynamic and "earthen" (Jardine, 1998) is not well understood. The more-than-human has potential to impinge on learning and education but how we plan for this is not well known. This research will aim to address this gap in outdoor learning practice.

2.14 Summary of Chapter and Research Questions

The key findings from the review of the literature have identified gaps in the research on outdoor learning that are important to note. I summarise the key features of the review and identify the gap this research will address:

- Place is central to human experiencing. If we see place as *a meshwork* of relations (Ingold, 2011) then we can understand a view of the ontological situation where we are relationally intertwined with the more-than-human.

- Attention to place is growing in the literature in outdoor education, environmental education, outdoor learning and related fields. Place is being used to align pedagogy with environmental concerns but through humanistic frames. There is a dearth of research in these fields that use a non-anthropocentric view of place.

- Non-anthropocentric views of place are educationally important in ways to improve human environment relations and offer rich educational opportunities. They are being harnessed in research in early years and some domains of environmental education, but less so in outdoor learning.

- Curricula is multifaceted, and some forms of posthumanist curricula can accommodate the more-than-human in outdoor learning. These curricula inform how outdoor learning could be used to educate beyond the needs of the prescribed curriculum.

- Teachers play an important role in curriculum planning and enactment but they are not the sole actors in outdoor learning. The more-than-human found in places will act upon

these processes too. How these are harnessed in the planning and enactment of outdoor learning is not well understood.

These points highlight that there are rich educational possibilities in outdoor learning if we harness non-anthropocentric aspects of place such as the more-than-human. How we might plan and enact such outdoor learning is poorly understood. This study will contribute to this gap in the research and further understand how outdoor learning can enrich education through the harnessing of the more-than-human. The research question was:

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

In the next chapter, I explain the methodological choices I made to answer this question.

Chapter 3 Methodology

3.1 Theoretical Framework

> New material feminisms, post-humanism, actor network theory, complexity theory, science and technology studies, material culture studies and Deleuzian philosophy name just some of the main strands that call us to reappraise what counts as knowledge and to re-examine the purpose of education. Together these strands shift the focus away from individualised acts of cognition and encourage us to view education in terms of change, flows, mobilities, multiplicities, assemblages, materialities and processes. (Taylor & Ivinson, 2013; 665)

Several of the fields of contemporary critical thought noted in this quote have informed the decisions I made in the methodological design of this research. This quote sets the scene well for this section where I explain how I have come to situate the research methodology in a posthuman and postqualitative theoretical underpinning.

3.1.1 Introduction

In this section, I describe the theoretical framework that has informed the methodology of this research. I explain the posthumanist theory I have used and the background to the form of postqualitative research used. I aim to be succinct with theory in this section because I have operationalised much of it within the main body of the chapter. This section is designed to do the following:

1. Define and explain the posthumanist theoretical framework in which this study is situated.
2. Explain what postqualitative research is, how it aligns with posthumanism, and how it is a suitable approach to answer the research question.
3. Define some key terms from Deleuzoguattarian philosophy that will help the reader as they go through this chapter.

I start with a description of the theory of posthumanism within human and cultural geography I have used. I then describe some developments of postqualitative research that have informed the design of the methodology. I finish with definitions of some Deleuzoguattarian terms that I use in the methodology.

3.1.2 Posthumanism

Posthuman philosophy, and posthuman geography, are fields of theorising on place and the human subject that have contributed to the methodological design of this study. Posthuman

geography has various forms (Castree et al., 2004), but, generally, it is premised on a rejection of the dualism of nature/culture. Posthumanism as an analytical and philosophical concept challenges philosophical humanism and the idea of a single, autonomous, human subject (Baidotti, 2013). For this study, I have drawn from both these fields in the design of the methodology because they inform how a non-anthropocentric understanding of place can researched.

Posthumanism as a field of philosophical thought is informed by a broad set of ideas which include the work of material feminist philosophy (Braidotti, 2013; Harraway, 2016) and science and technology studies (Hayes, 1999). Arguing for a distributed view of cognition in posthumanism inspired by cybernetics, Hayes (1999) sees posthumanism as able to challenge what we take for granted as humans in western thinking. She rejects human consciousness as the sole authority on how we understand everything. She also argues that the posthuman is a "collection of heterogeneous components, a material–informational entity whose boundaries undergo continuous construction and reconstruction" (1999; 3). These posthuman philosophical influences require us to reject a view of the ontological situation where we are separated from the world as a subject/object binary.

In their application of posthumanism to educational research, Snaza and Weaver (2015) highlight the importance of these early positions on understanding the posthuman. They argue that as we reconceptualise the human as posthuman we take a relational view of what were once thought of as discrete entities: human, animal, machine. If we do this, then we might see new ways of how the relations between "beings and things [that] make up the stuff of the world" work (2015; 1). These relational ways of understanding humans, places and the material were important to me in the design of this methodology because I wanted to research outdoor learning with place understood in a posthumanist way. In other words, if we cannot be separated from the material world, then researching *with the materiality* becomes necessary. As I identified from the review of literature, the curriculum planning and enactment of outdoor learning with place and the non-human are not well understood. Using posthumanist resources to inform the research methodology was how I ensured I was going to be able to successfully answer the research question.

Whatmore's (2002, 2004, 2006) work on posthumanism has informed this study in several ways, especially in the design of the methodology. Whatmore (2006) views the posthuman in a similar heterogeneous and constituted way as noted by Hayes (1999). Preferring the term more-than-human geography to posthumanism, Whatmore (2006) agrees with the trends in human geography (see Thrift, 2004) and anthropology (Ingold, 2000) which challenge the need to remove ourselves from the world to then be able to study it. Whatmore sees posthumanism as a

response to a trend in many fields (e.g., anthropology, geography, and archaeology) that are uncomfortable with the "all-too-human worlds" (2004; 1361) of social science. Whatmore's posthumanism has informed this study because I have used her term of the more-than-human to represent an understanding of nature that is relational and open to difference. I deal with this term in detail in Section 3.3.1.

For this study, these posthumanist views have informed an understanding of a theoretical framework which allows us to appreciate the ontological situation of the outdoors and human as hybrid; not a separation. As a result, I chose to work with a methodology devised to fit within this view of the ontological situation – postqualitative research. Postqualitative research is, in part, a posthuman project that harnesses new materialism (Barad, 2007; Coole & Frost, 2010) and is generally concerned with a refocussing of ontology over epistemology (St. Pierre, 2014). I discuss the role of new materialism in greater detail in Section 3.5, but first I explain how I came to see postqualitative research as being useful for this study.

3.1.3 Postqualitative Research

> Barad, Braidotti, Haraway and other material feminists make it clear that we cannot separate the materiality of the world from our knowledge of it (Coole and Frost 2010). By properly recognising that we have no bird's-eye position from which to look back or down at our world, we have to take seriously our own messy, implicated, connected, embodied involvement in knowledge production. (Taylor & Ivinson, 2013; 668)

If posthumanism and new materialism provide one way of understanding the inseparability of our material and discursive worlds, then we may need to ensure we do not try to take a bird's-eye view. To avoid this, we can draw upon resources within the developing field of postqualitative research. Postqualitative research draws on philosophy within posthumanism and new materialism and is concerned with a distributed subject (Somerville, 2017).

Postqualitative research has emerged in contemporary academia through multiple factors. A central factor is the disillusionment with the paradigm wars that have inhabited qualitative research literature (Denzin, 2013). This disillusionment is also noticeable in some writing in outdoor and environmental education (Gough, 2016). Gough articulates his disillusionment over competing paradigms in research in outdoor and environmental education and argues that we are post-paradigmatic – imposing paradigm distinctions on the world is a humanist project. He suggests that we should no longer be, "adhering to the strictures of exhausted paradigms that describe inquiry in advance in order to control it" (2016; 65). I agree with this position and his suggestions for finding new ways to think about, and do, research that does not rely on ageing paradigms. Gough's work is important to the development of the methodology of this study

because he sees new materialism and posthumanism as important theory we can draw upon to resist the paradigm trap. For example, he argues that using Deleuze and Guattari's machinic assemblages helps us to experience the world as posthuman, where we are always in a co-evolution with other materials and relations – there is no absolute separation.

> That is, posthuman/place relations are not about individual subjects autonomously forming and developing relations with the world but, rather, about realising that these relations always already exist, and might be as much influenced by the behaviour of other materials in the places we inhabit as they are by our intentional or unintentional actions. (Gough, 2016; 63)

In this quote, I see that Gough is encouraging us to see the world as posthuman, where we are part of an already relational world. To research this requires attunement to the importance of the material in our place relations and how they already exist prior to our involvement. For this study, because I wanted to research outdoor learning in ways that resisted the dominance of language and *a priori* meaning, postqualitative research gave me the resources to do this.

The rise of postqualitative approaches to research can be understood by looking at the complex and multifaceted history of qualitative research. Denzin and Lincoln (2011) identify eight particular moments in qualitative research that have occurred over the last 100 years. These moments are linked to developments in cultural and social theory that have influenced knowledge and meaning such as the rise of postmodernism, or the crisis of representation. Whilst qualitative research can be defined as "an interpretive, naturalistic approach to the world" (*Ibid.* 3) there are a range of different interpretivist paradigms in use. These include: positivistic and postpositivist, constructionist and interpretive, critical, and poststructuralist (*Ibid.*). Some developments of postqualitative approaches have emerged from concerns around understanding research in such compartmentalised and paradigmatic ways. There are two problems that postqualitative research seeks to address that arise from this understanding of qualitative research.

One criticism that postqualitative approaches seek to address is to do with critical thinking as understood within a "postmodern" position on qualitative research (Erikson, 2018; 54). The problem with being critical is that it requires a stance of some sort. To do this implies that we can take an external, or privileged view, on an issue. This problem is commented on by MacLure (2015), who argues that we have no position to take that allows us to unmask the problems we might identify in a phenomenon. Instead, drawing on new materialism within a postqualitative view, MacLure sees that any position on research is in the middle "We always start in the middle of things, where there is no transitivity: that is, no discrete actions which will separate and simultaneously lock together subjects and 'their' objects" (*Ibid*; 99). As a result,

postqualitative approaches are being articulated as concerned with what method can *do* not just what it can help us to interpret or understand (Lather, 2013). St. Pierre, Jackson and Mazzei (2016) explain it well when they argue for new forms of inquiry that work with new materialist positions that encourage us to "give up a container model of inquiry in which all elements (e.g., data, analysis, representation) are isolated, distinct, and appear in a pre-determined sequence" (*Ibid.*; 105).

A second criticism that postqualitative approaches to research seeks to address, such as those informed by new materialism, is the emphasis on evidence-based inquiry within a conservative neo-liberal environment in social science research (Denzin & Lincoln, 2011). Torrance (2017) identifies this as the "what works agenda" of the focus on measurement of outcomes in science-based research and policy in education (*Ibid.*; 69). In terms of the current moment of qualitative research, there is a growing attention to approaches that form a "methodological backlash associated with the evidence based social movement" (Denzin and Lincoln, 2011; 3). This is one rejection of evidence-based criteria in social science and is reminiscent of the paradigm wars of the 1980's (Denzin and Lincoln, 2011) where competing world views were the focus of debate which stalled the field of qualitative research (Lather, 2013).

Postqualitative approaches to research are responses to the evidence-based focus in social science and educational research. In their editorial in the *International Journal of Qualitative Studies in Education*, Lather and St. Pierre (2013) argue against *qualitative* research. Lather and St. Pierre reject the neatly bounded paradigm and argue for research that resists hierarchies and totalities, "that reconceptualizes and experiments with standard practices, moving beyond current scripts and their conventional codifying and disciplining of inquiry. Here is the space of 'postqualitative'." (2013, 638). Somerville discusses similar reasons for using postqualitative inquiry in her place research and states that "postqualitative inquiry begins with the assumption that there is no *a priori* category of the human" (2017; 20). Postqualitative researchers like Lather's (2013) work challenges qualitative research, she argues that we need to step beyond paradigms and the pursuit of scientific measures of quality. She argues for the postqualitative where we understand subjectivity as relational and distributed and where meaning is produced through engagement with the material and the discursive.

Like some other postqualitative researchers (Mazzei, 2013; Rautio, 2013b; Renold & Ivinson, 2014), I have used terms and concepts from the philosophy of Deleuze and Guattari (2004). Their philosophical writings have been influential in postqualitative research because they rejected representational logic and the pursuit of interpretation and final judgements. Instead, Deleuze and Guattari (2004) were interested in what philosophy can do to create new

understanding and new concepts. Reflecting their poststructuralist thinking of challenging metanarratives, Deleuze and Guattari (2004) portray this view in how they describe writing and literature, as a machine for thinking – not a source of final meaning. They write,

> But when one writes, the only question is which other machine the literary machine can be plugged into … Writing has nothing to do with signifying. It has to do with surveying, mapping, even realms that are yet to come. (2004; 4)

Resisting judgement and producing new ways of being in the world are key to postqualitative research, and the subset I worked with of new materialism (Fox & Alldred, 2015a). Lather and St. Pierre call this a "methodology-to-come" (2013; 635).

One feature of postqualitative, and new materialism, research that connects well with Deleuzoguattarian thought, is that we are *always part* of ongoing relations, never separated. This is how I have understood place in this study as a meshwork of relations that we cannot be separated from. This view of place has shaped the research methodology. The postqualitative researcher Rautio puts it well when she says:

> A Deleuzian and a new materialist take on this [being human and considering our relations to the world] would be to claim that we cannot be but always already related to *all* [authors italics] of our material surroundings, organic and inorganic, and not just related but constituted by it … It does, on the contrary [to humans being solely responsible for our relations] stress the responsibility that arises out of our realization that we always act as one part of a complex mesh of relations, the directions and outcomes of which are largely unknown to us. (2013b; 9)

For this study, I drew on Deleuzoguattarian thought in the new materialist resources (Fox and Alldred, 2015a) used in the formation of the methodology. In doing so, the methodology was sensitive to the complex mesh of relations we are immersed in. I describe this in the section on methodological design (see Section 3.5), the methods (see Section 3.10), and the analysis (see Section 3.15).

In summary, the reason I chose postqualitative research for this study is because it facilitates ways of thinking about outdoor learning with the more-than-human that were open to difference. I sought to do this through attention to materials, situated relations, and encounters with the more-than-human *not fully understood by language and representational logic.* Lather and St. Pierre (2013) argue that this is the main project of postqualitative work when they note:

> The ethical charge of our work as inquirers is surely to question our attachments that keep us from thinking and living differently. Those who write for this special issue show us how thinking differently changes being – which was, perhaps, always already different all along – and that is the goal of the new ontology, the new inquiry after the 'posts'. (2013; 631).

I describe the formation of the methodology along these lines in detail throughout this chapter. At certain stages I use some terms from Deleuze and Guattari's philosophy, and I explain these next.

3.1.4 Deleuzoguattarian Terms

In the postqualitative methodology I have chosen for this research I use certain terms from the philosophy of Deleuze and Guattari (2004). Where I use these in the main body of this chapter (and others) I discuss them in detail. However, because Deleuzoguattarian writing uses some neologisms and can make for challenging reading, and understanding, I have chosen to offer some early definitions and explanations here. Deleuzoguattarian thought is challenging to comprehend easily and I read their writing as a creative process of thinking about the world in new and unthought ways. The main purpose of this next section is to help prepare the reader for the use of these terms later in the main body of this and subsequent chapters.

Immanence

Immanence is a term that seeks to free thought from a point of view, especially one that uses the human as a grounding. Immanence can be understood as having a genesis *outside* the subject. To help understand immanence Deleuze's view of difference is important. In analytical philosophy, 'identity' and 'difference' are set in contrast to each other, which helps to delineate how one entity varies from another. Deleuze was more interested in how difference *itself* provides a grounding for being and not just how one entity differs from another. Deleuze (1994) argues that difference itself can be imposed on the world (in the form of a logic or external structure) or it can emerge on its own in the world and do so in a way that it is *immanent* (Somers-Hall, 2013).

We can understand immanence as a way of rejecting the representational logic of western thought. I find Colebrook's description of her reading of immanence helpful,

> [T]he event of thinking, grammar, writing, tracing or moving is not an event *in relation to being.* There is not a being that is then represented, a subject that bears predicates, or a substance that has perceivable qualities. Against this separation of representational logic Deleuze will put forward the possibility of a logic on *immanence:* where the event of the given is nothing other than itself and not the giveness *of* some presence. (Colebrook, 2005; 229)

In other words, immanence is a force that can inhabit, and *produce* our thoughts, writing, and being. It is freed from *a priori* meaning. In this study, I use the term immanence within the process of analysis and the production of findings; rhizoanalysis. In the findings, I share how immanent thoughts were produced by my reading of data. The use of immanent thought is used

within four rhizoanalytical procedures suggested by Masny (2014). These are detailed in Section 3.18.3.

Assemblage

The term 'assemblage' denotes a 'grouping' or coalescing of things, concepts, matter, bodies that hold together temporarily. Assemblages have capacities to produce other assemblages as well as break them down. With the term 'assemblage', Deleuze and Guattari (2004) create an explanation for how a new grouping of things can exist, without requiring pre-existing conditions of any of its components. It is easy to appreciate this when we remember they are working without *a priori* meaning in their philosophy.

Deleuze and Guattari (2004) rejected the idea of a whole (e.g., a human body) as being made up of components that are *constituted by the relations* they have to that whole. We can think of these relations as conditions of interiority (Delanda, 2006). For example, the human body is made up of organs that require distinct relations between themselves and the whole body. These are relations of interiority. In a challenging move, Deleuze and Guattari (2004) reject these conditions of interiority and instead argue that anything can form an assemblage with anything else because there are no pre-existing conditions of the components that make up a whole. They write:

> There is no longer a tripartite division between a field of reality (the world) and a field of representation (the book) and a field of subjectivity (the author). Rather, an assemblage establishes connections between certain multiplicities drawn from each of these orders. (2004; 23)

For this study, this concept of the assemblage allows us to take a particular view on the social and material relations that we enter into. If we see these as assemblages with the non-human and more-than-human then this is congruent with the view of the ontological situation as understood in this research; that we are already immersed in a field of relations – the meshwork (Ingold, 2011). For this study, assemblages are conceptually important because the methodology has employed new materialist approaches to research that attend to assemblages, not the subject (Fox & Alldred, 2015a). For example, in new materialist research, the assemblages are constituted by relations and affects, "Assemblages are territories produced and disputed by the affects between relations." (*Ibid.*, 2015a; 404). Assemblages are key features in the research methodology I have used. In it, the assemblage is the focus of analysis, not discrete subjects.

Territorialization/Deterritorialization/Reterritorialization

An assemblage is held together by the capacities of its relations and as these relations change then so does the assemblage. Assemblages hold together temporarily and are subject to forces that produce other assemblages as well as break them down. The terms of 'territorialization', 'deterritorialization', and 'reterritorialization' are to do with these building (territorialization), breaking down (deterritorialization), and re-forming (reterritorialization) of assemblages. Colebrook describes these forces as the "very connective forces that allow any form of life to become what it *is* (territorialization) can also allow it to become what it is *not* (deterritorialization)" (2002; xxii). Deleuze and Guattari (2004) provide a helpful example through the interconnectedness of a wasp and an orchid. The orchid produces a flower to attract the wasp. In this example they note that "the wasp is never-theless [sic] deterritorialized, becoming a piece in the orchid's reproductive apparatus. But it reterritorializes the orchid by transporting its pollen" (2004; 11). These terms portray the commitment of Deleuze and Guattari to think outside of representational logic and to see life, and thinking, as about forces and relations.

Multiplicities and Becomings

A multiplicity is a term used to denote a grouping of components or a set. It does not rely on a form of classification or logic, which is foundational. It is a concept that challenges western thinking. A multiplicity is a grouping of components not defined by any external measure but by the collection of its parts. Deleuze argues that a multiplicity is directly constituted by what it includes (Colebrook, 2002). This means that as any multiplicity changes in constitution then any associated meaning, or what it stands for, changes. For this research, I use the term 'multiplicity' in similar ways to Fox and Alldred (2015a) because their work on new materialist research has informed this methodology. They show that a multiplicity denotes the many heterogeneous relations that may come together within a grouping or assemblage. Although multiplicities are not limited to assemblages alone, Fox and Alldred explain "a 'research-assemblage' can be defined in terms of the multiplicity of affective relations in the research process, including the 'events' to be researched" (Fox & Alldred, 2015b; 4). This breaking-free from a ground used to determine difference in a grouping or set is important to this postqualitative research that set out to explore new ways of thinking about outdoor learning planning and enactment with the more-than-human.

'Becoming' is a term that Deleuze and Guattari (2004) use that brings things together. For example, "becoming-animal" (2004; 262). They reject the philosophical grounding of thinking in the person, the subject. They reject western thought that positions the subject as the perceiver

of the world and the changes and becomings that occur. Instead, Deleuze and Guattari (2004) see all life as a plane of becoming that *produces* our perceptions (Colebrook, 2002). For Deleuze and Guattari, if we become-animal we do not just imitate an animal or think of this coupling as absolute. When we are becoming-animal we are sharing relations through which our experiences are *being produced*; "What is real is the becoming itself, the block of becoming, not the supposedly fixed terms through which that which becomes passes" (2004; 262). By seeing all life as a plane of becoming, Deleuze and Guattari try to free thought from a fixed subject. These terms of multiplicity and becoming are used in Section 3.4 that describe the details of a research subject in postqualitative research that do not rely on representational logic.

3.1.5 Implications for Methodological Design

In summary, this section explains the background to why posthumanism and new materialism have been harnessed in the formation of this methodology. The theoretical framework of this research relies on the decentred subject, and the distributed agency, of posthumanist and new materialist thought. This is important because I wanted to understand curriculum planning and enactment of outdoor learning in ways possibly never imagined before. I wanted to research outdoor learning in ways that attended to the hybrid and enmeshed nature of our worlds. In this view, we can understand outdoor learning as something that is as material (mud, sticks, trees) as it is discursive. In this study, the use of postqualitative theorising has been important in how I have operationalised a research methodology that is congruent with the view on the ontological situation. For this study, I reoriented the case study approach via a new materialist ontology with methods that were sensitive to places, materials, and the co-production of people and landscapes. In the rhizoanalysis of the data, I created research assemblages and took the assemblage as the unit of analysis. For this study, these methodological conditions were important for researching in a unified relational field where the human is decentred and where nature is not defined through *a priori* terms but is seen as more-than-human. I now introduce the main part of the methodology chapter.

3.2 Methodology

3.2.1 Introduction

In this chapter I will explain, and describe, the rationale for the chosen methodology for this study. The chapter is laid out in the following manner. First, I explain the development of the research question and the shifts I underwent from humanist to posthumanist foci. The result of this changed the focus of the research question to the more-than-human elements that are harnessed in the planning and enactment of curricula for outdoor learning. I define the meaning

of the term ‘more-than-human’ used in this study, and then explain and describe the multicase study (Stake, 2006) methodology chosen. I then explain how I developed this multicase study methodology in specific ways to accommodate the more-than-human using postqualitative and new materialist resources.

Secondly, I explain the multicase study methodology I employed, including the cases and their settings. I include the impact of the piloting on my methodological design and the factors that contributed to the shift towards posthumanist foci. I also discuss how I have dealt with issues of quality in postqualitative research through attention to exemplary knowledge and contextualising findings. Next, I explain the process of data collection and the three methods employed: walking interviews, memory-box interviews, and field notes. I discuss how these were designed and used to collect data as well as the role they performed in the process of analysis.

Finally, I explain the data analysis process of rhizoanalysis. I explain this term and outline the format of rhizoanalysis that I used; a three-assemblage process (Fox & Alldred, 2015a). In the rhizoanalysis there are three-assemblages that collectively produce a vignette that portrays aspects of the key findings. The vignettes disclose the affects and relations of the educational events that data were collected on and show how I, as the researcher, am drawn into the meaning-making process. The vignettes are a co-production of meaning in ways that seek to draw the reader in, too. This is a process of affecting and being affected that I explain in the section dedicated to the production of the vignettes (Section 3.18.3).

3.3 Settling on the Final Research Question

The original research question was:

A. How do teachers’ considerations of place relate to their curriculum planning and enactment of outdoor learning?

During the pilot phase of the research, I started to feel concerned over the humanistic nature of this original research question because I wanted to research outdoor learning with a non-anthropocentric understanding of place. As my study progressed, I had identified some key arguments in cultural geography and posthumanism that show how place can be understood as not solely about humans (Castree, 2004; Jones, 2008; Whatmore, 2002). In addition, the theoretical framework I have used to inform my understanding about place is grounded in Ingold’s (2004; 2011) position of the unified relational field and the “meshwork” (2011; 86), expressed in the previous chapter (Section 2.1.2). For this study, how I understood place as a meshwork was important because it allowed me to challenge the privileging of humanistic

concepts of place. In the meshwork, what *also* became important were the relations of the more-than-human and how they became included in the outdoor learning.

As a result, I came to realise that the terms 'teachers' and 'conceptualisations' in my original research question were too humanistic. This realisation came to me as I sought to apply my understanding of place to the methodological design. In the end, I chose to respond to these concerns with a return to an early interest in the term "more-than-human" after Whatmore (2004; 1361).

3.3.1 Operationalising 'More-than-human' in the Research

I was inspired to use the term 'more-than-human' in the research question after the following authors:

1. Abrams (1999), and the influences of phenomenology that reject dualisms such as indoor/outdoor and that emphasise the importance of sentient and affective encounters in the world.
2. Gruenewald and Smith (2008), who reduce the hierarchy of an objective humanist worldview and seek to extend the 'culture' of places to include the non-human as part of a non-anthropocentric project.
3. Whatmore's (2002, 2004, 2006) posthuman project that understands social life as where we are interwoven in bodily and material ways. This includes human, animals and other bodies. She argues for a focus on practices and affects as registers for meaning as well as language.

Simply put, the term 'more-than-human' tries to undo a human privileged view of what exists in place and any meanings we might make from it. This is important to this study as I wanted to research outdoor learning in ways that included the aspects of place that are not human, and to take account of these at the ontological level.

In using the term more-than-human I am rejecting a dualistic understanding of the world. I see that the term more-than-human makes us think about what nature is. It offers a way to challenge and disrupt how we understand nature, or that which is not human. I am using the term to denote a different perspective on the binary of human-environment, as one where the human-environment is intertwined ontologically speaking. In this research, using the term more-than-human allowed me to operationalise this relational position of the human-environment situation.

Some researchers show how the term more-than-human opens up ways to conceptualise educational encounters with that which is not human in ways that are congruent with the

ontological situation where we are not separate from the world. For example, Sonu, Snaza, Truman and Zaliwska (2016) use the term more-than-human in such a way when they note that "Accounting for More-than-human agencies means we have to begin to consider how nonhuman actors directly participate in educational encounters" (2016; xx). Affrica-Taylor (2017) also notes the usefulness of the term in a similar way when she writes:

> Instead of seeking to become better humans by continuing to believe that we are destined to act (alone) on behalf of the world, the common worlds' response to the Anthropocene is quite simply to keep working at ways of become[ing] (sic.) more worldly through focusing upon our entangled relations with the more-than-human world (2017; 1458).

The work of these authors show how the term more-than-human is not about any binary of human / nature for example but that it leaves us open to ways of understanding our intertwining of human *and* environment.

Although the term is employed in writing in place-based education (Gruenewald, 2008; Cameron, 2003a), the more-than-human also defines Whatmore's (2002) posthumanist position in cultural geography. Whatmore's term, "more-than-human" (2004; 1361), is a way to describe the 'livingness' of the world, and is inspired by Foucault's corporeal materialism, and the phenomenology of Merleau-Ponty. Whatmore's work is part of a return to the importance of the corporeal in culture geography especially around landscapes. Whatmore writes:

> The first has been to re-animate the missing 'matter' of landscape, focusing attention on bodily involvements in the world in which landscapes are co-fabricated between more-than-human bodies and a lively earth. (2006; 601)

In Whatmore's (2006) more-than-human geography, she shows how nature is not a bounded entity and neither are we bounded human subjects. Whatmore explains this through inter-corporeality – a reciprocity between bodies. The term 'inter-corporeality' emphasises how bodies (human and non-human) are not fixed and stable entities; human bodies are *constructed through* corporeal exchanges. To understand the term more-than-human with these ideas it is important to know that Whatmore (2006) is combining, simultaneously, the inter-corporeality of human knowing and doing, *with* the affects of the more-than-human. In this study, the more-than-human could be the rocks, sticks, and raptors that might be encountered in teachers' outdoor learning planning and enactment. These were understood *as the more-than-human*.

The more-than-human, denoted as such and hyphenated, evokes a connectedness to life found in the world around us, whilst at the same time encourages us consider the term 'human' (and the idea of humanism) as more about *participation* than dominance. Whatmore is inspired by

Deleuzoguattarian positions around difference which she incorporates into her ideas of hybridity. For Whatmore, hybridity is not an interconnectedness of pre-givens, but instead, the immanent potential that resides in that which comes into being (see the term 'immanence', described in the theoretical framework, Section 3.1.4).

Whatmore (2002) uses food to show examples of the hybridity of the more-than-human (hybrid plants, fertilizers, viruses, additives) and inter-corporeality practices (growing, planting, cooking). Her project is:

> attending simultaneously to the inter-corporeal conduct of human knowing and doing and to the affects of a multitude of other 'message-bearers' that make their presence felt in the fabric of social life. (2002; 3)

Finally, Whatmore (2006) sees one of the greatest challenges of the more-than-human approach is to be able to experiment and take risks – especially in methods. For this research, these ideas were important because they gave me motivation to move away from the problematic humanistic terms noted in the earlier research question. Using the more-than-human in this research contributes to the methodological platform to reconceptualise the outdoors and all that we encounter there (mud, plants, animals, wind, sunshine, lichens, and diseases) as something we are immersed within, at the ontological level in the meshwork. Understanding curriculum planning from this position renders less relevant the categorisation and hierarchies on which science and its interpretations are founded. As a result of this thinking, I chose to fully incorporate the term 'more-than-human' into the study in a fundamental way by amending the research question to:

3.3.2 Final Research Question

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

The research question handles the term 'harnessing' in a way that removes the subject because I was interested in researching harnessing in ways that were not solely about humans. This meant that the methodology used for this study needed to be sensitive to these forces of harnessing which could include the more-than-human. I took inspiration from Whatmore (2004) in the development of the methodology and methods because she argues it is important to experiment and take risks in methods in the more-than-human approach. She calls for a breakaway from humanist methods of talk and text to those "that amplify other sensory, bodily and affective registers and extend the company and modality of what constitutes a research subject." (*ibid;*1362). For this study, these considerations were important to the development of the

methodology as I wanted to develop some methods that were sensitive to these registers; a walking interview in place and a memory-box interview.

After piloting these two methods, I noticed they were rich in collecting data that was situated, and material – not just discursive. For example, by the end of the piloting process I had taken over 90 photos of outdoor learning sites, natural artworks, natural artefacts, toys and outdoor learning equipment, cupboards full of outdoor equipment, children's artwork and the teacher's physical lesson plans. Looking at these photos I could see that some of these 'objects' had been central to how a teacher might enact outdoor learning. For example, leaves from trees in the school grounds became part of sculptures that the children produced. Felled trees that had many emerging shoots of regrowth became discussion points about science, and the same trees re-appeared in the pupils' artwork that I saw on the walls of the classrooms.

In summary, a significant change to the research question was a decision to explicitly focus on the harnessing of the more-than-human within the curriculum planning and enactment of outdoor learning. As I worked towards finalising the methodology for the data collection I was drawn to postqualitative research. This is because it accommodates research foci that are not solely humanist. I describe this field of research and how it informed the design of the methodology, methods and analysis.

3.4 Postqualitative Methodology – Introduction

The methodological choices I made in this research were informed by postqualitative theorising. I discussed postqualitative research in the theoretical framework, and in this section, I explain how I used it in more detail. Qualitative research has evolved in certain directions of late that have accounted for shifts in critical and cultural theory. These are developments that have been labelled postqualitative (Lather, 2013; Lather & St. Pierre, 2013). These trends in qualitative research have been signalled, for example, by a special edition of the *International Journal of Qualitative Studies in Education* (Vol. 26, No. 6) in 2013 that was dedicated to emerging ideas in postqualitative research. The postqualitative field is not a finished affair and could be conceptualised as many authors working with common aims in different ways. Some of these common aims are concerned with acknowledging the materiality in the structure of, and ordering of, our social worlds. These are considered in ways: not limited to a purely linguistic ordering (Lenz Taguchi, 2012); that resist the representation of language alone in research (MacLure, 2013); that resist the *a priori* categorisation of meaning (Barad, 2007). Additionally, Lather and St. Pierre (2013) note that, in postqualitative research, the material, language, and the human are not separate.

One example from the 2013 special edition was Pederson's (2013) critical posthumanist-inspired zooethnography that looked at veterinary students' education. Her work shows the limitations of the subjective/objective worldview and how the 'products' of research (field notes, interviews, etc.) are a part of a *construction process* of meaning-making. During specific field trips to various slaughterhouses, Pederson decentred the human subject. In doing so, she disrupted the boundary and separation of the human and animal. Within a posthumanist analysis, the pedagogical power of the slaughterhouse spaces and practices distributed the veterinary education. She acknowledged the powerful nature of practices and totalising socio-material assemblages and how, in the slaughterhouse (seen as a 'machine'), subjectivity and agency were powerfully overrun, disrupted, and re-formed through the death of the animals.

From Pederson, I take the importance of collecting rich data that involves going to the sites of practice. I chose to do this by visiting the outdoor sites with the teachers to explore their practices around how the more-than-human was harnessed in their planning and enactment of outdoor learning. Like Pederson, I did so because I wanted to disrupt the separation of the text-based planning world of lesson plans with the practices that unfold in outdoor places. Unlike Pederson, I did not accompany the learners in the data collection as I wanted to explore the specific aspects of curriculum making and the more-than-human that impinge on outdoor learning.

Postqualitative research provided resources to inform the methodology so I could answer the research question. For this study, I employed postqualitative resources because I could see that the more-than-human has capacities that can impinge on any curriculum planning and enactment. I wanted to conduct research that would be attuned to the nuances of a more-than-human world where prior categorisations and *a priori* meaning was not the finished product. The capacities of the mud and the birds, for example, could be researched in ways that understood them as more than a social construction. In this research these capacities are understood as being able to co-produce the planning and enactment of outdoor learning curricula, therefore, I sought a methodology that would be attuned to this. The focus of the next section is on how I used a specific subset of posthumanist thought called new materialism, to do this.

3.5 Postqualitative Research – New Materialism

> … 'new' material feminisms displace the human as the principal ground for knowledge and, instead, embrace all manner of bodies, objects and things within a confederacy of meaning-making. (Taylor & Ivinson, 2013; 665)

Although the term 'postqualitative' is suggestive of an established discipline, or field of research, it is multiple and quite nascent. Postqualitative research is, in part, a posthuman project that harnesses new materialism (Barad, 2007; Coole & Frost, 2010) and is generally concerned with a refocussing of ontology over epistemology (St. Pierre, 2014). New materialism is also a subset of postqualitative research (Coole & Frost, 2010). There are four distinct aspects of new materialism that were important to this study:

- New materialism is interested in social production, not social construction (Fox & Alldred, 2015b)
- It is a project that works more with matter than with text (Fox & Alldred, 2015a)
- It is concerned with social justice and liberation (Coole & Frost, 2010)
- It works with multiplicities and becomings, not singularities and being (Fox & Alldred, 2015a).

For this research, these aspects of new materialism are important because they reinforce the intertwining of matter and life. In the employment of new materialism in this research, I have sought to avoid an anthropocentric position and to find ways of disclosing and portraying differences that are full of potential; not closed off by humanist *a priori* conditions. For example, within a new materialist worldview, the artefacts and objects that are part of a teacher's planning and enactment of outdoor learning, refuse simple classification as just dead bits of wood. They are open to becomings in the ongoing practice of curriculum planning and enactment. Next, I describe the key features of new materialist research in some detail that have informed this methodology.

3.5.1 New Materialist Research – Assemblages and Analysis

In this section, I explain the key features of new materialist research and why these are important to this methodology. In new materialist research, there is a focus on relations and assemblages of the animate and inanimate. New materialist researchers use Deleuzeguattarian resources such as assemblages that resist the subjectification of the human/non-human as *a priori* (Fox & Alldred, 2015a; Hultman & Lenz Taguchi, 2010; Rautio, 2013b). In methodological literature on new materialism, Fox and Alldred (2015a, 2015b) promote ways of doing research where the human subject is dispersed within an assemblage of material, discursive and conceptual elements. Fox and Alldred write that a new materialist research process will:

- Examine how flows of affect within assemblages link matter and meaning, and 'micro' and 'macro' levels.
- Acknowledge the affective relations within the research-assemblage itself (2015; 410).

A key feature of new materialist research is how the material, non-human, and more-than-human can influence meaning-making. Examples of postqualitative research in education with new materialism and Deleuzoguattarian thought includes work located in the early years (Hultman & Lenz Taguchi, 2010) and Children's Everyday Life (Rautio, 2013b).

In early years research, Hultman and Lenz Taguchi (2010) rejected the humanist view of the child and instead understood children as situated in worlds where matter and discourse are both part of an intra-action (after Barad, 2007). Inspired by Deleuze and Guattari, they argue for a flat ontology, without hierarchies and where difference is the condition of becoming. In their analysis they saw the children as part of an assemblage. They read the data as an 'event' (photos of early years children in outside play contexts), as a "becoming-with-the-data" (Hultman & Lenz Taguchi, 2010; 534). They called this analysis a diffractive 'reading' which is, "not a reading *of* a photograph as in the taken-for-granted understanding, but a reading *with* the photograph in your encounter with it" (*Ibid.*; 537). This diffractive analysis is not traditional qualitative analysis where researchers might attempt to find the truth 'behind' the photograph, or to imagine (and interpret) the event as a child might have experienced it. These features of new materialist research have helped to answer the research question. In this study, the teachers and the more-than-human were seen as part of assemblages, and data were analysed in similar ways through a reading *with* the data (see Section 3.18.3).

These are important considerations of how to undertake new materialist research that I embraced in this study. For this research, I used these ideas to help devise a methodology that would support methods to collect, and analyse, data that were sensitive to the more-than-human. For this research, Masny (2013a, 2013b) more astutely captured the approach I need to take to analysis in order to answer the research question about the more-than-human. She sees postqualitative research as a reading of the world and the self; "it is a process in which there is an investment in reading data in a broad sense: reading, reading the world and self, through affect in an assemblage" (Masny, 2014; p. 345). I describe how her work was useful in the analysis in more detail in Section 3.18. I now describe the implications of these postqualitative, posthumanist and new materialist influences on the development of my case study methodology; a posthuman case study.

3.6 Methodology – A Posthuman Multicase study

In this section I explain how I devised a new materialist inspired case study, its key features, and how they relate to my reporting and conclusions. Case study methodology has many variants, mostly within the constructivist paradigm (Butvilas & Zygmantas, 2011); and some designed for a positivist scientific approach (Yin, 2009; Miles & Huberman, 1994). Generally,

case study research considers the context of the case, and the researcher, as being central to the meaning-making. Through the reading undertaken for the methodology, it became apparent that a positivistic case study approach would not account for the posthuman directions that were becoming important in the research. For this research, I required a methodology that could accommodate conceptualisations of curriculum planning and enactment in the outdoors without privileging the human or social. As the focus of the research was on how the more-than-human elements were being harnessed, any case study methodology chosen needed to be sensitive to data and case boundaries that were not solely about humans

To resolve this, I decided to use a multicase study approach advocated by Stake (2006) for two reasons. Firstly, because Stake's multicase study rejects a positivistic approach to case study research. For example, positivist case study researchers Miles and Huberman (1994) are driven by generalisability from a representative sample. Stake identifies a different position than the positivist case study. Stake writes:

> From their scientific perspective [Miles and Huberman, 1994], statistical sampling is greatly preferred … Here I am contrasting science with professional services. Science is a search for generalizable knowledge. Professional services, such as teaching … are efforts to help people and organisations function better. (2006; 24)

Stake argues that a multicase study is about deepening our understanding of a phenomenon not working to generalisability from a representative sample. He also argues that a multicase study is more akin to a single case study with attention to understanding a complex phenomenon over generalisation.

Secondly, I chose Stake's multicase study approach because a key feature of a multicase study is the focus on the situation or setting. This resonated strongly with my attention to place and the more-than-human. Stake notes that in order to understand the collective phenomena in a multicase study approach "we try to observe each case in its ordinary activities and places" (2006; vi). For this study, I was drawn to the acknowledgment of place as a key feature of this design.

As I explain the rationale and process for choosing this methodology, it is important to emphasise the collective phenomena that binds all the cases together. Stake (2006) presents the multicase study as a research methodology where multiple cases are chosen to understand a common phenomenon; the "quintain" (*Ibid.*; 4). The common phenomenon, or quintain, is very important to this approach to case study research. This is because it relates strongly to the selection of cases, the relationships between the cases, and the knowledge that can be learnt from the quintain. In short, a multicase study is "a research design for closely examining several

cases linked together" (*Ibid.*; v). The quintain central to this study was: **the planning and enactment of outdoor educational provisions involving the more-than-human, humans, and places**. As Stake notes: "Multicase research starts with the quintain. To understand it better, we study some of its cases – its sites or manifestations" (*Ibid.*; 6).

The binding nature of the quintain to the cases and across them is important. Stake notes that "a multicase study starts with recognizing what concept or idea binds the cases together" (2006; 23). I was interested in teachers who planned and enacted regular outdoor learning outside the school grounds. The key concept, or quintain, that binds the cases together is how more-than-human aspects of place are harnessed in outdoor learning curricula.

3.7 Cases, Settings, and Data Collection

In this section I describe the components of the multicase study. This includes case definition, the case settings, an overview of the data collection methods, and the data that was collected in each case.

3.7.1 Overview of the Research Setting and Case Selection

The cases in this research were chosen from a population of teachers and schools that took part in a research project called Teaching in Nature (TiN) in 2010 (Mannion et al., 2011). This population was chosen because they were:

- Teachers who were planning and enacting outdoor learning regularly.
- Teachers who were planning and enacting outdoor learning in settings that were in local green spaces but not in school grounds.

The Teaching in Nature project was designed to "enable practicing teachers from primary and secondary schools to collaboratively explore how National Nature Reserves could be used to provide for learning across a range of subject areas" (*Ibid.*; ii). The original project worked with 18 teachers across primary and secondary education in Scotland over four geographical locations. The locations were classed as "urban", "more rural", and "more remote" (*Ibid.*; 5). These details are important for this study because the cases I chose came from this population of teacher and locations.

In early 2012, I emailed all the participating teachers in the Teaching in Nature project to ask them if they would be interested in participating in further research on their planning and enactment of outdoor learning and to undertake walking and memory-box interviews. In the

end, 5 teachers agreed to participate for the duration of the study and I was able to include cases from each of the 3 location classifications in the original TiN project.

3.7.2 Ethical Approval and Consent

This study followed the ethical guidance of the British Educational Research Association (BERA, 2011) and was granted institutional approval from the University of Stirling School of Education Research Ethics Committee (Appendix 3). Once potential participants had been identified, I sent them all a letter outlining more information on the data collection process and a sample consent form (Appendix 4). Included with that letter was some detailed information about the two research interviews (appendix 5). On the day of the interviews in the field, each respondent was given a consent letter which were all signed in person and returned to me (appendix 6).

The letters and forms were used to inform the teachers as to the exact nature of the data collection process, what they were agreeing to and to collect written consent. The teachers were also asked for oral consent at each stage of the data collection process before the walking interviews and the memory-box interviews. At each interview, the teachers were verbally reminded they were could withdraw from the research process at any time. The outdoor areas used for the walking interviews were outdoor learning sites teachers regularly used to which they had full access to. The consent process included a commitment to removing any obvious identifiers in the data. All the data was stored in password protected external hard drives. The visual data, audio files and transcripts will be destroyed ten years after the date of data collection in 2023.

3.7.3 Definition of A Case

For this study, the cases were constituted by: teacher, place/setting, and practices. A case definition was:

The class teacher, any planning and enactment practices of outdoor learning, and considerations for use of the outdoor learning site including the more-than-human.

I did not include the lived experiences of the learners in the case as I was focussed on the practices of planning and enactment and decided the teachers and the more-than-human were the best foci for this.

In the next table (Table 3.1) I give information about each case that includes; the school context; the characteristic of the outdoor place; the practices of planning and enactment of

outdoor learning. I do this to give a background to each case and to show the diversity that was present across the multicase study.

Table 3.1 Case Details

Case	School context	Teacher	Place of Outdoor Learning	Outdoor Learning Practices
1	Primary School	Head Teacher. Rural school with composite classes.	Mixed woodland with dominant planted Scots Pine and areas of natural regeneration	Regular use that includes: curriculum areas; Forest School type activities; 'reward' afternoons and days; forest conservation work for landowner; mammal conservation work
2	Primary School	Class teacher (small town school)	Farm woodland shelter belt, planted Sitka Spruce and Scots Pine trees.	Regular use that includes: curriculum areas; Forest School type activities, 'reward' afternoons and days.
3	Primary School	Class Teacher (small town school)	Several sites in local area including: mixed broadleaf woodland, nature reserve, archaeological sites, local towns, forest recreation areas	Regular use that includes: curriculum areas; starting point for school project work – archaeological dig.
4	Secondary School	Peripatetic Special Educational Needs Teacher (Science teacher by training). Small town school.	Local nature reserve.	Regular use that includes: curriculum areas; starting point for school project work – self-awareness.
5	Primary School	Head Teacher. Rural school with composite classes.	Coastal broadleaf forest, other local sites on farms and beach.	Regular use that includes: curriculum areas; starting point for school project work – art projects.

From the multicase study methodology advocated by Stake (2006), he notes that for selecting cases three criteria are important:

1. Is the case relevant to the quintain?
2. Do the cases provide diversity across contexts?
3. Do the cases provide good opportunities to learn about complexity and contexts?

(Stake, 2006; 23).

For this research, the implication of these design principles meant that cases were **selected** to deepen my understanding of the quintain. As Stake writes, "relevance to the quintain and opportunity to learn are usually of greatest importance" (2006; 26). The specific attention I paid to Stake's three criteria were:

1. *Is the case relevant to the quintain?* The quintain was: **the planning and enactment of outdoor educational provisions involving the more-than-human, humans, and places**. All the cases included were relevant to this quintain.

2. *Do the cases provide diversity across contexts?* The 5 cases provided diversity in four ways:

    a. through their locations being diverse (urban, more rural and remote);

    b. the school contexts being diverse -secondary and primary are represented;

    c. the teachers being diverse – headteacher, class teacher and educational needs teacher; and

    d. the sites of outdoor learning were diverse from semi-rural shelterbelt forest plantation to native broadleaved forest.

3. *Do the cases provide good opportunities to learn about complexity and contexts?* The range of outdoor learning sites offers complexity and a range of contexts. The teachers involved had diverse educational contexts i.e., headteacher to special educational needs. There was complexity in curriculum planning and enactment across the cases as some teachers were undertaking 'reward' days whilst others were doing project work (e.g., archaeological digs).

These five cases became the multicase study that was centred on the quintain: **the planning and enactment of outdoor educational provisions involving the more-than-human, humans, and places**. In this phenomenon it was important to consider how the more-than-human might be understood as a co-ingredient in the processes of planning and enacting the outdoor learning curricula. As noted before, my understanding of place in the study is relational and not solely humanistic (Ingold, 2010). This dominated the choice of research methodology. Stake's multicase study approach seeks to answer the question; "What helps us understand the quintain?" (2006; 6). By focussing on the more-than-human within the research question the

humanist registers of people, settings, and locations, are all conceptualised as more diffuse. To remind the reader, the research question was:

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

As a result, the harnessing of the more-than-human was able to become a focus of the research in new ways; those that do not privilege the human.

3.7.4 Data collection: Walking Interviews and Memory-Box Interviews

Although I used three methods (walking interview, memory-box interview, and field notes) to answer the research question I devised two specific methods of note. I explain these in detail in Sections 3.12, 3.13, and 3.14, but, in summary, they were place sensitive methods that attuned to the more-than-human. The two methods were: a walking interview, and a memory-box interview. The table below outlines the data collection undertaken over the five cases. In addition to this data, I took reflective field notes after each visit and data collection event.

Table 3.2 Data Collected in each Case

Case	Walking Interviews		Memory-Box Interviews		Field Notes
	Audio Data	Photographs	Audio Data	Photographs	
1	Yes	Yes	Yes	Yes	Yes
2	Yes	Yes	Yes	Yes	Yes
3	Yes	Yes	Yes	Yes	Yes
4	Yes	Yes	No	No	Yes
5	Yes	Yes	No	No	Yes

3.7.5 Walking Interviews Data Collection

In all five cases, I visited the school and outdoor learning areas once for the walking interview. Each walking interview started when I met with the respondent. This included the journey to the site, the walk around the site, and the return journey. The walking interviews were all 2–3 hours long.

3.7.6 Memory-box Interview Data Collection

At the end of each walking interview I left a memory-box with the teacher, and I explained I would return to interview them after they had time to use it. The memory box interview method is explained in detail in the methods Section 3.13. In brief, this method surfaced data on the material aspects of outdoor learning which became foci for an interview. The memory-box interview as a method was designed principally for the teachers' use, but in practice the pupils were encouraged to engage with them by the teachers.

I conducted the memory-box interviews during the second visit to the schools. Not all cases were included in this data collection. Cases 4 and 5 were excluded from the memory-box interviews because these teachers had left that educational employment and were no longer able to participate. The memory-box interviews were approximately 2 hours long and took place in the classroom (after class), a private office, or at the teacher's home. All the teachers who used the boxes involved the children in their use. All 22 hours of interviews were transcribed by a professional transcription service. These transcripts were read several times before the analysis was started to familiarise myself with the data.

3.7.7 Artefacts from the Interviews

During both interviews, there were occasions when I was given artefacts that were relevant to the practice of planning and enactment. These included physical copies of lesson planning documents for outdoor learning, risk assessments, examples of pupils' work, and classroom displays. These artefacts were photographed and seen as part of the walking and memory box interviews. Their role in the analysis was that they became part of any assemblage that was formed with the interview data and the research tools. This process was rhizomatic and is discussed in Section 3.18. All of these data, including my field notes (discussed in Section 3.14) were understood as components of the 'event' assemblages that went on to connect with other assemblages and produce the final vignettes that portray the key findings. This analysis is detailed in Section 3.17 and the piloting phase I undertook is explained next.

3.8 Piloting

I piloted the two methods and the technology before the data collection. The technology was piloted during short outdoor walks in a variety of weathers with others in forests and open green spaces. I especially wanted to pilot the recording of voice as we walked through these outdoor environments to ensure I could obtain usable sound data even in the wind and rain. Both the walking interview and memory-box interview methods were piloted in a local school with a primary classroom teacher who used outdoor learning. I visited the pilot school twice, once for

each interview, and we used the school grounds. These were extensive with multiple ecological habitats that the teacher used for her regular outdoor learning. The teacher used in the pilot was known to me through a personal connection and we had good rapport.

The walking interview piloting took 2 hours and the memory-box interview took 2 hours. Over this time, I became aware of the nuanced role that the more-than-human seemed to play in the planning and enactment of outdoor learning. As I worked to analyse this pilot data I became aware of the need to re-consider the research question and the implications of this on the methodology design and analysis. I have discussed these shifts in my thinking towards the more-than-human in the research question in Section 3.3. Next, I explain how I understood generalisability in this posthuman multicase study and provide a detailed description of the methods.

3.9 Generalisability in a Posthuman Multicase Study

Stake writes on the topic of generalisability that, "Because the reader knows the situations to which the assertions might apply, the responsibility of making generalisations should be more the reader's than the writer's" (2006; 90). The involvement of the reader, and their knowledge, are key to any generalisability this multicase study could offer.

For this research, I cannot claim generalisability, but instead claim that the findings will be useful when understood with contextualised experience; what I refer to as exemplary knowledge. To do this I draw on the work of Thomas (2011), who argues that case study research is generalisable with an emphasis on phronesis (contextualised, skills, and practice knowledge). He argues that any generalisability lies in the way we might come to know something through our own contextualised phronesis and knowledge. He notes:

> I should make it clear that in 'exemplary knowledge' I am talking about example *viewed and heard* in the context of another's experience (another's horizon) but *used* in the context of one's own (where the horizon changes): the example is not taken to be representative, typical or standard, nor is it exemplary in the sense of being a model or an exemplar … Rather, it is taken to be a particular representation given in context and understood in that context. However, it is interpretable only in the context of one's own experience —in the context, in other words, of one's phronesis, rather than one's theory. (2011; 31)

For this research, I understand generalisability as that which we understand from within our own contextualised experiences. For example, a teacher might read the findings from this study and, using their practice knowledge (phronesis), evaluate and consider it in terms of meaning for their future practice.

In this way, “exemplary knowledge” (Thomas, 2011; 31) becomes a useful way to make a form of onward use from case study research. As Thomas notes, “The case study thus offers an example from which one’s experience, one’s phronesis, enables one to gather insight or understand a problem.” (2011; 31). Thomas goes on to show that his idea of exemplary knowledge is very similar to Stake’s “naturalistic generalisations” (1995, 85). Thomas quotes Stake on this: “Naturalistic generalisations are conclusions arrived at through personal engagement in life’s affairs or by vicarious experience so well constructed that the person feels as if it happened to themselves” (Stake, 1995; 85, cited in Thomas, 2011; 31). For this study, these concepts of exemplary knowledge and naturalistic generalisations are important, because they show how the findings could be useful to practitioners without needing to rely on generalisability. This shows how I have sought congruence between the conceptual framework and the research methodology I have used. The congruence between these are more important in postqualitative inspired research than the pursuit of qualitative concepts such as reliability or valid truths (Davies, 2013).

In this study, I have sought to avoid an anthropocentric position and to find ways of disclosing and portraying differences that are full of potential. This study is postqualitative, where the unthought and new possibilities of the world are imagined and considered as a becoming-with the data. By understanding the findings through our own phronesis we can then work with new meanings and ways we might apply them. Thomas alludes to this in this statement: “The articulation and exegesis of that exemplary knowledge rests in the phronesis of the researcher- and its understanding in the phronesis of the reader” (2011; 33). For this study, I understand any form of generalisability to be that which lies within the reader and their future use of that knowledge, as informed by their own practice and experience in the world.

In addition to Thomas’s work on the generalisability of case study research, Flyvbjerg (2006) makes a similar point about case study research being useful in exploring and communicating context-dependent knowledge. Flyvbjerg argues that formal generalisation is overvalued as an output of research and writes: “Predictive theories and universals cannot be found in the study of human affairs. Concrete, context-dependent knowledge is, therefore, more valuable than the vain search for predictive theories and universals” (2006; 224). For this research, these views on generalisability are important because they link to the ontological concerns of postqualitative research where knowledge is not just representational.

For example, in this research I share key findings that were produced through a rhizomatic process of analysis (Section 3.16). The findings are portrayed through vignettes where I call on the reader to draw on their life experiences to make sense of the findings in their reading of them. In the new materialist inspired methodology of this study I draw on Fox and Alldred’s

(2015a) work who argue that objective truths and generalisability may not be possible. They do note we can have some faith in findings especially if we ensure:

> Research reporting in this conception is reflexive, recursive and rhizomic, offering de-territorialization and lines of flight to event assemblages and affects, and drawing research audiences into the research-assemblage, to contribute their own affects and capacities to its affective economy and micropolitics. (2015a, 411)

In this research, I have sought to achieve this through the use of vignettes that could include photographs and text. These are designed to draw the reader into the meaning making processes. In addition, by understanding generalisability via exemplary knowledge I am asking readers to bring their day-to-day examples of practices (which we carry with us as a form of expertise) to interrogate the data and co-create meaning.

For this study, these views on generalisability are important because new materialism is concerned with multiplicities and becomings, not singularities and being. In this view, the findings from the exploration of the quintain and the research question will offer ideas, questions and possibilities, for how curriculum planning can be considered as a co-production with the more-than-human. I sought to generate findings that would provoke new ways of thinking about pedagogy and teaching and learning outdoors in light of the research question.

3.10 Methods: Introduction

The methods I devised for this study needed to be sensitive to place and the more-than-human. In this introduction, I show how I developed two specific methods, in addition to field notes, in ways that were aligned with new materialism. One key problem I had was how to conceptualise the interview as a posthuman research method. I used interviews in both walking and memory-box methods. I discuss this challenge in this introduction then explain the methods in detail.

3.10.1 The Interview in Posthumanist Research

For this study, across both interview methods I wanted to gather data on the harnessing of the more-than-human in outdoor learning curriculum making and enactment. To do this, I needed to use methods that would be sensitive to an understanding of place as a co-production and the subject as decentred. In her posthumanist interviewing methods, Mazzei shares her struggles and solutions in trying to understand interviewing with a decentred human subject. She proposes a "Voice without Organs" (Mazzei, 2013; 733), where the human is an assemblage and the 'voice' is distributed. Drawing on Deleuze and Guattari (1983), she describes how this distribution might be understood as "an enactment among researcher-data-participants-theory-analysis" (*Ibid.*; 733). In other words, the 'voice without organs' is produced via the assembling

forces of the researcher, participants, and components of the methodology. For Mazzei, the material *and* discursive components of the interview are what she sees as important. She notes that:

> Perhaps more attention needs to be given to the where of the interview, and the when of the interview, and the if of the interview. If we are to make sense of these material and discursive material constructions and joining of forces, perhaps we must think practices that disavow an over-reliance on words as the primary source of meaning. (2013; 739)

For this research, these ideas around interviewing with a distributed voice express how I sought to re-think the interview as a method that is more than just about words. This is important for this research because I was seeking to gather data on the harnessing of the more-than-human through the design of two material- and emplaced-sensitive interview methods. I developed a walking interview that was attuned specifically to *outdoor places and the more-than-human* and a memory-box interview that was attuned to *the materials of the more-than-human.* Both were designed to collect data on the planning and enactment of outdoor learning.

The walking interview method was devised as a mobile, visual ethnographic-inspired method to collect data on the emplaced experiences of the teachers' planning and enactment of outdoor learning in their chosen outdoor learning sites. It was also designed to collect data on the ways the more-than-human was being harnessed in teachers' curriculum planning and enactment. These interviews were seen as material and discursive; where the social fabric of life is not static (Lorimer, 2008) and neither are the practices within it (Pink, 2007, 2012) . Inspired by visual and sensory ethnographic approaches to interviewing (Pink, 2007; Pink, Hubbard, O'Neill, & Radley, 2010) I saw the walking interview as a way of developing understanding of place and practices that are congruent with new materialism and distributed subjectivity and agency.

The data collected with the walking interview included voice recordings, photographs from the places of learning, and any field notes that I generated. This choice of method was vital to this study as it allowed the researcher to be in the unified relational field (Ingold, 2004) and collect data on the material and discursive as the world unfolded. The visual ethnographer, Pink (2012), also identifies that meaning-making and knowing occur at the intersection of practices and places. Therefore, as researchers we try to "not need to seek or 'capture' or 'arrest' the flow of everyday life, but to follow it, and to gain a sense of it" (*Ibid.*; 33). This was my aim in the walking interviews. I knew that I could not capture all possible data, but I sought to capture what harnessing of the more-than-human was available through the site visits and talking with teachers.

The memory-box interview method was devised along similar methodological lines as the walking interview. It was devised to collect data on the material aspects of the more-than-human harnessed in curriculum planning and enactment in outdoor learning. I did this because I thought the co-production of these curriculum practices was occurring with the more-than-human. The memory-box interview was devised as a way of collecting data on this co-production. By means of a table (Table 3.3) I show the different data types that were sought and collected through the methods. These data types were collected within each case. I next provide details on these methods that were employed.

3.11 Data Collection Across Cases

The data collected in the **walking interviews** were:

1. Audio recordings of teachers' descriptions of the harnessing of the more-than human and place-specific practices in the planning and enactment of outdoor learning.

2. Photographs of place specific features and artefacts (e.g. planning documents), of these practices.

The data collected in the **memory-box interviews** were:

1. Audio recordings of teachers' descriptions of the harnessing of materials and the more-than-human in the curriculum planning and enactment of outdoor learning.

2. Photographs of material features and artefacts (e.g. planning documents) of these practices.

The audio recordings were transcribed verbatim by a professional transcription service. The pre- and post-interview reflections I recorded were transcribed myself as field notes.

Table 3.3 Data Collection: Methods, and Cases

This table shows the data that was collected, in which location, and within each case.

Case	Walking Interview Data	Memory-box Interview Data	Field Notes
1	In the site of regular outdoor learning. Interview Transcripts and photographs	In school office. Interview Transcripts and photographs	Taken during and after walking interview and Memory Box interview
2	In the site of regular outdoor learning. Interview Transcripts and photographs	In teacher's classroom. Interview Transcripts and photographs	Taken during and after walking interview and Memory Box interview
3	In the site of regular outdoor learning. Interview Transcripts and photographs	At teacher's house in garden. Interview Transcripts and photographs	Taken during and after walking interview and Memory Box interview
4	In the site of regular outdoor learning. Interview Transcripts and photographs	x	Taken during and after walking interview
5	In the site of regular outdoor learning. Interview Transcripts and photographs	x	Taken during and after walking interview

Note: x denotes where a memory-box interview was not undertaken because these teachers had left their employment.

3.12 Method 1 – Walking Interviews

The walking interview was a mobile method that involved walking and interviewing with the teachers at the regular outdoor learning sites they used. During the interviews, the teachers and I walked through the places they used for outdoor learning whilst I asked questions about how they used it in their planning and enactment. The interview schedule was generally unstructured but contained specific themes that I used to get behind teachers' thinking about the enactment and planning practices. I had prepared an interview schedule, but during the piloting it became apparent that handling an audio-recorder and digital SLR was very challenging. Add to that, negotiating wet ground, wind, rain and the changing terrain, so I opted to memorise the key subjects I wanted to talk about because holding an interview schedule, or notepad, was not possible.

During the interviews, I encouraged the teachers to tell stories and narratives of how they planned and enacted their curriculum in the outdoor places. I listened for when the more-than-

human was mentioned and probed around that. My attention was also directed to the more-than-human in these places as we walked. For example, one outdoor learning site was a forest plantation where there was a dense canopy that restricted light reaching the forest floor. This meant there were few ground species of plants there. When I noticed the lack of flowering plants on the forest floor I took a photograph and probed this issue with questions.

During the interview, I became aware of the specific relationship that was being produced between the respondent and me. Often, there was an easy flow of conversation between us and the interview process felt co-productive (Brown & Durrheim, 2009). I would ask a question to start the teachers talking about their planning and enactment in the outdoors and then follow with prompts. I committed some key questions and topics to memory that acted as opener questions. In this way I paid particular attention to the more-than-human and how it was being harnessed (or not) in any planning and enactment of outdoor learning. Key prompts included:

1. Why did you use this place?

2. How do you plan outdoor learning here?

3. Can you tell me about how you use this place for outdoor learning?

This method collected data on how the more-than-human was harnessed into the planning and enactment of curricula for outdoor learning with attention paid to the unfolding and co-production of places. The method was peer reviewed in Lynch and Mannion (2016) and the key elements are discussed here.

The walking interview method could be understood as an exploration of the meshwork of becomings that might include: the more-than-human, teachers, children, school, and land owners. In this study, the formation of knowledge is understood to be part of these becomings. Ingold views our knowledge-building in the world not just with place but as *movement* through places; he calls this "wayfaring" (2011; 148). For Ingold, place itself is less important than the movement through/along places: "The path, and not the place, is the primary condition of being, or rather of becoming" (2011; 12). Ingold believes that it is in moving through the world (wayfaring) that knowledge is created, "that scientific knowledge, as much as the knowledge of inhabitants, is generated within the practices of wayfaring" (2011; 155). These concepts are important to this study because there were how I could conceptualise knowledge formation through the walking interviews. During the walking interview I held in my mind these ideas of wayfaring as a lens in understanding place to help in my questioning and probing.

By choosing the walking interview as a method I was responding to calls within writing in postqualitative research and human geography which has identified the importance of doing more than a static interview to apprehend the world. Hall (2009) writes about new mobilities, a paradigm identified by Sheller and Urry (2006) which asserts that everyday life is on the move. As researchers of it, so should we be. Kuntz and Presnall (2012) re-work the interview as a method that can respond to the challenges of representation; they do so using agentic realism (Barad, 2007). They show how the embodied aspects of a walking interview can work around representation through diffractive readings of the data. The walking interview makes available relational ways of knowing that include the spoken, material and affective aspects of humans and non-humans.

This approach has been put to similar use in: walking and researching everyday life through the visual ethnographic work of Pink (2007); by Edensor's (2010) work using walking and place being 'stretched out' along linear routes; Ingold and Vergunst's (2008) work that sees walking as creating the world in formation; and Evans and Jones' (2011) walking interviews on town planning that found the walking aspect stimulated the interview process in nuanced ways. Ross et al. (2009) also used walking interviews in their empirical work where they saw journeys as place-making practices. Lund (2012), viewed landscapes as narrated through the activity of walking and used Ingold's views to show how we make our way through a world in formation not across it; walker and landscape entwine with each other.

These examples of walking interviews are important to this study because they show a sense of an established field of research that gathers place-specific data on practices. With a walking interview method in a unified relational field, the world is experienced through wayfaring. One way of being in this wayfaring is to walk with the practitioner in their place of outdoor learning or education. As Ingold writes, it is these practitioners [in place] who are key: "Practitioners, I contend are wanderers, wayfarers, whose skill lies in their ability to find the gain of the world's becoming and to follow its course whilst bending it to their evolving purpose" (2011; 211). This quote describes well what I was seeking to do in the walking interviews; following the wayfarers in their places of outdoor learning.

For this research, these examples show how walking *and* interviewing as a combined practice are feasible ways of collecting data on some of the co-production of places, practices, and the more-than-human in outdoor learning planning and enactment. Similar co-production of curriculum making and place has been identified by some researchers. Ross and Mannion (2012), writing about non-representational curriculum-making, argue for a relational view. In doing so, they posit that curriculum-making is an entanglement of people-place relations that are re-made through relationships between them. Understanding place in this way, where we

resist representation, means that we can view outdoor places as those where knowledge emerges and folds into distributed subjectivities of self, and other. The walking interview method was devised with these foundations in mind. Walking with teachers in the places they used for outdoor learning allowed me to see some of their responses to curriculum-making with place *and the more-than-human*. By undertaking walking interviews in place, I sought to collect more useful data on the harnessing of the more-than-human. The second method that I used to complement this was the memory-box interview, which I discuss next.

3.13 Method 2 – Memory-box Interviews

The second method used was a memory-box interview. Teachers from each case were given cardboard boxes in which to collect materials that they felt were significant in their planning and enactment of outdoor learning. After a period of time, I returned to the school where the boxes and contents became the focus of an interview. The memory-box interviews were designed to collect data on what material aspects of place, and the more-than-human, teachers felt they were harnessing in their planning and enactment of outdoor learning curricula.

The memory boxes were standard cardboard adult shoe-boxes which were rendered 'marketing neutral' by the application of unbleached craft paper glued to all the inside and outside surfaces. The use of unbleached craft paper on the outside was to allow them to be drawn on, written on, or marked in any creative way. Each memory box was big enough to hold items from the outdoors such as pine cones, sticks, stones etc. The boxes included a summary of suggestions of how it might be used but these were very brief (Appendix 1).

Each memory box interview was approximately 2 hours long. Three out of the five teachers used the memory boxes, and I interviewed each one. The data this method gathered included teachers' comments about outdoor learning planning and enactment practices with materials from the outdoor learning sites, as well as photographs of the boxes' contents including any markings on the boxes themselves. The interviews produced 'event' assemblages that were then used in the production of the final vignettes of the data analysis (discussed in Section 3.18.2). Memory boxes have been used in qualitative research before (Eloff, Ebersöhn & Viljoen, 2007; Connelly, Clandinin & He, 1997).

Memory boxes have been used in psychotherapy research to encourage a different 'type' (different meanings) of talk than in normal conversations or interview. Bragg (2011) used boxes of personal and meaningful artefacts of people's lives as a focus for discussion. In terms of accessing teachers' practice of curriculum planning, the memory-box interview in this study was inspired by the object-elicitation interview found within narrative inquiry (Connelly &

Clandinin, 2000). In narrative inquiry, the objects/artefacts formed a participatory role in the interview process. Using objects and artefacts has been reported as a nuanced way to explore teachers' practice through narrative accounts (Connelly & Clandinin, 2000; Connelly, Clandinin, & Fang He, 1997; Polkinghorne, 2005; Taylor, 2002). Previous research using object and artefact elicitation interviews identified that using objects can expediently create rapport with respondents and help to access the interview topic deeply, as artefacts are imbued with meaning (Barrett & Smigiel, 2007). Carter and Mankoff (2005) used object elicitation in a diary study and found that objects inspired unique ways of describing and codifying beliefs and behaviours. They also found that arranging objects spatially by the respondents in the interviews had significance and produced rich data.

Whilst these examples are from traditional qualitative research they have been useful in helping me to understand how a memory-box interview can be attuned to the material and they have informed my use of this method. For this research, these examples from empirical research show how object and artefact elicitation interviews can help to gather data on the material aspects of the social world. In similar ways to the walking interview, there is a change in the interviewee/interviewer relationship in this type of interview where rapport and freedom to talk in depth are fostered. For the postqualitative orientation to research in this study I saw that object and artefacts were part of a co-constructive process in meaning making. The material artefacts were part of the assemblages of teacher-places-materials-curricula. I explain more about the role of the memory-box interview data in the assemblages in Section 3.18.2.

Some researchers are using similar methods in sustainability education within more postqualitative orientations to research. Green and Somerville (2015) used visual elements such as photographs in focus group interviews to access data on the material. They note that "the addition of the visual element consisting of photographs of sustainability sites in schools enabled us to access the material expression of sustainability practice" (2015; 837). Research that uses similar methods with explicit attention to the material is of particular note to the use of the memory-box interviews in this study.

In her application of the object elicitation interview, Nordstrom (2013) took a postqualitative position. She devised an object elicitation interview to accommodate the material as co-productive in meaning making. She performed these interviews with an understanding similar to this research around how these objects were not *representing* meaning but involved in *producing* it. She notes:

> The object-interview shifts the interview from a subject-centered conventional qualitative interview into a space in which both subjects and objects produce knowledge. (2013; 238)

In her research, she saw these objects as not residing in a linear concept of time, but across time. As a result, drawing on Deleuze's idea of the fold (Deleuze, 1993), she sees the objects as being able to hold all the past, present and future meanings in them. For this research, these concepts of how we can conceptualise the material in a postqualitative interview link well with the choice of the methods in this study.

These ideas around matter-producing meaning are noted by Rautio (2013b), and other thinkers who ascribe to the new materialist worldview. There is an importance of matter and the material in our understanding of the world (Barad, 2003; Braidotti, 2011; Coole & Frost, 2010). For example, Taylor and Ivinson (2013) note:

> In 'new' materialism, matter is not inert, neither does it form an empty stage for, or background space to, human activity. Instead, matter is conceptualised as agentic and all sorts of bodies, not just human bodies, are recognised as having agency. (2013; 666)

For this research, these positions on the material and meaning making were important to the use of the memory-box method. The memory box interviews were used to access, and elicit, examples of how teachers harnessed the more-than-human in their curriculum planning and enactment. The data in these interviews formed events that would then go on to form the final vignettes in the analysis. The memory-box interviews are not just represented in the vignettes. The relations between the material and discursive components play a part in the production of these vignettes and the meaning that they offer.

3.14 Method 3 – Field Notes

Field notes were taken before and after each data collection event and were spoken into the data recorder and typed up. The field notes helped to keep track of the research process and became useful sources of my reflections and thoughts in the field (Bogdan & Biklen, 2003). The field notes did become more useful as analysis developed but were not intended to be research diaries. Punch (2012) notes that research diaries are detailed and rich in the researcher's emotional responses which can help to form a bridge back to the intensity of the data collection for more traditional ethnographic studies. The field notes were not intended to perform such a detailed role in this research but did contribute to the analysis as I considered my affective responses to *data*.

Initially, the entries in the notes often included challenges or difficulties which I felt in areas of the research such as the data collection. The field notes gave me an opportunity to consider these difficulties and how they might impinge on the research process. For example, such

difficulties might be how a walking interviewee struggled to focus on certain research questions or how some more-than-human aspects were expressed by a teacher in a particular way.

However, as I developed my postqualitative approach to research and understood data to be components within assemblages the way in which field notes became useful changed. As Punch (2012) identifies, field notes and diaries in ethnography have been kept out of the public research process in the past but are now considered important ingredients in research and a way of disclosing the situated and constructionist nature of meaning. In this research, as my understanding of the analysis process (rhizoanalysis) developed, I started to see a role for the field notes in this. I could see the field notes as components of the research assemblages created in the rhizoanalysis. Initially the field notes were useful in maintaining the detail of the event, but in the analysis, they performed a more assembling role as they became part of the reporting process. In this research, the field notes became part of the assemblage that was the ongoing becoming of the data and meaning-making. The field notes have a role to play in the assemblages in the analysis and appear in some vignettes where they have the power to affect and be affected. These ideas and the process of analysis are detailed in the next section.

3.15 Analysis – Introduction to Rhizoanalysis

In this section, I will explain the rationale and processes of the analysis. In postqualitative and new materialist research, ontologically it is understood that we are *always part* of ongoing relations, never separated. Deleuzeguattarian thought is influential in postqualitative research because they rejected representational logic and the pursuit of interpretation and final judgements. Rhizoanalysis, is an approach to research and especially analysis, which fits with the ontology of new materialism. As a research approach it can be attuned to relations and the inseparability of our social and material worlds. As Masny (2013b) notes, rhizoanalysis does not seek to create judgments and final meaning, but instead seeks to open up the potential for new becomings and meanings with data.

The term ‘rhizoanalysis’ has its genesis in the geophilosophy of Deleuze and Guattari (2004). At the core of rhizoanalysis is their use of the term ‘rhizomatic’. Deleuze and Guattari (2004) understand thought as rhizomatic; random, multiple, and propagating. As discussed in the theoretical framework, within their philosophy, thought is not grounded within a subject. It is a rhizomatic production; we do not ‘have’ experiences, thought *produces* experiences. Working rhizomatically in qualitative research, Masny (2014; 341) put this well when she notes: “The subject becomes an effect of events in life”.

Rhizoanalysis is one of many postqualitative ways to do analysis. Deleuze and Guattari preferred rhizomatic and open systems as a base for thinking about metaphysics. They used the rhizome metaphor as a way of understanding heterogeneous entities (and concepts) as they come together in the world. Deleuze and Guattari saw thought as being like a botanical rhizome; a plant tuber that sends off shoots in random directions without a hierarchical order or foundational structure. They have no starting point and no end. Deleuze and Guattari (2004; 12) understand that rhizomes also connect and form more rhizomes with something else "with the wind, an animal, human-beings".

For this study, I wanted to research how the more-than-human was being harnessed in ways that were open, still to be imagined, and not measured within human-centric positions. Because of these concerns I could see how rhizoanalysis would work well. It resists a human- or subject-centred focus to outdoor learning, and it fits well with the new materialist project noted in Section 3.5. The rhizoanalysis that was performed sought to resist reducing the natural world to the foundations of science or an objective interpretation. I see that there is no objective position that we can take as subjects to understand the world, to then represent the world again. Fundamentally, in a rhizoanalysis it is the relations of entities and concepts and how they come together and the mappings they create that are important, not discrete entities themselves. What is important is what this rhizome does or can do, not what it is (Masny, 2014).

For this research, the rhizoanalysis was used to produce new understanding on the way the more-than-human is harnessed in outdoor learning curriculum planning and enactment. This process of analysis does not interpret the data but tries to work productively with the data. In this research, I employed rhizoanalysis in the production of vignettes with the data. As a result, these vignettes could be understood as rhizomes that breach the idea of knowledge and meaning as 'out there' in the world waiting to be interpreted and understood. The rhizome is a way of breaking out of binary thinking and pre-established *a priori* categories. Most importantly, it helps to create new concepts. In this study, the rhizoanalysis sought not to represent the data but to see what it could 'produce'; what new thinking and conceptualising about outdoor learning can be produced when we see the more-than-human as something to harness.

3.15.1 Rhizoanalysis – Examples of Use and Limitations

Rhizoanalysis in educational research has been used to think in new ways, and produce new ideas that break down binaries and dualisms. Waterhouse's (2011) empirical research on English language education with immigrants to Canada is one example of rhizoanalysis that was employed to do this. Drawing on the transcendental empiricism of Deleuze, Waterhouse (2011) understood language education and identity through an immanent view, not as discrete

and bounded. For Waterhouse, she understands the pedagogical event as that which is *produced* through forces and dynamic interactions in language. Importantly, these interactions affect and are affected; "In this way literacies are processes that produce becoming" (Waterhouse, 2011; 48). Waterhouse used rhizoanalysis because it allowed her to conduct research within an ontology of difference informed by Deleuzian thought. This approach allowed her to include and build on chance pedagogical events that happened to her in research settings. The effect of this event drove her towards a form of analysis that let *possibilities emerge*, not to see problems as gaps in our existing knowledge (pre-determined), but as possibilities for new meanings.

For this research, I understood the harnessing of the more-than-human in the curriculum planning and enactment as something that will be 'new' every time teachers and students go outside. The pedagogical event is always changing and warrants understanding from a perspective that is not pre-determined, not *a priori*. In this study, I see that there is potential for the more-than-human and the teachers to become-something-new through outdoor learning curricula. As Waterhouse (2011) suggests, the harnessing of the more-than-human can produce certain becomings, which are important in new practices of the planning and enactment of outdoor learning. These becomings are portrayed in the findings and go on to produce more becomings in the discussion (Chapter 5) and conclusion (Chapter 6), and even beyond that, I do not doubt.

There are limitations to this type of analysis. The decentring of the human subject, for one, presents problems for how to (re)present research findings in the field of academia that rely on texts and interpretations. As Masny (2013a; 222) notes, "rhizoanalysis is a non-method". As a result, presenting findings based on becomings is challenging. In this study, I have chosen to present findings as productions (Chapter 4) and discuss the future considerations of these for educators with more-than-human pedagogies (Chapter 5).

The decentring of the human subject presents other concerns such as ethics and being human. In an assemblage, the ethical architecture of politics, gender and difference that serves to protect humans and others can be undermined. In the always-becoming world of postqualitative research, how do we account for the stability in life? In this research, I have been inspired by Braidotti's (2013) posthuman nomadic ethics where she sees these concerns of stability as a problem for the past, for Cartesian thought. In other words, is it only a problem if we see ethics grounded in the liberal autonomous subject? A posthuman nomadic ethics seeks a different ethical position based on how we construct new futures. She writes:

> The key notion in posthuman nomadic ethics is the transcendence of negativity. What this means concretely is that the conditions for renewed political and ethical agency cannot be drawn from the immediate context or the current state of the terrain. They

> have to be generated affirmatively and creatively by efforts geared to creating possible futures, by mobilizing resources and visions that have been left untapped and by actualizing them in daily practices of interconnection with others. (2013; 191)

For this research, Braidotti's comments lie at the centre of the methodological choices I have made and the turn towards the postqualitative. Understanding the human in co-production with the more-than-human in outdoor learning practices acknowledge the already relational position that exists (Gough, 2016). In this research I am seeking to return some power and consideration to the more-than-human in outdoor learning pedagogy. In this research, I am working with new ideas and concepts for outdoor learning that could be useful for a better future, one that could improve human-environmental relations, for example.

For this research, I am content with some of this destabilising, in a micro political way, as it can expose and raise questions on aspects of the more-than-human world that are being oppressed. In the discussion and conclusion chapters, I explore how these acts of oppression or undermining could be challenged in future practice. In turn, what this might do for the field of outdoor learning is explored. Whilst the 'stable' structures in and around these educational events may be undermined by a decentred human, in this study I regard the role these structures played in the formation of assemblages as important and informative. In the next section I explain and discuss the rhizoanalysis I undertook and explain the use of assemblages and the reporting of the analysis via a series of vignettes.

3.16 Rhizoanalysis Process – Introduction

The rhizoanalysis I performed was a three-stage process, and the unit of analysis was the assemblage, not the human subject. The process involved the production of three-assemblages that were taken from Fox and Alldred's (2015a) framework on new materialist social inquiry that foregrounds research as a 'research-assemblage'. These authors argue that in social inquiry research with new materialism human agency is de-privileged and relations and assemblages are key foci. Fox and Alldred (2015a; 1) note:

> In this new materialist ontology … both events and research processes are considered as material, relational and interacting networks comprising human and non-human components.

The new materialist theoretical framework central to this study strongly influenced these choices in the data analysis. The term 'assemblage' is from Deleuze and Guattari and denotes a 'grouping' or coalescing of things, concepts, matter, bodies that hold together temporarily and which have capacities to produce other assemblages as well as break them down (see the theoretical framework, Section 3.1.4). Thinking of research as an assemblage is a reaction

against humanist social science (Coleman & Ringrose, 2013; Braidotti, 2013) and has three foundational considerations:

1. Objects and bodies are relational.
2. Human agency is replaced by the Spinozist notion of affect.
3. Assemblages are territories produced and disputed by the affects between relations. (Fox and Alldred, 2015a; 403).

Understanding research analysis via assemblages is a way to conceptualise, and actualise, social science research that takes into account the "bodies, things and abstractions" that *include* the tools, models and researcher (Fox and Alldred, 2015; 401). For this research, this is particularly important because it means the researcher, research methods, and audience are all included in the analysis. There is no representational position taken in this rhizoanalysis. For this research, I wanted to employ methods of analysis that could accommodate this shift. Mazzei (2013; 733) argues this well in her posthumanist interview research where she notes "that kind of human being is an assemblage, an entanglement, a knot of forces and intensities … that produce a voice that does not emanate from a singular subject but is produced". I now detail the process of analysis that used three types of assemblage. In the first section of the findings chapter (Section 4.1), I use Vignette 1 as a detailed example to show the production of the three-assemblages and the process of rhizoanalysis in practice.

3.17 Rhizoanalysis Process – Three-Assemblages

The analysis of the data in this study followed the three-assemblage concept described by Fox and Alldred (2015a). The authors suggest a threefold, rhizomic, format which moves the unit of analysis from the human subject to an assemblage. The triad they suggest is a framework for understanding research as being made up of three-assemblages (see Figure 3.1). These three-assemblages are not separate but are formed and reformed in ways where they can constitute each other as a building process of analysis develops.

The three-assemblages can be understood as:

1. *assemblage E*: The 'event' being researched, for example, a teacher-planned outdoor learning event. This becomes the focus of a research study

2. *assemblage R:* The components of 'research', for example: methodology, research question and instruments.

3. *assemblage R/E*. A hybrid 'research/event' assemblage of the R and E assemblage relations

(see Vignette 1 in Finding 4.1 for a detailed example of these assemblages and how they rhizomatically produced a vignette).

All these assemblages are constituted by relations and the affective flows between these relations. This relational, and affective, dynamism will be discussed in more detail in Section 3.18 but it is important to note at this early stage of the explanation that relations and affects between relations cut across, and between, each of these assemblages.

In this process of rhizoanalysis (Masny, 2014), relations are able to 'build' their capacities from one assemblage to the next. These new capacities can be productive in the *event* assemblage, the *research* assemblage, and then the *research/event* assemblage. This process was one of many possible building processes where relations and affects are dynamic and in flux between, and within, assemblages (Fox & Alldred, 2015a). These relations and affects can produce, stabilise and destabilise an assemblage and can be thought of as 'flows of affect' and as part of an "affective economy" (Clough 2004; 15, cited in Fox & Alldred, 2015a; 402).

For this research, the role of affects and the affective economy was important in the final reporting assemblage – the *research/event* assemblage (I also call this a vignette). Crucially, in assemblages, all matter has agentic capacity to affect (Fox & Alldred, 2015a). Matter is not considered inert, nor waiting for consciousness to ascribe it meaning. Fox and Alldred employ the Deleuzian notion of affect where it is a change of state, or capacity, of an entity. In other words, affects are becomings. I will explain these processes in more depth through the terms of affects, precepts and sensation in the next section. In addition, I will show their importance in the rhizoanalysis process through the affective economy.

3.17.1 Sensations, Affects, and Percepts

In the following sections I explain the rhizoanalysis process in more detail. In the context of this research, I describe the three-assemblages, explain how I understood their formation, and what findings they were able to produce. These explanations require an understanding of some key terms and processes of rhizoanalysis. For these reasons, I will explain the key terms of sensations, percepts, and affects, and how these are part of 'affective economies' within the rhizoanalysis. After providing these explanations, I will show how the rhizoanalysis was performed in this research and how the final reporting of the findings was produced.

3.17.2 Affects are Becomings

Taking the assemblage as the unit of analysis emphasises the importance of relations in an assemblage and the affects (capacities) between those relations. Affects are involved in the formation and break-up of assemblages. Affects are first, and foremost relational, and affective registers lie mostly outside of language, rationality and thought (Jones, 2013; 427). Therefore, we can understand that there is a degree of separation between affects and discourses; they are not fully connected because affects are pre-conscious and can precede discursive thought (Feely, 2016).

The Deleuzian notion of affect is based on Spinozian Philosophy where an affect is thought of as a 'becoming' that represents a change of state or capacities of an entity; it may be physical, psychological, emotional or social (Fox & Alldred, 2015a). Affects are more about the flows and energies of relations than about human ideas or emotion. Anna Hickey-Moody (2014) describes Deleuze's Spinozist affect as the change that bodies undergo because of an encounter, "it's a margin of change" (2014; 79).

For this research, these are key points to consider, especially in relation to the more-than-human in the data. We would do well to remember that, in view of the ontological situation, matter is not an inert substance waiting for human consciousness to give it meaning and all matter has agentic potential to affect. As a result, we can see that the more-than-human has agentic potential to affect: the teacher's planning, or the formation of the final reporting assemblage as just two different examples. Affects are key in the formation of all the assemblages that were produced in the rhizoanalysis. Affects produce capacities within assemblages through the relations they change; one affect can produce more than one capacity, as a result, life is 'rhizomic', not linear (Fox & Alldred, 2015a; 406).

These initial explanations around affects are important for this research because they show how the affects of the more-than-human were able to produce changes to relations in the assemblages. These changes to relations were productive and became part of the rhizoanalysis.

3.17.3 Sensations Affects and Percepts

To more fully explain the ideas around affects, percepts and sensations that are key to the rhizoanalysis I turn to Grosz's (2008) work on Deleuze and art. Using art, Grosz describes how through the work of Deleuze and Guattari (1994), art can be understood as "Not a series of sensations that depend on either a creator (composer or performer) or an audience, but an autonomous block of sensations, affects, forces, intensities … " (Grosz, 2008; 59). For this research, this analogy is important because it identifies how sensations are not productions of

the human subject, they exist independently of the subject. Understanding sensations in this way is useful in helping to conceptualize how the relations of the more-than-human have participated in this research. To explain sensations, affects, and percepts, Grosz works with examples of artwork and the subject in a relational exchange. I explain her example here then show how I see it informs an understanding of sensations, affects and percepts in the context of this research.

In Deleuzian thought, sensations are forces that are products of an artwork. Sensations have two types of energy: affects and percepts. Affects can be understood to 'live' in the artwork. Grosz (2008) notes that affects are external forces that flow into the physiological and neurological body *from* the artwork. Percepts are different and are in opposition to affects. Percepts are the forward, bodily parts of sensations and contain a creative and unknown capacity, a virtual aspect (a quality of pure possibility). Percepts can transform the ways we perceive the world. Grosz writes:

> Percepts and affects are the inhuman forces from which the human borrows that may serve in its self-transformation and overcoming. Percepts and affects summon up a "people to come", not a public, an audience, but something inhuman. (Grosz, 2008; 77)

In summary, sensations do not 'live' in the human body but are produced by our encounter with affects and percepts. Affects and percepts are *productive* and go on to change bodies and in turn change assemblages.

For this research, this explanation of sensations, affects, and percepts through the topic of art helps to explain how I understood the power of affects and the role they performed in the rhizoanalysis. In the rhizoanalysis, I conceptualised the more-than-human affects as being able to change relations in assemblages and have capacities to change other assemblages. By understanding affects as 'living' in the more-than-human which were then responded to through the percepts of teachers in outdoor places for example, I was able to understand how these affects could be forces that transform and change the assemblages of curriculum making.

In the context of this study, I see the more-than-human as the 'artwork'. The affects that 'live' in the outdoors and the more-than-human are inhuman forces that go on to *produce* sensations with the corresponding percepts. In the context of this study, as the teachers go into the outdoor places they use for learning, they are becoming-with, or receiving, multiple affects. These affects produce sensations and percepts that go out into their (potential) harnessing of the more-than-human, their planning and enactment of outdoor learning. The percepts are not locked into senses that perceive but have a component that can be transformational. Grosz writes that:

> percepts … are the transformation of the evolutionary relations of perception that have attuned the living creature to its world … into the resources for something else, something more, for invention, experiment. (2008; 78)

For this research, affects, percepts and sensations were not seen as only human experiences, they were outside of the subject and in turn could be understood as that which can *produce* a subject. In the rhizoanalysis, they were forces of production around meaning and are identified in many of the final vignettes. These vignettes were produced through the embodied affects of reading the data and being affected. Feely notes how affect and sensation do this as forces in their own right:

> Affects and sensations are what we 'experience' in direct ways that go on to produce meaning or sensations. The Deleuzian concepts of affect and sensation are not about representations of experience but allow us to discuss the visceral experiences that can produce subjectivity. (Feely, 2016; 872)

The power of affects to be part of the changing state of an assemblage can be understood through an affect economy. This is what I explain next.

3.17.4 Affects and the Affective Economy

Affective flows are what makes assemblages remain in a state of constant flux; they gather together and form assemblages (territorialize) or break up an existing assemblage (deterritorialize). The assemblages have their own affect economy, their "own affects and affect economy that makes it [the assemblage] do whatever it does" (Fox and Alldred, 2015a; 405). In this 'economy' of affects, affects and their associated capacities can build, change, and "switch bodies and other entities from one mode to another" (*Ibid.*; 404). These affects can show the processes of becoming.

Clough (2008), describes what affects can do by drawing on the way affect can be understood to contain a virtual (openness to possibility) component. She does this through Massumi's (2002) work, who notes how affect can show the process of becoming and what bodies can do. Within this argument, there is a degree of autonomy to affect. This is also how I have described affect in the previous section (Section 3.17.3). Here I use Clough's words:

> The autonomy of affect not only show what the body can do; they show what bodies can be made to do. They show what the body is becoming. (Clough, 2008; 5)

This quote explains how I see affect as being able to track, or identify, some changes in bodies. For example, this was in myself as the researcher reading the data, or in the teacher through how they respond to the more-than-human in their curriculum planning. These processes are examples of an "affect economy" (Fox & Alldred, 2015a; 402). The affect economy is about

how these fluxes of relations occur within and between assemblages "and are the process by which lives, societies and history unfold" (*Ibid.;* 3). For this research, the affect economy is important because it shows how some affects could produce strong relations in the rhizoanalysis. The affective economy portrays how affects are able to be part of a changing process of what bodies can do, such as the changes in assemblages and the affects they produce.

In summary, from these sources I see affects and percepts as forces that are always in the meshwork (Ingold, 2010) we are immersed in. Any harnessing of the more-than-human in the data has potential to produce other affects which will in turn affect the final assemblage; the reporting assemblage (hybrid research assemblage). I see that percepts and sensations are produced through these affective flows which in turn are produced in the reader as they read the final hybrid research assemblages – the vignettes. The three-assemblages of the rhizoanalysis were constituted through the relations and affective flows of each assemblage.

> The relations in an assemblage connect through sensations (percepts and affects) deterritorialize/become different through the power to affect and be affected. (Masny, 2014; 351)

The formation of the assemblages and how they produced the findings are explained next.

3.18 Rhizoanalysis – The Three-assemblages

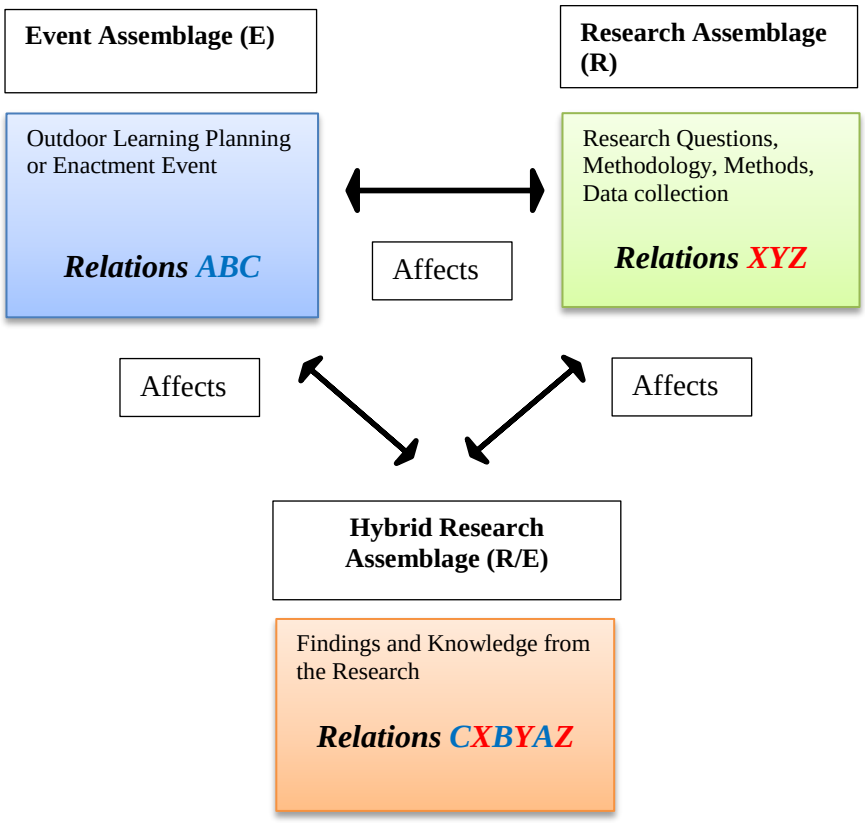


Figure 3.1 Three-assemblages – Rhizoanalysis

Note: the relations in the hybrid research assemblage CXBYAZ have colours from the relations in the other two assemblages to denote how they all could have capacities in this final assemblage.

The figure above (Figure 3.1) displays the process of rhizoanalysis I undertook. It is based on the process described by Fox and Alldred:

> If R is to document, analyse and eventually textually report E, it must necessarily have the capacity to be affected by the relations ABC and the affects between them, in the sense that a research instrument or conceptual tool must be sufficiently sensitive to be useful as a means of inquiry. We may therefore regard the interaction between E and R as productive of a hybrid third assemblage R/E, with its own affective flow between A, B, C, X, Y and Z. This flow is distinct from those in either E or R, but it is this hybridised affect economy that will produce the outputs of research such as the 'knowledge' of the E assemblage, and potentially altered sensibilities concerning E in the researcher, among research audiences, and perhaps also the people caught up in the event. (2015a; 405)

3.18.1 Rhizoanalysis – Three-assemblages Described

The rhizoanalysis was a building process that started with the event assemblage (E), then involved the research assemblage (R) and ended with the hybrid research assemblage (R/E). This hybrid research assemblage produced the vignettes that formed the basis for the findings. The findings chapter portrays the important vignettes that affected me and could affect the reader. I now describe each assemblage in turn.

1. The Event Assemblage (E)

The event assemblage was constituted by discursive and material relations, and capacities, in the data collected on teachers' practice of the harnessing of the more-than-human in their planning and enactment of outdoor learning. During data collection, with both interview methods, teachers would recount examples of their outdoor learning practice where the more-than-human was harnessed (or not). These were considered as 'events' of outdoor learning planning and enactment. These assemblages included data from the walking interviews and the memory-box interviews. This included interview transcripts, photographs of the outdoors sites, photographs of lesson plans, and the field notes. As I reviewed the data in the analysis I was drawn to examples that portrayed how some more-than-human elements were being harnessed into the planning and enactment of curricula for outdoor learning. These affective responses went on to affect the research assemblage (R).

2. The Research Assemblage (R)

This assemblage was constituted by the relations around the research inquiry process, such as: the research question, the researcher, the technology used in the recording of sound and visual data, and the data collection methods. In contrast to traditional qualitative inquiry, in a postqualitative study these research processes are seen as dynamic. It can help to see these assemblages as machines. This assemblage can be understood like a physical machine that can produce outputs from raw materials. It has capacities to manipulate and produce 'data' from affective flows and relations between the researcher, data collection and event. In an oversimplification of the process, the machine takes the 'event' as the 'raw material' and produces data which goes onto form the final *hybrid research* assemblage (Fox & Alldred, 2015a).

Ultimately this 'machine' works because of the affects it has and the way these can act on the event assemblage. To be useful however, the *research assemblage* needs to:

> apprehend aspects of an event, and act on these to produce an output called 'data' … Precisely how event, instruments and researchers interact depends upon the intentional affective interactions defined by the machines used, in other words, the techniques and methodological strategies adopted. (Fox & Alldred, 2015a; 405)

3. Hybrid Research Assemblage – Vignettes (R/E)

The hybrid research assemblage is constituted by the affective flows of the relations in both assemblages of the *event* and the *research* assemblage (see Figure 3.1). This final assemblage has an affect economy that produces the outputs of research. These hybrid research assemblages were the vignettes in the findings chapter.

This final assemblage needed to provide some trustworthiness in terms of reporting the data. Similar to conventional social science research, these assemblages can be understood to perform in ways that are similar to the constructs of validity and reliability. The potential for research methods to distort or obscure data is possible in rhizoanalysis. The goal of producing acceptable and plausible findings is still important. There are two possible situations of greatest concern in considering the effects of this disruption on the data. Firstly, if the *research* assemblage has affective capacities that overpower the *event* assemblage, the *hybrid research* assemblage will consequently be distorted. This distortion could come about through the affective flows of the *event* being overpowered and re-configured (re-territorialized) through the methods. Secondly, if the data collection machine fails to have any affective capacity, the relations in the *event* assemblage will territorialize the *hybrid research* assemblage and the outputs will be merely descriptive or superficial and not critical in any way (Fox & Alldred, 2015a).

For this research, I sought to minimise these effects through the design of methods that were sensitive to place and the material. In doing so, I sought to reduce the reliance on the importance of text and language. Whilst there is likely to be some distortion or superficiality in the final vignettes, I have tried to show the data and findings in ways the reader can be drawn into considering the findings I offer.

3.18.2 Using Data to Produce the Assemblages

All the data collected from the walking and memory-box interviews, along with field notes, were organised and placed into folders for the rhizoanalysis. The interviews were transcribed into Word files via a transcription service and the photographs of places, documents and artefacts were labelled and placed into case folders 1–5. I initially read all the transcripts, looked at the photographs and sought to become familiar with the data. The early stages of reading and focussing on the data felt daunting, yet there were moments when the data would

stand out and resonate with me. I continued reading the datasets in their distinct cases and across cases and tried to understand how I could analyse the data from the theoretical framework I was using.

The case files were then read in full, and the photos looked at and considered for relations and affects they evoked in me as the researcher. I had walked these places, shared sightings of sea eagles with teachers and looked at the stones and shells that would in time become artefacts of the memory-box interviews. I felt attached to these places of learning and what they produced. I felt keenly the importance of finding a way of undertaking analysis that was sensitive to new materialism. I reviewed all data for each case focussing on the research question: **how are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?**

I proceeded through the rhizoanalysis, paying attention to the methods and saw them as data collection 'machines'. As these data collection machines differ from one another, the relations they bring to the research process will *have different affect economies*. Consequently, the data were split into two categories for analysis and presentation in the findings chapter. Walking interviews were considered as one dataset while the memory-box interviews were seen as a second data set. Field notes were seen as a data set that went across both data collection machines. In all, I produced a total of 38 vignettes from the entire data sets. The most important 14 that portray the four findings clearly have been used in the findings chapter (see the table in Appendix 2 for a list of the 14 vignettes in the thesis). In the findings chapter, I share vignettes from these two data sets. I also explain in depth in the first section of the findings chapter (Section 4.1) how the vignettes were produced through affects and relations to support the readers understanding of the process. The formation of the final hybrid research assemblages, the vignettes, are explained next.

3.18.3 Production of the Vignettes

The hybrid research assemblage was the last assemblage to be created in the rhizoanalysis and produced the findings. As I tried to understand how this third assemblage could work, I struggled to comprehend how to report the findings 'on the page'. Because the hybrid research assemblages were produced from the other assemblages, they could include relations from any of the two assemblages (see figure 3.1). At this stage I was concerned with how these relations and affects, across assemblages, could be expressed in ways that did not reduce them just to text, but could instead report on the findings in ways that drew the reader into becoming-with the data (Hultman & Lenz Taguchi, 2010).

For the reporting, I chose a vignette format of the hybrid research assemblage used by Masny (2013a, 2014) in her rhizoanalysis work. Her approach to analysing her ethnographic data was inspired by postqualitative research methods (Lather & St. Pierre, 2013), where she sought to draw in the researcher and produce new ideas. Masny did this through vignettes which contained multiple types of data. She used drawings and text to connect readers with the data and to produce rhizomatic connections through the production of questions. These questions, she argues, produce new thinking and concepts.

I too used multiple forms of data in the vignettes. I used a selection of data that had affected me and might include: text, photographs of places, photographs of materials and documents, field notes, and interview transcript excerpts. Like Masny (2013b), I produced vignettes that were not based on reducing and categorising the data, but instead were selected on the basis that they could "affect and be affected" (2013b; 229). In other words, data that were able to daw me in and that I felt would also draw in and engage the reader. These vignettes produce sensations around the harnessing of the more-than-human for outdoor learning planning and enactment. As Masny (2014) writes, these vignettes produce concepts and ideas that take thinking off in new directions. Masny uses questions to do this, and so do I in the end of my analysis of each vignette. The role of affect in the choice and production of the vignettes related to how I, as the researcher, was affected. This was where I read the data and was affected but also how the vignettes were affected – one example would be through their creation. Masny describes how the sensations, percepts, and affects come together in the connecting relations in an assemblage.

> Rhizoanalysis is interested in percept and affect, a bloc of sensation that flows through connecting relations in an assemblage. (Masny, 2014; 357)

I was writing myself into the data analysis where data were working on me as much as I was working on them (Hultman & Lenz Taguchi, 2010). The vignette portrays the relations and affective economy of the data and the ways in which I have been affected, and in turn, affect the data.

Each vignette is produced from the two assemblages (*event* and *research*) where all of the relations and affects are available to be affected and to affect (see Figure 3.1). The vignette is to be read immanently. In doing so, it disrupts pre-conceived notions of established meaning. This disruption creates new meanings for the reader and new assemblages with capacities that can affect and be affected, onwards into the future. This is non-representational research analysis and reporting. Masny (2013a) understands that vignettes are part of the assemblage that is research. For her, vignettes constitute "raw tellings" in an assemblage (2014; 352). She notes that:

> The vignette foregrounded for analysis is based on its power to affect the assemblage and be affected by the assemblage. Vignettes rupture, deterritoralize, and take off in unpredictable rhizomatic ways and create concepts (*Ibid.*, 2013a; 343).

For this research, Masny's (2014) work on disrupting ethnography through rhizoanalysis has been very useful in informing the way in which I produced the vignettes in my analysis. The vignettes here are productive; they are not just judgments or interpretations.

I used four procedures in the formation of these vignettes that Masny identifies: "Palpating", "raw tellings", "reading the data intensively and immanently", and "provoking questions" (2014; 358).

Palpating – Data were read and 'palpated' to connect to it in ways not directly experienced, not categorised *a priori*. Masny notes, from May (2005):

> To palpate (May, 2005) is to be able to feel (touch, see, hear) an approximation of what is, of what could be. In that way to palpate vignettes is to palpate unempirical data. Empirical data are data grounded in the human subject. (2013a; 347)

Palpating data is an ambiguous, difficult, and challenging task. Masny identifies this as about embracing the uncomfortableness that comes with a loss of certainty. In this research, I saw palpating the data as a process of noticing changes in a body (mine, a teacher, or the more-than-human), and how affects and sensations are involved in these changes.

Reading the data intensively and immanently – Reading intensively and immanently stimulated new directions of thought with affects of the data. This can make unpredictable connections and form new ideas. Data were read immanently in ways that allowed for unpredictable ways of thinking and meaning-making to emerge. These were particularly focussed on the more-than-human and the capacities they produced, and restricted, in the outdoor learning curriculum planning and enactment.

Raw tellings – Masny notes that "raw tellings deploy intensities that resonate with flows of affects engaging multiplicities, complexities and out-of boundaries messiness" (*Ibid.*, 2014; 358). In the analysis, I saw raw tellings as elements of data where raw description, or a strong image, drew me into a flow of affect that created sensations in me as I tried to make sense of it.

Provoking questions – "Questions provoke and deterritorialize along lines of flight to engage creation, innovation, and power thinking" (Masny, 2014; 359). In this research, I engaged with this aspect of Masny's rhizoanalysis in particular as I wanted to avoid interpretation. The vignettes produce questions that are intended to produce new unthought-of possibilities in the

immanent responses they create in the reader. Questions are produced at the end of the analysis of each vignette.

The vignettes are assembled in this thesis through the relations that affected me and where I affected them through the four processes. In the vignettes the text is highlighted (after Masny, 2013a, 2014) to portray the aspects that felt a territorialisation (the forming of an assemblage through the capacities of the components) or deterritorialization (the breaking up of assemblages through the capacities of the components) of the capacities of the more-than-human in outdoor learning curriculum planning and enactment.

Finally, the vignettes produce questions, which provoke thought on new possibilities for the more-than-human in the curriculum planning and enactment of outdoor learning. In this rhizoanalysis, I had to keep remembering that "in the analysis, there is no explanation/interpretation of data" (Masny, 2013a; 344). Research understood in this way is seen as an event that produces questions that go on to shape meaning in ways that do not reduce, report or close off meaning.

The vignettes are understood as ongoing 'products' of the rhizoanalysis; they perform an analysis every time they are read. In this study I was part of the rhizoanalysis, part of the assemblage of research, and I bring myself into the reporting of the vignettes and to the pages of this thesis.

3.19 Summary

In this chapter, I have shown how I have engaged with theory in posthumanism and postqualitative research to devise the methodology. The question itself was reworded in this light:

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

I started with a theoretical framework that explained how posthumanism and postqualitative research theory has informed the methodology. This included definitions on some key Deleuzoguattarian terms that I wanted the reader to appreciate before they came across them in the main chapter. The importance of this theory is exemplified in the first part of this chapter where I show how it played a role in the changing of focus of the research question towards the more-than-human. Using the more-than-human as a focus was deliberate turn towards a new materialist research approach. For this study, this was a key move as I have understood the

outdoors, and all that we encounter there (mud, plants, animals, wind, sunshine, lichens, and diseases), as the more-than-human.

I then explained how new materialism has informed the postqualitative research design because it has a focus on matter as well as text, social production over social construction, and becomings over being. For this study, new materialism informed the design of the methodology in ways where data could be understood as becomings in the ongoing practice of curriculum planning and enactment of outdoor learning. Using new materialism in the postqualitative methodology I was able to conduct research in ways that were open to difference and new ways of being in the world.

I then explained the format of the multicase study that I have used (Stake, 2006). This form of case study was chosen because it foregrounds the importance of setting (place) and rejects the positivist paradigm some case study research is based within. The multicase study focusses on a collective phenomenon that binds cases together. For this study the phenomenon, or quintain, that bound the five cases together was: **the planning and enactment of outdoor educational provisions involving the more-than-human, humans, and places**. Through the description of the quintain I also defined what I understood to be a case. I described the case settings, and the data collection undertaken across all cases. Cases were chosen because they could deepen the understanding of the quintain and each case was understood as:

The class teacher, any planning and enactment practices of outdoor learning, and the outdoor learning site including the more-than-human.

I then explained how the methods were especially attuned to place and the material after the new materialist inspired methodological design. The way I have dealt with generalisability is explained through the work of Thomas (2011) and Flyberg (2006) who both see that contextualised knowledge produced in case study research is a useful outcome compared to broader generalisability. How we then use and apply this knowledge in our future practices are key. For this postqualitative research, this is more important for I am concerned with new ways of being in the world, and thinking differently, with the research data and findings.

Both of the interview methods were designed to collect data on the planning and enactment of outdoor learning. These were:

- a walking interview that was attuned specifically to *outdoor places and the more-than-human*
- a memory-box interview that was attuned to *the materials of the more-than-human*

In the final section of this chapter, I discussed the analysis of the data. This was a specific process of rhizoanalysis; a three-assemblage format as suggested by Fox and Alldred (2015a). In the rhizoanalysis each of these assemblages affected each other and were affected. These processes will be portrayed in the vignettes in the findings chapter. The relations and affects between these assemblages were central to the production of the findings in the rhizoanalysis. The vignettes that portray the four key findings are presented in the next chapter.

Chapter 4 Findings

Introduction

This chapter includes vignettes that portray the four key findings from the research. The research question was:

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

In this chapter, I use vignettes from a range of cases to portray[9] each finding and include as many examples of planning and enactment vignettes as possible. It is important to remember that a multicase study is "a research design for closely examining several cases linked together" (Stake, 2006; v). To honour this linked approach to case study research, I worked across all five cases and data types to produce these findings. In the first section (Section 4.1), I use Vignette 1 as a detailed example to show how the vignettes were produced through the process of rhizoanalysis. The remaining sections in this findings chapter (Sections 4.2, 4.3, and 4.4) are less detailed.

Section 4.1 Finding 1 – Teachers' Noticing of the More-than-human

Introduction

In this section I will show how key Finding 1 was produced.

Finding 1: The degree to which teachers harnessed the more-than-human into their teaching was influenced by their ability to notice it.

All the data in this section (Section 4.1) are from walking interviews and field notes. Data collected in the memory box interviews are not included in this section because they did not

[9] I use the term 'portray' to denote how I understand these vignettes and how the findings convey meaning. It is a term that acknowledges that these vignettes are not representational, but that through their portrayal there is a connection between knowledge and reality. I use the term in similar ways to the one suggested by the material feminist Susan Heckman, who uses 'disclosure' (Heckman, 2010; 8), and in similar ways to new materialist researchers in the outdoors who also use "portray" (see Somerville, 2016; 1170).

portray how teachers noticed the more-than-human. The degree to which teachers noticed the more-than-human was a dominant feature of the walking interviews. This is not surprising, perhaps, as the walking interview method was nuanced towards surfacing data on teachers' practices of outdoor learning with place and the more-than-human. This section (Section 4.1) contains four vignettes that produce this first finding.

These vignettes were produced from a coming together of the event and research assemblages, as described in the previous chapter. The vignettes portray the various ways in which the more-than-human was harnessed by teachers across cases 2, 5, 4, and 1, respectively. Finding 1 was produced across 4 of the 5 cases. As a result, this finding is important in answering the research question, because it was produced in almost all of the cases and *links* them together (Stake, 2006).

The vignettes that produce Finding 1 portray various ways that teachers noticed the more-than-human. How they did so, influenced how the more-than-human was harnessed into the planning and enactment of the curriculum for outdoor learning. The first vignette is a detailed example of the rhizoanalysis process and I explain how it contributes to the production of Finding 1. The example of Vignette 1 is structured as follows. Firstly, I briefly revisit the rhizoanalysis process to remind the reader (Section 4.1.1). Next, there is the vignette itself: Vignette 1, "Teacher's Noticing of Missing Biodiversity" (Section 4.1.2). Next, I describe how the vignette was produced through the three-assemblage process and where I show the affect economy (Section 4.1.3). Then I return to Vignette 1, where I offer my analysis and how the vignette contributes to Finding 1 (Section 4.1.4). In the remaining vignettes in this section, and chapter, I present an abridged version of this process.

4.1.1 Rhizoanalysis in Practice

As explained in the methodology chapter, in Sections 3.16–3.19, data were analysed via a three-assemblage process and four rhizoanalysis tools. The vignettes produced the findings through the affect economies of the three-assemblages and the rhizoanalysis tools (Masny, 2014). The coming together of the different datasets of photographs, transcripts, and field notes produced sensations in me as the researcher that shaped the format of the vignettes. Firstly, the vignettes came together through the three-assemblage processes and became the hybrid research assemblages that I mentioned in Section 3.18. Once the vignettes were produced, they were read with the rhizoanalytical tools noted in Section 3.18.3. For this research, the following rhizoanalysis tools (Masny, 2014) were used to both portray and report the findings.

As noted in Chapter 3, I used Masny's (2014) four rhizoanalysis tools of:

1. palpating
2. raw tellings
3. reading the data intensively and immanently, and
4. provoking questions.

I give a detailed explanation of these tools and how they were used on page 106. In that explanation, I expand on Masny's (2014) use of these terms to show how they are ways of reading data. For example, I sought to *palpate* by seeking to be attuned to affects that were making changing in bodies (mine or the respondents); I sought to identify where the data felt it could stand alone as a *raw telling*. Where a phrase of data resisted my attempts to understand it; I sought to *read intensively and immanently* where the data produced new thoughts and unintended directions in my thinking. In the process of creating *provoking questions,* I was resisting interpretation and trying to create new ways of thinking about curriculum making with the more-than-human.

In the vignettes, I see the reader as being *also* part of an ongoing performance of the research as an assemblage. As data are 'read', any reader will also have thoughts and ideas that are produced by the vignette. The vignettes are not to be read with any single authorial stance; in palpating the data, sense emerges (Masny, 2013b). In the vignettes, I share the affects that moved me and, in turn, produced questions. At the end of the rhizoanalysis in each vignette I present questions that were evoked in me; the "provoking questions" rhizoanalysis tool from Masny (2014; 358).

I turn next to Vignette 1, which was about curriculum planning. I provide an overview of the case, and of the events on which I collected data. I then follow by describing in more detail how the vignette was produced.

4.1.2 Curriculum Planning – Walking Interview

Vignette 1 (Case 2): "Teacher's Noticing of Missing Biodiversity"

The teacher in this case (Case 2) stated that her pedagogical journey in outdoor learning started with Forest Schools (FS) training. Although she rejected the FS curriculum with its focus on tool-use, she did note that it gave her the confidence to go outdoors for learning with pupils. She also stated that she developed her pedagogy in outdoor learning through the Teaching in Nature project (Mannion et al., 2011). Prior to this, she admitted that her approach to outdoor learning involved taking classroom-based activities outdoors. During data collection, she

described her pedagogical strategy as being child-led. This included letting the children decide what was important outdoors and to use these as foci in the planning and enactment of outdoor learning. Taking into account the influence of this teacher's biography on her outdoor learning practice, it seems that she has developed some sensitivity to place. During the walking interview, I felt she noticed some of what places can offer in terms of learning. However, she seemed less sensitised to the features of the landscape and the more-than-human than the teachers in the other cases in this study had been.

This first vignette includes a photograph taken during the walking interview of the forest and another of a curriculum planning document she showed to me. The excerpt of text is from the field notes I recorded after the walking interview. This vignette provides a starting point for portraying how this teacher is drawn to noticing the more-than-human in outdoor places in her **curriculum planning**.

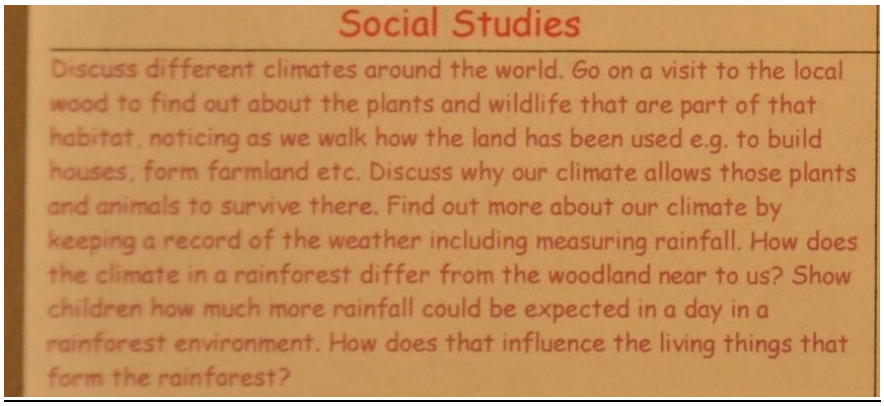
During the walking interview the teacher expressed how she noticed a lack of biodiversity in the site, especially a lack of flowering plants. To her, this was a problem which influenced the more-than-human she felt able to harness in her outdoor learning. She stated how this lack of biodiversity meant she found it hard to do the games and activities that she had planned beforehand. For this research, this is important, because it depicts how the reality of the place, and the more-than-human capacities there, are part of the embodied and material planning process.

Vignette 1

From field notes …

Listening to her … she couldn't explain how she planned her session. She would get an idea that might come to her when she was doing something else, perhaps at home, that would build into a session plan in her head that would develop into a session when she was there [in the wood]. *One big thing I hear is that her outdoor learning journey from the beginning has taken her to the place where she now uses a child-led approach. She has the confidence to do that now … there was a bit of a place-led approach coming across in the* [walking] *interview but it was not articulated, as it is in my head when I think about the features of a place-led approach.* ***One of the problems she notes of the site is that it lacks biodiversity (it's a shelter belt plantation – closely planted non-indigenous species and no light to the canopy floor). She notes there are no small plants or flowers growing and so the games or activities she might like to do where the children go to find stuff are not as possible.***

The spruce plantation with limited biodiversity, which in turn limits the activities and games that might rely on the features and presence of flowering plants.



Social Studies

Discuss different climates around the world. Go on a visit to the local wood to find out about the plants and wildlife that are part of that habitat, noticing as we walk how the land has been used e.g. to build houses, form farmland etc. Discuss why our climate allows those plants and animals to survive there. Find out more about our climate by keeping a record of the weather including measuring rainfall. How does the climate in a rainforest differ from the woodland near to us? Show children how much more rainfall could be expected in a day in a rainforest environment. How does that influence the living things that form the rainforest?

Part of a curriculum planning document she shared.

4.1.3 Vignette 1 – Vignette Production

I now explain the process of rhizoanalysis in practice through an explanation of how Vignette 1 (a hybrid research assemblage) was produced. Firstly, the vignette was produced through the three-assemblage process. It was produced through the ways it had power to affect the event and research assemblages and be affected by these assemblages. These processes of *affected* and *affecting* are discussed in Chapter 3 (Section 3.18), but I operationalise them here. I explain how each of these mutually affecting processes has been understood and how they have helped to produce this vignette and the meaning it portrays. Firstly, I deal with how the vignette was *affected* (produced) – by the affects between the relations of the research assemblage and the event assemblage. I use Vignette 1 as an example.

Vignette 1, "Teacher's Noticing of Missing Biodiversity" was *affected* by the research assemblage and the event assemblage. Examples of how the event and research assemblages affected this vignette (the hybrid research assemblage) are:

1. **By the Event Assemblage** – In the data, there were affects around the concepts of biodiversity working between the relations of the forest, the teacher, and the prescribed curriculum.

2. **By the Research Assemblage** – As I reviewed the data of the event and considered the research assemblage, I saw that there were affects between the relations of the research question, the walking interview in the forest with little biodiversity, and how the more-than-human was being harnessed.

Vignette 1 was produced through the affecting processes of the event and research assemblage. In practical terms, the vignette was produced by including data from each of the two assemblages. During this process, how the vignette affected me the reader was constantly being taken into account. I used the four rhizoanalysis tools (Masny, 2014) to report how I was affected and discuss this next.

Vignette 1 also *affects*. It affects the researcher and the reader. The vignette produces sensations in me, the researcher, which influenced how it has come together. As Masny notes, these sensations go on to produce thinking: "Sense emerges in the form of purposeful and not pre-given questioning that propels thinking in the unknown" (2014; 354). My reading of the data propelled my thoughts in directions that produced this vignette. These thoughts were focused on the ways this teacher was struggling to harness the more-than-human in certain ways because of a lack of biodiversity. There are changes in myself as I read the vignette, I am *affected*. I also

sense the changes in the teacher, and her curriculum planning, through the more-than-human that she notices as missing.

In all the vignettes, there are sections where the text is in bold (see Chapter 3, Section 3.18.3) to portray where data has affected me directly. I use these bold sections to portray where there was a territorialization or deterritorialization (the forming and breaking up) of an assemblage that was myself-with-the-data. I have used the four rhizoanalytical devices to *report on* the forming and breaking up I underwent with the data and any meaning I arrived at. I would read through the vignettes using the procedures of: palpating, reading immanently and intensively, looking for raw tellings, and producing questions. As Masny writes (2014):

> Vignettes form an assemblage with the researcher, interview transcripts, video, participants, computer, etc. Intense affective highlighted/underlined passages disrupt as connections happen in the body of the researcher and produce thought. (2014; 353)

The bold text in Vignette 1 was where I palpated the data and noticed the changes that were being undergone by this teacher, her practice, and myself-with-the-data. These changes produced thoughts that I discuss in the text following the vignette itself (see Section 4.1.4). The vignette is a coalescing of elements produced on the page and within which the reader is involved and plays a role in the meaning-making.

Next, I describe the process of meaning-making that was produced in this Vignette 1. I do this drawing on the teacher's biography and my own. First of all, I present some of the teacher's biographical data in a way to present the case from which the vignette is drawn, then I provide an explanation of the rhizoanalysis and the questions that are produced. In the remainder of *all* of the vignettes in *this* section (Section 4.1), I have included both processes in some detail to help the reader see how the vignettes and findings were produced. However, in the rest the chapter, I detail less of this procedural work and focus on the vignettes, the meaning I arrive at, and the findings they produce.

4.1.4 Vignette 1 – Meaning-Making

This vignette portrays how, ontologically, this teacher is unfolding in the world. Her pre-planned activities and topics become problematic when she is in this place. As I palpated the data, I got a sense of the changes that she underwent around her noticing of the lack of biodiversity in the forest and the problems this posed to her planning of outdoor learning. What this vignette may be starting to disclose are the ways in which the more-than-human needs to be noticed first so it can be harnessed in any planning of outdoor learning.

In new materialist research in education, the researcher is always part of any analysis; "In the event that emerges, the data is itself understood as a co-constitutive force, working with and upon the researcher, as the researcher is working with the data" (Lenz Taguchi, 2012; 272). This quote is important for this research because it identifies the importance for me as the researcher to engage with the production of these vignettes through my responses to them; as I am affected. In this vignette, I do so via my own past and biography.

My biography connects with this vignette in two distinct way. Firstly, as a forestry graduate I studied forests and woodlands, and I was aware of the type of forest we were in during the walking interview. I knew it as a plantation forest of Sitka and Norway Spruces. These trees are planted in agricultural areas because they grow quickly and provide reliable shelter for grazing animals. These trees are planted close together to achieve this effect, so it is common to see no light reaching the forest floor. I recognised these forests and the limited light that reaches the floor from my past studies. As a result, few other plant species survive and grow there. The teacher's awareness of this issue developed too once she started to visit the site and consider the *planning* of outdoor learning. A thought that emerges from this vignette, as I am affected, is around how the planning of outdoor learning requires the more-than-human in places to be noticed.

This vignette allows me to look productively with signposts for what other educators need to think about if they are going to harnesses the more-than-human into outdoor learning in purposeful ways. As I palpated the data in this vignette, I could sense the teacher is comparing rainforests with the local forest. In my reading of this vignette, I see the agencies of the more-than-human are being noticed for curriculum planning in ways that are dominantly about science, such as climate and levels of rainfall.

This vignette produces questions for me about how we harness the more-than-human in the planning of outdoor learning. How can we develop teachers' abilities to notice, and harness, the more-than-human in ways not limited to science? Another question I have from my reading of this vignette is: how do we encourage teachers to notice the more-than-human in a relational way? A different kind of noticing is perhaps an ontological question that I will discuss further in Chapter 5.

4.1.5 Curriculum Enactment – Walking Interview

Vignette 2 (Case 5): "Needing to Apply Maths: Counting for Counting's Sake?"

The teacher in this case (Case 5), noticed and harnessed the more-than-human in ways that were driven by a need to meet the requirements of a prescribed curriculum. This vignette portrays how the more-than-human that was noticed is being harnessed in the enactment of outdoor learning. This teacher's biography, her familiarity with the land, and the more-than-human, contributes to the meaning produced through this vignette.

As the class-teacher and principal, this teacher is quite outward-looking into the community. She came to this small Island School a number of years ago, and she was attracted to the beauty of the landscape as someone who enjoys being outdoors. Her approach to outdoor learning seems to be influenced by the landscape and the people who work there, as she interacts with farmers, wildlife rangers, and local people in her teaching and learning. This vignette portrays how the teacher noticed the more-than-human (sticks) and welcomed them into her enactment of the maths curriculum in an outdoor learning event.

Vignette 2

I Are there any other sites you use for particular activities or lessons?

R **We have done quite a bit of maths here**. There are lots of bits of stick lying on the ground. **We had quite good fun once doing our multiplication tables with the sticks.**

I How did you do that?

R They were doing their five times table. The kids went and collected five sticks each. Then we looked at how multiplication was like a long addition of five and five and five and how many three fives were and how many … and we counted the fives and we did all sorts of things like that. We have looked at ways to count larger numbers**. For instance, if we were counting a big pile of leaves, or a big pile of things, to divide them into tens first so we could count them up more easily. Skills like that really lend themselves to this kind of environment.**

I That kind of idea, which comes first? The maths in your head, or the having lots of units lying around?

Area used for counting sticks

R I suppose it is the maths. I think we are doing multiplication, so we need to learn to apply that. We need to do some practical work to help the children learn and understand what can we do? **There are lots of sticks in the woodland, we can use that environment.** That is a good way of using the environment. For instance, we always grow potatoes every year, not here, in the school grounds. **When we harvest the potatoes there is a fantastic amount of maths from that. Heavier, lighter. For the younger children, ordering them in size. Counting them. Count them in larger numbers, all sorts of things. I suppose it is similar here, if you are going to do the activity anyway, you look at how much you can get out of it in different areas of the curriculum.**

This vignette (Research Hybrid assemblage), is produced by the event assemblage and the research assemblage. The event assemblage affected this vignette through the relations around this teacher's enactment of maths with sticks found in the outdoor place. The relations of the more-than-human as part of a counting system, and affects between them, have been dominant in the production of this vignette. The research assemblage has affected this vignette through the relations of the walking interview and being *in the place* of the teacher's enactment. By walking through the area used in the maths exercise it produced affects and relations attuned to the research questions. Especially, as she notes; "**We have done quite a bit of maths here**"

(Data excerpt, Case 5, Vignette 2). This vignette affects me, the researcher as I palpate the data, I am moved to think of the educational possibilities around curriculum enactment that exist in the way the more-than-human is being noticed in relation to the maths curriculum.

When I first read this vignette, I was struck by my thoughts and reaction to how this teacher was seemingly not noticing the more-than-human in the outdoor learning at all. Later, after more readings of this vignette I have come to be affected in a different way. I have come to sense the *changes in this teacher* around how she was noticing the more-than-human, albeit in a way to meet the needs of a maths curriculum. She harnessed the capacities of the sticks in a spontaneous and unfolding way into her mathematics curriculum. This teacher seemed to notice the more-than-human through the enactment of the curricula. As she did so it was harnessed, or funnelled, into the prescribed curriculum.

The degree to which this teacher noticed the more-than-human at times hints at a process of co-production, but the affective flows around the focus on maths disclose the power of the prescribed curricula to dominate the affect economy. This vignette portrays how the capacities of the more-than-human were being noticed by this teacher in her enactment of the maths curriculum. One question produced by this vignette is: how can we encourage teachers to notice the more-than-human in ways that can extend learning beyond the prescribed curriculum?

4.1.6 Curriculum Enactment – Walking Interview

Vignette 3 (Case 4): "Hopes and Desires of the Wheelchair Girl"

The teacher in this case (Case 4) was a trained secondary school science teacher. The pupils she taught were a group of children who were not being put forward for level 3 examinations but were doing vocational studies. As such, she did not have a prescribed curriculum, but instead chose to use outdoor learning for a variety of purposes around personal and social development. She had used this outdoor site as part of the Teaching in Nature project (Mannion, et al., 2011), and had found the landscape very inspiring and stimulating for her teaching.

In this case, the teacher was working with one child in a wheelchair. During the walking interview, we went to a cavernous geological feature that is part of a national nature reserve. This was pedagogically significant for this teacher and she noticed the more-than-human aspects of it. The vignette discloses how the teacher paid attention to the affects of the more-than-human in this interesting outdoor site.

Vignette 3

I **I remember when I had been in the burn** [the collapsed pothole], **one of the things was I really wanted was to get *student name* inside it**, but I just didn't have enough energy and time.

I What was the reason for that?

R **Because she is in a wheelchair and restricted in what she can do**. I would have thought it would have been amazing if we could have allowed her to get in there.

I Give her a rich experience.

R Her parents have carried her in before. Her mum said that her dad just lifted her out of her wheelchair. So I could have lifted her but struggled. She is not heavy. A man could have …

I It is a bit of a risk as well …

R It is but it is a risk worth taking. I didn't try to because I just wouldn't have managed it. **The other thing I thought we could have done, because of coming on visits, it would have been wonderful to have done something musical inside that space.**

I Why do you say that?

R **Just because of the echoing of the sound and …**

I Yes.

R **And we could have filmed it. When I realised that I couldn't get *student name *in I thought maybe I could** … there is a film unit in the shire and filmed us inside it so she could have watched it.

I So you could have gone in and filmed it so she could see …

R No, a live feed. Have a live feed.

The rocks blocking the path with the wheelchair

Inside the rock feature

This vignette (hybrid research assemblage) is produced by the affects between the relations of the event assemblage and the research assemblage. The event assemblage affected this vignette through the relations and affects of the more-than-human that were not accessible because of the restrictions around the wheelchair and the rocks. The research assemblage affected the vignette through the relations of my questions around the teacher's attention to the pedagogical possibilities of this place. This vignette affected me through the raw telling of how the boulders blocked access to this place. As I read the data, I sensed how important it was for the teacher to let the child experience the sounds, the echo in real time (not a video), and the more-than-human in this place. I read this vignette sensing that the teacher noticed the more-than-human in ways that influenced her understanding of how she could harness it in her enactment of outdoor learning. How this teacher noticed the more-than-human has influenced how it was harnessed in the enactment of her curriculum. She noticed the space of the cavern and the potential for music there and decided that the affects and sensations should be available to the student in the wheelchair. It is as though the teacher felt that this pupil should not miss out.

In this vignette, I could see that this teacher's enactment of outdoor learning was taking into account the more-than-human of this place that she paid attention to. She did not come to the site with an idea of what she might impose on it. This vignette produces questions for me around the way this teacher noticed the more-than-human in the enactment of outdoor learning: How might teachers develop a way of paying attention to the pedagogical potential of places and the more-than-human in the process of enactment? And how might they respond to these as they unfold?

4.1.7 Curriculum Enactment – Walking Interview

Vignette 4 (Case 1): "Badger Nose Marks"

This vignette is taken from Case 1 and portrays ways in which the more-than-human was noticed by the teacher. The teacher in this case visits the outdoor learning site regularly and is involved in helping to manage the site with the local ranger service and other community members. As a result, she is very familiar with the site and the more-than-human that has been encountered there. Similar to the teacher in Vignette 1, her background in outdoor learning also involved Forest School training and this has informed her practice. She admitted that she rarely follows a Forest School plan but does use fires and tools with the children. In this vignette, the teacher noticed much of the more-than-human in the environment and was aware of the subtle traces left by a range of species living there.

Vignette 4

I So what would be distinct about what you might do here?

R Well, if you are doing tree ID they all know about larch, and we have got little rhymes that we know about different trees. So larch is lumpy, lumpy larch and so … if you are going to do larch you are not going to sit with a smart board with pictures of larch going this is a larch tree. You come up here for a walk and you do your tree ID. They only know three or four but that is something you should do up here. But, if it is like a measuring activity on metres and half metres which you could do on school grounds there is not a lot of point. **I am not saying there is not a lot of point coming up here, but I think that the place does matter and there is so much variety that we have got. We have got a massive site. We come down here a lot because … this is our … down here you will …**

I **Is that badgers?** Is it hoof prints? Or noses?

R Nose marks. **This is really far from the sett.**

I **If you came across that with the children would you talk about it?**

R **We would stop and ask, and we use photography so that if we don't have an expert, or don't have a definite answer, we can take it back and we email**. So here we go, here is somebody's tree.

I They put something round it.

R That is E's tree.

I They put their initials around it. Something to identify it.

This vignette (hybrid research assemblage) was produced by the affects between relations in the event assemblage and the research assemblage. The event assemblage had dominant affects between relations around the different classification and naming activities this teacher did at this site. The research assemblage has dominant affects between the relations of my questions, the research question, and the place specific aspects of the more-than-human that was enacted in the outdoor learning curriculum. The affects around the badger nose marks in the event assemblage are particularly strong, which help to produce this vignette around the teacher's response to the more-than-human she noticed in the enactment of outdoor learning.

The raw telling of the teacher's responses to the badger's nose marks draws me into the rhizoanalysis. I am struck with a realisation that she knows this place well and the more-than-human that may be encountered there. She knows these nose marks are far from the sett, and this vignette portrays the level of knowledge and attention this teacher has built up over time.

Nose marks. **This is really far from the sett.** (Data excerpt, Case 1 Vignette 4)

This vignette produces two areas for deeper consideration about the teacher's harnessing of the more-than-human in the enactment of outdoor learning. Firstly, she noticed these are badger nose marks, and she noticed these 'tracings' of the more-than-human are not where she would have expected them to be. This seems to be based on the more-than-human lives being lived here she noticed previously.

Secondly, reading this vignette immanently and intensively discloses how the more-than-human that the teacher noticed were important in curriculum enactment. The vignette produces in me an understanding that the way this teacher has noticed the more-than-human over time reflects an intermingling of her life with that of the badger. In terms of harnessing the more-than-human, she describes her response to this type of event where she would follow this 'tracing' of life through photography to access more expertise on the matter. This teacher's response suggests she might harness the more-than-human through registers of recording and classification.

This vignette portrays how more-than-human was harnessed in the enactment of the outdoor learning curriculum. The harnessing took into account the lives of the more-than-human and any 'tracings' of what was left behind in the forest. This vignette produces questions for me of: How do we develop teachers' ability to notice the 'tracings' of the more-than-human over time? What might this do to outdoor learning?

4.1.8 Finding 1

These vignettes portray the multiple ways the teachers noticed the more-than-human in the outdoor places. They also portray the degrees to which the more-than-human was harnessed into their teaching because of how they noticed it. In the planning vignette (Vignette 1), the teacher had made no obvious plans to harness more-than-human elements into the pedagogy ahead of the lesson. Key to the ability of teachers to work with the more-than-human in their teaching was the ability to notice these elements in the first instance. Thereafter, it became important that they worked on ways of making the inclusion of more-than-human elements possible and potent in the approaches taken to planning.

In the analysis of these vignettes, it has shown how the practices of noticing the more-than-human are core to teaching and learning outdoors. In the vignettes about curriculum enactment, the degree to which the more-than-human was harnessed is a necessary and significant precursor to the possibility of responding to/making a response to the more-than-human. From these vignettes, it can be understood that the teachers' response-making to the more-than-human is part of more-than-human pedagogy.

These vignettes portray that, during enactment, the teachers noticed, and responded to, the more-than-human in the outdoor learnings sites. This is itself a significant finding. That they did not spend time in these places and ignore the more-than-human is an important feature of Finding 1. In addition, the enactment vignettes disclose ways the prescribed curriculum had powerful and territorializing relations around how the more-than-human was harnessed. These vignettes portray how there were multiple relations of the more-than-human that *could have* been harnessed. However, those that were harnessed tended to be ones that fitted into the teachers' needs to address the prescribed curriculum.

Finally, most of these vignettes disclose how, for some teachers, the harnessing of the more-than-human was focussed towards meeting the needs of the prescribed curriculum, and how teachers in Cases 2, 5, and 4 tended to notice the more-than-human in these ways. In Case 3 (Vignette 3), however, the teacher noticed the more-than-human with attention to less prescriptive requirements. In that vignette, the teacher was able to respond to the more-than-human in open and emergent ways. In that outdoor place, she saw how the more-than-human was able to be harnessed to enact a musical component to outdoor learning, as part of a sensory pedagogy. This vignette discloses potential for teaching and learning beyond the needs of a prescribed curriculum that is possible if educators pay attention to the more-than-human in meaningful ways.

This section has produced the key finding:

Finding 1: The degree to which teachers harnessed the more-than-human into their teaching was influenced by their ability to notice it.

Section 4.2 Finding 2 – Children Noticed and Responded to The More-than-human

Introduction

In this section, and the remainder of this chapter, I provide less detail on the process of rhizoanalysis and instead focus on the ways in which the vignettes have produced the findings. I do however, describe each of the rhizoanalytical tools (Masny, 2014) I have used because they are linked to the meaning produced from each vignette. In all, over 38 vignettes were produced, and I have chosen to include the 14 that show the key findings best. To be able to include the most possible, I have kept the methodological considerations to a minimum and have instead focussed on the ways in which the data have produced the findings.

In this section, I show the production of key Finding 2:

Finding 2: Teaching with the more-than-human involved paying attention to children's noticing and responses to the more-than-human.

The vignettes in this section contain data on the ways children noticed and responded to the more-than-human in outdoor learning. The vignettes portray how teaching with the more-than-human was linked with the noticing and responses that children made. The data in this section are from both walking and memory box interviews.

4.2.1 Walking Interview – Planning

Vignette 5 (Case 5): "Noticing Tadpoles"

This vignette is based on a section of walking interview data from Case 5. The vignette produces provoking questions around how we might understand some of the planning processes of outdoor learning that includes the more-than-human noticed by the children. This vignette portrays an event which surfaced during the walking interview when the teacher and I paused at the entrance to their outdoor learning site. It was a place where the children had discovered tadpoles during a previous outdoor learning session. This vignette portrays the teacher's

approach to curriculum planning and her harnessing of the more-than-human the children noticed and responded to.

Vignette 5

I So how much does this particular place, that you have got here, how does it steer projects in their conceptualising, of their design, of their implementation? Is it something that you could talk about? Does it do that?

R **Last year when we came here we found some tadpoles and the children were fascinated to see every week when we went back, what they looked like. We went back to school and did some work on tadpoles. We did some more detailed project work on the life cycle of a frog. That came directly from this.**

I They spotted the tadpoles here and they went back into the classroom …

R That is right.

I And the exploration of the biology of it.

R **Some of it is planned by me. A lot of it is planned by the children or comes from what the children find and want to follow up.**

I Do you find that using the children to plan stuff, is there a reason behind that, is there a rationale for doing that or is it just the way you like to teach and you like to incorporate …?

R It is the way that we teach. If the children are involved in the planning then they are more focused on what they are doing. They understand more about their own learning. They can set targets for themselves more easily. They have a much better awareness of what they are learning. I think that is really crucial.

Photo of tadpoles at the site, which 'block' the entrance through the gap in the wall

Palpating the data, I am affected in how the more-than-human that was noticed by the children became part of an ongoing project on biology and science. The project was *not* something that was decided beforehand. It came from the more-than-human that the children noticed and encountered in the outdoor place. The teacher's approach to planning was able to allow what

the children noticed and responded to become a focus for further learning and project work: "**Some of it is planned by me. A lot of it is planned by the children or comes from what the children find and want to follow up**" (Data excerpt, Case 5, Vignette 5).

Reading the data intensively and immanently, I sensed that teaching with the more-than-human is portrayed in this vignette as tied to the more-than-human the children notice. The teacher in this case used what children noticed as a particular approach to the curriculum planning of outdoor learning. In this vignette, I am drawn to consider how rich this planning process is, yet it led to the enactment of a science-based project. In this vignette, there are forces of funnelling the enactment towards the prescribed curriculum around science. A question this vignette produced in me is: What new approaches to teaching with the more-than-human could be welcomed through these encounters with the more-than-human that children noticed?

4.2.2 Memory-box Interview – Planning

Vignette 6 (Case 2): "Children's Noticing of Spontaneity"

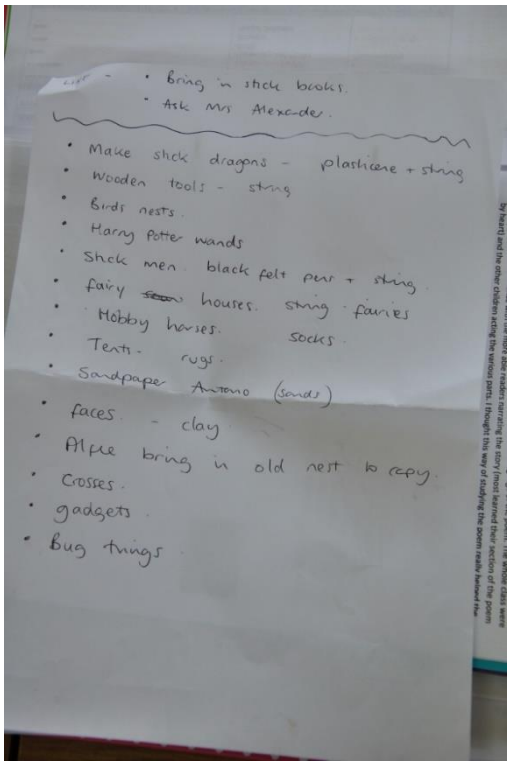
This vignette helps to produce Finding 2 because it provokes thinking around how the children became drawn into the planning process through the spontaneity they noticed and their choices of activities. The vignette portrays aspects of the teacher's planning process she undertook with the children before a visit to their regular outdoor learning site. It portrays how her involvement with the children in planning was part of her development into a more confident outdoor learning teacher. The relations of the memory-box method have affected the event assemblage in the production of this vignette. This is noticeable through the relations of the pupil's suggestion sheet that was placed in the memory box, which in turn became a focus for discussion in the interview. The vignette begins at a stage in the interview when the teacher was recounting a story of how the children spontaneously started putting on a show for her in the outdoor learning site.

Vignette 6

R. We had been doing some songs and things in class [in the outdoor learning site], so they were repeating some of the songs and things they were doing in class. But they just said, '**we are putting on a show, you need to sit here, you sit there** …' and they enjoyed doing that kind of thing. **Some of that is kind of in my planning and some of it is just spontaneous obviously**.

I **Did the place initiate that spontaneity** or was it milling around with everything you were doing anyway?

R I think the spontaneity … **allowing that is something I just feel much more comfortable doing now.** Because I think when I first was taking children out, I was thinking of lots of things … because I was concerned that they would be bored. **I am now much more relaxed about it because I have done it lots of times and I know they are going to come up with the ideas. So we would talk about it beforehand, and for instance, this is my scribbles I am afraid, but this was me sitting with the class and saying to them, ok, we are going to go down to the woods, what do you want us to do this time? What are your ideas?** This is them giving me the ideas of things that they would like to do. And me making sure 'what do I need to take if that is what they want to do?



The list of activities from the discussion with the children that was put in the memory box.

Palpating the data in this vignette, I am affected by the aspects of the teacher's planning process that includes the children, and the spontaneity the teacher has learnt to work with. There is a sense that this teacher welcomed the children into the planning process in ways that she did not

do in the beginning of her teaching of outdoor learning. Her response, in terms of planning, was to ask the children what they wanted to do at the outdoor learning site. Her planning involved the children and her list reflects what the *children saw as meaningful* to do in the outdoor place, not her.

As I palpated the data, I sensed the changes the teacher underwent as she described the welcoming of spontaneity into her planning practice along with her involvement of the children's choices. This welcoming seems to have changed her outlook on the planning. She notes "I think the spontaneity … **allowing that is something I just feel much more comfortable doing now"** (Data excerpt, Case 2, Vignette 6). This raw telling portrays an important feature of how the teacher was *recognising outdoor places as sites of spontaneity*. In addition, this vignette portrays a change in this teacher's planning practice to include what children noticed in places through the activity sheet in the memory box. This vignette produces questions for me: How might we develop ways to plan outdoor learning with the spontaneity of the more-than-human children notice and see as meaningful? What might this do for outdoor learning?

4.2.3 Walking Interview – Enactment

Vignette 7 (Case 3): "Stung Lips and Curling Ponds"

In this vignette, the walking interview data portrays some ways that the children noticed the more-than-human in different ways from the teacher. The data from the walking interview around the children's responses to encounters with nettles gives a real sense of the gap between the teacher's curriculum planning, and the enactment of it outdoors. The interview starts with a discussion with the teacher around her practice of managing a class of children outdoors.

Vignette 7

R Absolutely. Once they are used to being out and mine are much more used to being out. They gave me a few frights in the beginning. I do have to say.

I What kind of things did they do?

R Apart from scattering … I would actually blow a whistle to bring them back. And there is a child who I make sure I carry his medication because he is highly allergic to things. I hadn't a clue where he was, and he hadn't a clue where I was.

I And you were where the medication was?

R Yes. And when I did get them closer, one of the days **we were out looking at plants and we were talking about plants in general and we came across a clump of nettles which they recognised** and I started to say, 'And of course people used to eat nettles,' and before I could say, 'You nip off the tops in early spring and use them for soup,' **two of them had actually picked a nettle leaf and stuck it in their mouth. And got stung lips**. I had never had that experience where children just did that type of thing before you finished saying the sentence. **As you can see this is the building that fascinated them. Whether it was a hut for the curling stones, and whether this boggy area was the original curling area, it could be.** From the shape of the landscape. I think this is the area is the community are suggesting that they re-dig out the pond and use it for pond dipping and if it does freeze over in winter, which it certainly wouldn't have done this winter, it could be used for community curling. It is a stone's throw from the school, I could be up here every day if I wanted to in the spring time. And there is certainly a lot of frogs in that boggy area. Plants got ditched for the frogs. But that is learning as well.

The ruins of the building in the outdoor learning area that fascinated the children

As I palpated the data in this vignette, it produced in me affects around how powerfully the children noticed the nettles through their bodies. This was different from what the teacher expected, and I sense was likely to be different from what she planned. The ways in which these children noticed the more-than-human with their bodies gives glimpses of the richness that can come about through the more-than-human children pay attention to. The teacher acknowledges that sometimes what the children noticed was *different to what she noticed.* If what the teacher

notices dominates any harnessing of the more-than-human in the enactment of outdoor learning, then the richness that children bring to what is noticed may be overlooked.

The potential for teaching with the more-than-human is palpable in this vignette through what the children noticed and responded to; what interested and fascinated them. This vignette discloses how the teacher attached importance to when, and how, how children noticed the more-than-human. This vignette discloses how, at times these noticing's were different from the teacher. This vignette produces the question: how could we encourage outdoor learning to be enacted in ways that paid attention to the more-than-human that children notice?

4.2.4 Finding 2

These three vignettes are linked by the ways in which the children noticed the more-than-human and how what they noticed impinged on the planning and enactment of outdoor learning. In the two vignettes on planning (Vignettes 5 and 6), the teachers in these two cases were able to teach with the more-than-human that the children notice and responded to. In both cases, the planning involved drawing on what the children noticed in the outdoors.

In the first vignette, the more-than-human (tadpoles) that the children noticed went on to be harnessed by the teacher into her curriculum planning through the topic of the life cycle of the frog. In Vignette 5, the more-than-human that the children noticed was ultimately 'funnelled' into learning around science which was perhaps part of the teacher's prescribed curriculum. That noted, the teacher in Vignette 5 saw the outdoors as a site of spontaneity which she felt comfortable in handing over to the children. One response to planning she has developed in her outdoor learning is to let the children choose activities and be spontaneous in places. In the third and last vignette, there are glimpses of the different ways in which children noticed the more-than-human in the enactment of outdoor learning. The children in that vignette noticed the more-than-human in a different way from the teacher; with their bodies.

These three vignettes portray that teaching with the more-than-human involved working with the ways children noticed and responded to the more-than-human in the outdoor places. In terms of planning, welcoming the meaningful and affective aspects of the more-than human children noticed required some regular knowledge about the outdoor site. In terms of enactment, the more-than-human that children noticed was, at times, different from the teachers. Yet, in terms of harnessing the more-than-human into the curriculum, this was still often driven by the teacher. If what the teacher notices dominates the harnessing of the more-than-human, then the particular way children notice the more-than-human will be overlooked.

This chapter has produced the key finding of:

Finding 2: Teaching with the more-than-human involved paying attention to children's noticing and responses to the more-than-human.

Section 4.3 Finding 3 – Teachers' Attunement to Place

Introduction

This section includes three vignettes that produce the third key finding in this study:

Finding 3: Teachers' harnessing of the more-than-human in the curriculum planning and enactment of outdoor learning developed in contextualised ways through an attunement to place.

The vignettes in this section portray how it was important for teachers to become attuned to place as they sought to harness the more-than-human in outdoor learning. Whilst there are likely to be many ways to develop attunement to place, in the data this was most commonly done through walking in places and making multiple visits to the sites of outdoor learning. In this research, how teachers harnessed the more-than-human in their teaching was developed in contextualised ways through their attunement to place.

I use the term 'attunement' to portray an awareness of, and deep connection to, the more-than-human found in outdoor places by teachers. Teachers' attunement to place surfaced in the data and appeared to be something that developed over time. I see this is similar to the becoming attentive and responsive to the environment that Ingold identifies. He writes that learning is about "becoming attentive and responsive to those subtle cues that reveal the nuances of our relationship to them" (Ingold, 1993; 221). He sees that through learning we develop a perceptual system that is resonant "with significant features of the environmental context of action" (*Ibid.*; 221). This describes how I understand the attunement in Finding 2. It is derived from teachers spending time in place and developing their attention to, and responses to, the more-than-human.

The vignettes in this section portray an attunement to the more-than-human that is then harnessed into the planning and enactment of outdoor learning curricula. A particular aspect of planning included the affects of the more-than-human that unfolded in place over time. These were developed in ways that may not have been possible without a physical visit beforehand.

4.3.1 Curriculum Planning – Walking Interview

Vignette 8 (Case 4): "Welcoming the Waterfall"

This vignette is about an activity called 'portrait in nature' that the teacher in this case did with her pupils. For this activity, the pupils and teachers visited the site twice. The first visit was to get to know the place and to do some planning for the 'portrait in nature' activity. As part of the curriculum planning on the first visit, the children were to collect images or objects that best 'represented' them through the use of a workbook. The activity itself took place during the second visit. This vignette discloses relations around the attunement to place that occurs through repeat visits. The teacher in this case seems to understand that repeat visits were central to how well the pupils responded to the 'portrait in nature' task. This vignette includes transcript data from the walking interview and a photograph of a pupil planning workbook that noted the deep connection they had with a waterfall they encountered.

Vignette 8

R So what had happened, when we went to the art gallery, to the exhibition, we went with the art department, and the art teacher did a little bit of work to do with Goldsworthy with them? Because at the time I was thinking that they might create **… I thought some of the children might want to create something that they were within. Like an art type structure …**

I An installation.

R Yes. I thought they might want to try and do that.

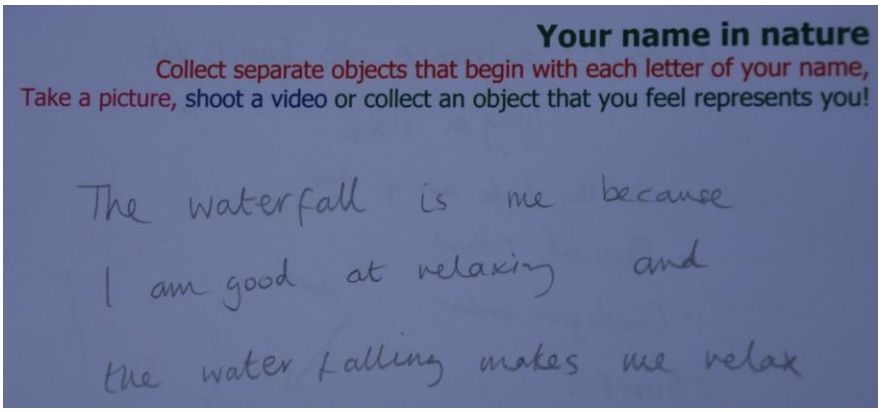
I As part of their portrait? [The 'portrait in nature' activity]

…

R Yes. Within five minutes. But I think having done this it would be really, really amazing to do it with a group of pupils and actually spend, go somewhere and camp and have that as your objective, that you either do an art installation or you became part of it. I remember when … saw the pictures of the children, he thought they were amazing. And because of … being in her wheelchair it had so many levels. You could look at it in so many levels. And the children, I couldn't believe how much … **I was so surprised at how … they just did it. You didn't have to ask them to do it. You didn't have to talk to them about it. They just got it.**

I What do you think it was? Was it the sensory element of it? Was it the space element of it?

R **I think that whole idea that …had of coming twice. I think that return visit is important. You have that sense of belonging. It has some connection. Whether it is with your memory or at a cellular level.** I think having come once before, when they came here, in a way, I remember thinking … even though the place did matter … it was themselves that … they were experiencing something themselves. **It was that idea of the place becoming … you become part of the place and the place becomes part of you.**



An excerpt from the pupil planning workbook designed for the 'portrait in nature' activity. The writing is the 'voice' of a pupil.

The vignette discloses the strong affects of the repeat visits which seem to be significant in this teacher's planning of outdoor learning. The repeat visit were important to developing an attunement to place, and the more-than-human, for her and the pupils. In this vignette, the raw telling of "**you become part of the place and place becomes you"** (Data excerpt Case 4, Vignette 8) affected me strongly. It produced a change in me where I could see how powerful the repeat visit was for this teacher who was working with pupils' sense of self and place. In the activity 'portrait in nature' the teacher harnessed the more-than-human in ways that resonated with the pupils. She did not impose a topic, a prescribed curriculum, but instead let the place and more-than-human be active in the pupils' interpretation of the activity

Reading this vignette, I palpated from the data that this teacher sought to create new meanings through her planning of outdoor learning and the attunement to place made possible by a second visit. Reading this vignette immanently, I am struck by how the teacher in this case seems to be able to work in a non-dualistic way, to see outdoor places as sites of becoming. She seems strongly affected by the way she sees place as having educational potential around identity and the notion of who we might become. This attunement to place has resulted in the harnessing of the more-than-human in rich and contextualised ways around the constructions of self and place. For this teacher and her planning, previous visits seem important. This vignette produces a question of: if we can encourage educators to become attuned to places and harness the more-than-human in rich ways, what new kinds of planning outdoor learning may be possible?

4.3.2 Curriculum Enactment – Walking Interview

Vignette 9 (Case 5): "Sphagnum Moss as Capacity"

This vignette contains data from Case 5 and portrays how the teacher harnessed the more-than-human in the enactment of outdoor learning. During the walking interview, she explained how some sphagnum moss was used in an exercise on capacity in the enactment of outdoor learning. The relations around the sphagnum moss surfaced on the walk and have been dominant in the production of this vignette. These relations also disclose a level of attunement to place this teacher has developed over time.

Vignette 9

R. **You will see here on the ground sphagnum moss;** we did a topic on capacity and we collected quite a lot of plastic containers from the beach and took them back into the school and did a lot of work on capacity with them and how much water they could each hold. They estimated first and then …

I The capacity of the plastic vessels.

R **But one of the things we did was collect sphagnum moss and as a problem solving exercise we found how much water the sphagnum moss would hold and then squeezed it out and measured it.** So that was quite fun. There is all sorts of things that … it is not just to do with the natural objects …

….

R **But this is the way that we walk into the woodland so every time we walk in there will be something different to see**. There might be new flowers that we didn't notice before or it might be the trees beginning to bud**, it might be mosses,** it could be … as I say we have used the rubbish before as a focus. It could be wildlife that we see. Birds that we see. There are eagles nesting in the cliffs up here and we sometimes see sea eagles from here. Sometimes, quite regularly actually. We see sea eagles from here. **So what we see on the walk into the woodland can often affect how we follow, what we do next, what we follow up.**

The area with sphagnum moss

This vignette portrays the rich, place-focused, data that was surfaced during the walking interview, and how the relations of the more-than-human (sphagnum moss) became the topic of

discussion as we walked. In this vignette, the teacher described the attunement to place that occurred as she walked onto the site with the children as a powerful raw telling: "**So what we see on the walk into the woodland can often affect how we follow, what we do next, what we follow up**" (Data excerpt Case 5, Vignette 9). As I consider this raw telling, I think about how this teacher is paying attention to what she, and the children noticed, every time they entered the outdoor learning site. For this teacher, her curriculum enactment was attuned to the more-than-human that can be harnessed in activities such as capacity with the sphagnum moss. There is a sense she was attuned to the more-than-human in this place because she knows about the moss that is there and its water-holding capacity.

This vignette portrays aspects of this teacher's interdisciplinary curriculum enactment. For example, she (and the children) noticed species (this relates to science/ecology) and activities around capacity (this relates to mathematics). This teacher's attunement to place has resulted in the harnessing of the more-than-human in contextualised ways. I also sense that this occurred as she became attuned to the more-than-human that unfolded, as a result of her walking through the outdoor place. The questions this vignette produces are: How do we encourage teachers to develop their attunement to place and the more-than-human in these interdisciplinary ways? How does walking the ground help this process?

4.3.3 Curriculum Enactment – Memory-box Interview

Vignette 10 (Case 3): "The Smugglers' Trail and the Shaded Forest"

This vignette is from Case 3 and includes data from the memory box interview. It is an entry point into understanding aspects of one teacher's attunement to place and the harnessing of the more-than-human in their curriculum enactment of outdoor learning. The vignette discloses a story about a novice teacher who was being mentored by the teacher in this case. The photograph in the vignette is of an old map used by the teacher in this case. The map, *initiated the story of the development of the geocache trail*, so it is included in this vignette because of the relations it produced. This vignette produces thinking around how the more-than-human, such as the shade offered by the trees, was harnessed in the enactment of outdoor learning in contextualised ways developed through an attunement to place.

Vignette 10

R Yes. Not that it costs us any transport to come here. We are lucky. I appreciate not everybody is. I was involved as a mentor with the [unclear 26/55] group in *Place name* and I got really nice feedback from them, who had done what. I was blown away with some of the ideas they came up with. There was one girl, when I first mentioned things like geocaching she was like, 'No, that is too technical, not for me,' **but she was open minded when she went to the site with the kids**. They are focused on the smuggling history of the area, there is a smugglers' cave and things up there, and I had brought in some old brandy bottles that came from our house when we discovered a false wall when we were doing some renovations. So they focused on that. **And she said when they were there on the site with the kids, you saw how the landscape made you hide, and your route varied according to not wanting to be seen, and then they ended up doing a geocaching trail that is called the smugglers' trail. You had to keep out of sight of anybody all the time.** I think it was the ranger who offered to show her the technology side of things. Because she was on the site and saw what the site offered to the topic and how excited the kids were and then the ranger offered the expertise and the technology and the equipment to do it, it all fell into place. And that is something she would do again and again. She thoroughly enjoyed it.

I Wow. That is a bit like here …

R And she was someone who hadn't gone out very often. She was a convert.

Map put in the memory box that evoked the story in this interview.

Palpating the data in this vignette, I sense the changes in curriculum enactment with the more-than-human that came about through the attunement to place by the novice teacher. The movement through the forest and the different sensations of being in shade, or out in the open, were significant aspects of attunement that influenced the enactment of the 'smugglers' trail geocache activity. This vignette produces thoughts in me about how the capacities of the more-

than-human of the shade, trees, and trail are harnessed in contextualized ways through an attunement to place.

This vignette portrays how the more-than-human of the trees, and the shade of the site, could be understood as 'bodies' (in the Deleuzoguattarian sense) that these teachers are becoming attuned to through the sensations and movements in place. This vignette produces provoking questions around: How do we encourage educators to become attuned to place through sensations and affects in places? What might this do for the enactment of outdoor learning?

4.3.4 Finding 3

These vignettes portray the importance of teachers becoming attuned to places for the harnessing of the more-than-human in the curriculum planning and enactment of outdoor learning. These processes of attunement involve walking in place as well as making repeat visits. In the vignette on planning (Vignette 8), making repeat visits and walking the landscape were part of the way the teacher developed an attunement to place. This attunement helped the teacher and the pupils to harness the more-than-human in the planning of the activity 'portrait in nature'. This happened in contextualised ways that were about personal development and identity.

In terms of enactment, the next vignette (Vignette 9) portrays how walking in place and being attuned to the more-than-human were important in the enactment of some interdisciplinary features of a curriculum for outdoor learning. By paying attention to the more-than-human noticed by the teacher, and the children, the outdoor learning that was enacted was interdisciplinary, including science and mathematics.

These vignettes also portray that the harnessing of the more-than-human was able to be contextualised, and this could be different for each teacher. The importance of context includes the teachers' personal knowledge as well as that which comes through attunement to the more-than-human in a particular place. This may be knowledge from a teacher's previous engagement with the land as shepherdesses (Case 3, e.g., Vignette 10), or an understanding of how sphagnum moss can hold large quantities of water (Case 5, Vignette 9). These vignettes portray how the ability of teachers to harness the more-than-human in contextualised ways involves the degree to which they become attuned to place.

The previous vignette disclosed how the capacities of the more-than-human impinged on the enactment in rich ways. It portrays how shade and story became interwoven and produced curriculum that was engaging and interdisciplinary through the employment of digital

technologies (geocache) and local history. In summary, these vignettes portray in detail how finding 3 was produced:

Finding 3: Teachers' harnessing of the more-than-human in the curriculum planning and enactment of outdoor learning developed in contextualised ways through an attunement to place.

Section 4.4 Finding 4 – Harnessing of the More-than-human as an Assembling Process

Introduction

This section contains four vignettes that produce key Finding 4:

Finding 4: Teachers' harnessing of the more-than-human was an assembling process that included material, discursive, human, and more-than-human elements.

In this section, there are a range of cases and data types involved in the production of this finding. There are two vignettes on the planning of outdoor learning (Vignettes 11 and 12) and two on the enactment of outdoor learning (Vignettes 13 and 14). Vignettes 11 and 13 were produced from the walking interview method and Vignettes 12 and 14 from the memory-box interview method. The vignettes produced thoughts and questions around how the teachers' harnessing of the more-than-human was a process of assembling. This assembling often included the relations of the more-than-human that became available to their planning and enactment with the involvement of other learning professionals (or knowledgeable adults) and *their practices*.

Thinking of outdoor learning as an assembling process came from working with the data across the cases. It was an aspect of the planning and enactment of outdoor learning that was present in all the cases, but particularly the three portrayed here (Cases 1, 3, and 5). This vignettes in this section portray how assembling outdoor learning is a process that involves being responsive to the more-than-human available in certain places. This may include certain people and their practices. In this section, I use the term 'learning professional' (LP) to refer to volunteers or employed staff from organisations who worked in some educational capacity with the children and teachers in these cases. Some examples of these people were educational rangers from the Forestry Commission, local archaeology experts, farmers, or knowledgeable parents.

Returning to new materialism, where the subject is de-centred, it is important for me to note that the importance of these *people* are not the main foci of the assembling. It is the more-than-human *relations that are harnessed* by the involvement of these learning professionals and their practices that are of interest. The *assembling* process portrayed in these vignettes includes the more-than-human relations coming together with the involvement of these people and their practices.

4.4.1 Curriculum Planning – Walking Interview

Vignette 11 (Case 1): "The Children's Desires and the Record Centre"

The data in this vignette are from Case 1 and include a photograph and excerpt of the transcript from the walking interview. This vignette portrays the rich relations of the more-than-human that are being assembled into the planning of outdoor learning from the influences of a record centre (a local biodiversity project). A learning professional (forest ranger), in conjunction with a local record centre, asked the school to help collect data on the badgers in their forest to help compile a database of badger sett locations across Scotland. In my reading of this vignette, the planning process undertaken by the teacher in this case involved assembling with the more-than-human. As a result, the focus of outdoor learning took off in a particular direction; that of mammals.

Vignette 11

R … if I think there is a need in the school then we look at ways of using the forest days to support that. But the mammal records came from the ranger….

R **It is funny. When you say planning, I go, 'Ah'. Although if you said to me, 'What is your maths plan over the next year?' I could tell you what the progression is, but if you said, 'What are you going to be doing here in a year's time?' I don't have a clue.** I know that my core curriculum is skills-based. But the knowledge that comes out of it would very much depend. We don't know what is going to happen here. It might be that we decide to focus on nothing but den building for a whole year. We have done that before. At the moment we don't do that, because they are actually quite proficient at going and doing that themselves. There is not any point.

R. However, saying that, when I was talking to the volunteers who are coming tomorrow we then started talking about birds. **But we want to focus in on the mammals because we are responding to the request from the record centre and the incentive for the kids, is that they have seen the record centre for the insects.** And they [the children] have seen how you get a dot for every place it has been sighted. They want *place name* in as many pages as possible. There is an incentive for them. **If you had said to me last August, 'Are you going to be looking at mammals last spring time?' I would have probably said, 'Well I don't really know, just wait and see.'**

The children's den-building in the forest

As I palpated the data in this vignette, I felt the changes that occurred in the teacher's planning of outdoor learning. I particularly felt the teacher's progression from a skills-based curriculum of den building towards mammals. She assembled her planning with the relations of the more-than-human harnessed through the involvement of the record centre. This included the forest ranger *and the practices of collecting data on badger sett locations*. The changes in planning that I palpated in this vignette made me consider that a focus on mammals was not considered before the involvement of the record centre. The more-than-human being harnessed was being assembling with the practice of collecting badger sett data.

In this vignette I see that the teacher, badgers, children and the record centre all became an assemblage of relations available for harnessing in the planning of outdoor learning. This

vignette produces thoughts in me about how the teacher in this case was able to assemble her planning with these relations. This vignette produces a question: how do we knowingly plan for the relations of the more-than-human that get assembled through the involvement of other learning professionals and their practices?

4.4.2 Curriculum Planning – Memory-box Interview

Vignette 12 (Case 3): "Planning Means I Miss Out on Certain People's Experience"

This vignette includes data from the memory box interview in Case 3 and includes transcript excerpts and a photograph. The photograph in the vignette is of the children sieving the soil when they were part of an archaeological dig in their local area. It was placed in the memory box and became a focus in the interview. The teacher in this case had arranged the pupils' involvement on the dig through communication with other learning professionals in the local community; members of a local archaeology society. This vignette portrays some of the rich harnessing of the more-than-human that gets assembled by this teacher in her unconventional approach to planning through the involvement of the learning professionals and their practice of archaeology.

Vignette 12

R **In the beginning I used to do all these plans, complete waste of time, because a) I completely over-planned and never got one fifth of it done, or b) you met somebody in the community and went off on a different tangent because they had an expertise that you didn't have so why not learn from them.** I actually do … I did try to do the formulaic type plans, but what is the point of doing a plan if you don't stick to it? I think *other educator* asked me for permission to use a quote that I did in a private email with her one time. I think it was something along the lines of '**how can you plan for something that you don't know how it is going to pan out in anyway whatsoever?' There are people out there, that if I planned, I could miss their expertise.**

I I agree with that fully in terms of education and learning. Some of it happens almost in hindsight. You can't plan for that.

R **It is actually being there in the place doing things, and other things happen round about it. Whether it is wildlife or plants, or the change of the seasons. We were here in May but it is completely different in September. I don't know how you can actually plan for any of that anyway but the community, the more you do the more people come and suggest things to you. Their eyes are shining with the idea of doing this together with the school and I am enthusiastic and the kids are all for it, so why miss out on all that enthusiasm.** There is learning going on. I do struggle with this, how do I say in the beginning what we want to tackle? My job, I feel at the end of the day is to make sure I didn't miss anything out. So it is more a kind of evaluation at the end, have we missed anything out? In which case I need to do it next year. Like **I know for example the only science I have really done … there has been lots of mythological science in among the archaeology but the only science subject I have really covered is biology this year.** So I will choose something from either the chemistry or physics side to do in winter time when we don't get out quite as much. That would be the good time to do something around light and colour, and play around with light boxes and find a darkened corner to do all that kind of thing. So that is my … especially as I have got a composite class, I have got them for more than one year, so anything I don't pick up on this year, I have still got the chance of tackling it next year.

Photograph from the memory-box that shows sieving done on the archaeological dig

There was a raw telling in this vignette that produced a response in me.

> **In the beginning I used to do all these plans, complete waste of time, because, a) I completely over-planned and never got one fifth of it done, or b) you met somebody in the community and went off on a different tangent because they had an expertise that you didn't have so why not learn from them.** (Data excerpt, Case 3, Vignette 12)

This raw telling produced thoughts in me around how planning outdoor learning was an assembling process with other learning professionals and their practices. I am struck by the way in which this teacher rejected formal planning and how planning for her emerged through the relations of the more-than-human made available by other sources, such as learning professionals and their practices of archaeology. There are also sensations produced in me of how the assembling process was not just with the learning professionals but included the practices that involved the more-than-human. Such as soil being sieved, and the organic matter being touched.

The teacher in this case was skilled at working with an assembling process in her planning. The vignette portrays how she was able to 'map' the needs of the prescribed curriculum that she harnessed the more-than-human into and identify any gaps. She noted in this vignette:

> **I know for example the only science I have really done … there has been lots of mythological science in among the archaeology but the only science subject I have really covered is biology this year.** (Case 3, Vignette 12)

Planning for this teacher was more about the relations that were *brought into being and that became available* once an expert had been welcomed into her practice. I am struck by the confidence in this teacher's rejection of formal planning and of her description of how she encouraged the capacities of the more-than-human. Is this a form of expertise, perhaps? This vignette produces the question of: how do we develop teachers' expertise to harness the more-than-human with other learning professionals (or knowledgeable adults) and their practices?

4.4.3 Curriculum Enactment – Walking Interview

Vignette 13 (Case 5): "Children Making Leaves and Learning to Look Closely"

The data in this vignette are from the walking interview with Case 5. The vignette portrays an event which involved a local artist working in collaboration with the Forestry Commission and the children at their regular site of outdoor learning. This vignette produces thoughts in me around how the artist's practice included ways of paying attention to the more-than-human (leaves) in certain ways. These brought a rich dimension to the enactment of outdoor learning.

Vignette 13

R. It was a project organised by *organisation* and they had an artist in residence, *artists name* who came out here and worked with the children along with *person* from the forestry commission. So, we did work about the kind of eco schools work here as well. We looked at the food pyramid, the children made a pyramid and became different food. We did practical stuff like that. We did lots of games just out here which related to the environment which was great. **Then they collected things which they then used in their art work and looked in detail at the things in the environment. The lichen and things are absolutely beautiful and very beautiful shapes and very often if the children don't look closely at them, they don't see those shapes. It was helping them to be more aware of the beauty and the incredible diversity just in this kind of place.** That was a lovely way … it was lovely to have something at the end that was created that they could go and see, and they could take mums and dads to see, this exhibition.

I What was created at the end of it?

R They created different kinds of leaves**.**

I Out of?

R Out of clay. Or some were cast. So they had leaves cast in bronze. **The leaves had imprints of things that they had found in the forest in the leaves.** So maybe a piece of fur or a piece of bracken that they had imprinted into the clay that they then used. Or a piece of bark. Something … Or a leaf shape. Something that they had found here that they liked. They took back a collection of things. And made these beautiful leaves that were then exhibited with the same … children from other schools in the island did the same thing and they were all exhibited together. And they were told it was a kind magical forest which was beautiful. It was lovely.

Reading this vignette and palpating the data, I sense changes to the way the children were encouraged to notice the more-than-human through the involvement of the artist and her practice. This vignette discloses some of the affective flows around the more-than-human that the children were encouraged to pay attention to in the enactment of outdoor learning. There is a raw telling of:

> **The lichen and things are absolutely beautiful and very beautiful shapes and very often if the children don't look closely at them, they don't see those shapes. It was helping them to be more aware of the beauty and the incredible diversity just in this kind of place.** (Data excerpt, Case 5, Vignette 13)

I read this raw telling and felt that this quote identifies where the artist, and their practice, influenced how the more-than-human were being harnessed. The role of the artist was to encourage the children to look differently at the more-than-human and to think about what they liked so they could make an imprint. The changes encouraged in the children by this way of looking were linked to an awareness of diversity and beauty. The relations of the more-than-human that were assembled in this enactment of outdoor learning may not have been those the teacher would have harnessed on her own.

In this artistic outdoor learning enactment, the children were encouraged to see the living relations of the more-than-human in new ways. In this enactment, the outdoor learning curriculum was assembled through the teacher, artist, and the more-than-human. It also assembled with the lives of the children, their parents and families via the public dissemination of the artwork. The question this vignette produces is: How might we encourage other learning professionals to engage in the enactment of outdoor learning with teachers?

4.4.5 Curriculum Enactment – Memory-box Interview

Vignette 14 (Case 3): "Noticing via Parents, Maps, Experts and Magazines"

The data in this vignette are from the memory-box interviews. They include transcripts and photographs from a local educational magazine the teacher and pupils from Case 3 were featured in. This teacher embraced local crofting experts and brought them into her outdoor learning enactment to teach historical land-use practices, such as basket weaving and thatching. The more-than-human of the grasses, and the thatch materials, were harnessed into this enactment of outdoor learning. What this vignette portrays are the many relations of the more-than-human that are available for assembling with in practices such as crofting and forestry.

Vignette 14

Memory-box contents – An excerpt from a local magazine with pupils in class and outdoors doing crofting practices.

I Where did you hear about this? Did you research it yourself?

R I came to this area not knowing anything about it. One of the parents has actually got *place name* connections and he had been on the website, and seen a topic I had done, the teaching and nature one that I had done on the website, and his twin girls are in primary two and he was basically thinking, 'I want my kids to have some of that'. So he came and approached me and said, 'There is this old deserted township,' and he wants to come with us and go up with the kids. And that is what started it off. **Then *local place name* Mausoleum had money so they brought in the person who had done the weaving workshop with us that made the baskets and taught the kids how to do that. They finished it off themselves. She is coming back next week to do a thatching workshop with them. She has built a model of a house and she is going to teach them about thatching material and how to actually thatch it. When we go up to the old sites as well, the old township, we will try and make scale models of the houses, there is a corn kiln up there as well apparently which fits in with our growing of the grain.**

There is a raw telling in this vignette around the more-than-human the other learning professional brought into the enactment of outdoor learning. I am drawn into it to make sense of the assembling processes going on:

> **they brought in the person who had done the weaving workshop with us that made the baskets and taught the kids how to do that. They finished it off themselves. She is coming back next week to do a thatching workshop with them.** (Data excerpt, Case 3, Vignette 14)

The raw telling creates sensations in me as I think about how these crofting practices were full of relations of the more-than-human. I see that the more-than-human was being assembled in

the outdoor learning enactment in ways that were part material (the more-than-human such as grasses and rushes), and part discursive (tales of crofting practices).

In this vignette, the learning professional brought access to relations of the more-than-human that were different from the ecological or science-based relations that have been the foci of other teachers in this study. The learning professional, and their practices, were part of an assembling process. I see in this vignette how the practices of crofting were able to open up outdoor learning to multiple ways of understanding landscape and the material dimensions to place histories such as weaving with reeds. This vignette produces a question: how do we encourage other teachers to assemble the curricula of outdoor learning with the more-than-human of other adults and their practices?

4.4.6 Finding 4

The vignettes in this section produce Finding 4, which is concerned with the ways in which the more-than-human was harnessed in outdoor learning through an assembling process. While the decision to work with the other learning professionals and their practices was often planned, the learning that was assembled in these vignettes seemed emergent. The planning vignettes portray how the assembling of the more-than-human brought depth to prescribed curriculum content and could also develop new topics of learning. Planning outdoor learning in ways that allow for this assembling will likely be influenced by teachers' dispositions to welcoming other learning professionals and practices into their planning.

Similarly, the enactment vignettes portrayed ways the assembling of outdoor learning could result in new educational directions not originally planned for. The relations of the more-than-human that became assembled seemed to be those that may not have been available to the teacher without the other adult's involvement. These vignettes portray how the enactment of outdoor learning can be understood as assembling human, discursive, material and more-than-human elements. As a result, the more-than-human that was harnessed in the assembling of these elements led to the inclusion of topics of learning that were not limited to a prescribed curriculum.

These vignettes disclose the multiple relations that can be harnessed in the assembling with the more-than-human and other knowledgeable people in outdoor learning. The finding that this section produces is:

Finding 4: Teachers' harnessing of the more-than-human was an assembling process that included material, discursive, human, and more-than-human elements.

4.5 Chapter Summary

In this summary, I revisit the multicase study method I have used and consider how it has contributed to the production of the four findings. Firstly, I revisit the quintain to remind the reader of the scope of the multicase study methodology. Then I revisit the research question and show how the findings have been productive in answering it.

In Chapter 3, I explained how the five cases became a multicase study that was centred on the quintain, or phenomenon: **the planning and enactment of outdoor educational provisions involving the more-than-human, humans, and places**. This quintain was important because it formed a boundary around the topic of interest in this research. In this summary, it is important to remember that the purpose of a multicase study is to answer the question; "What helps us understand the quintain?" (Stake, 2006; 6). To do this, I devised a research question that focussed on the more-than-human. I did this to contribute to the gap in research on the planning and enactment of outdoor learning that includes the non-human aspects of place. The research question was:

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

Through the production of the four findings, I have found that the more-than-human was harnessed in the curricula for outdoor learning by teacher's paying attention to the more-than-human; through the more-than-human children noticed and responded to; through a process of attunement; and through assembling with material, discursive, human, and more-than-human elements.

Finding 1 shows that the practices of noticing the more-than-human are core to teaching and learning outdoors. Central to how teachers harness and work with the more-than-human is their ability to notice it. Whilst the more-than-human was not being ignored outdoors, it was often being harnessed in ways to meet the needs of a prescribed curriculum at times. There were also aspects of finding one that hinted at the rich potential that was present in the way that places, pedagogy and the more-than-human became intertwined; such as the music in the cavernous space (Vignette 3).

Finding 2 shows that teaching with the more-than-human involved working with what children noticed and responded to in the outdoor places. In terms of planning and enactment, the more-than-human that children noticed could be different to the teacher but was often harnessed into activity relating to the prescribed curriculum.

Finding 3 shows how practice of planning outdoor learning with the more-than-human was supported by attunement to place through walking and making repeat visits. These processes seemed to encourage a harnessing of the more-than-human in ways that led to contextualised outdoor learning. In the enactment of outdoor learning, the more-than-human was harnessed in interdisciplinary ways that seemed influenced by the degree of teachers' attunement. The teachers' attunement to place was also related to their past experiences of the land and the relationships they have built up with it over time.

Finding 4 shows how teachers assembled the material, human and more-than-human elements of place into the planning of outdoor learning. The relations assembled with other learning professionals and their practices were particularly useful. In reality, the more-than-human is always available for harnessing, but across the cases, it was disclosed that other learning professionals and their practices increased the range of more-than-human relations that were assembled. Finding 4 also shows that for the enactment of outdoor learning there were opportunities for new topics and subject areas that may not have been considered before the assembling with material, human and more-than-human elements.

In summary, the research question was:

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

The research undertaken to answer this question found that:

Finding 1: The degree to which teachers harnessed the more-than-human into their teaching was influenced by their ability to notice it.

Finding 2: Teaching with the more-than-human involved paying attention to children's noticing and responses to the more-than-human.

Finding 3: Teachers' harnessing of the more-than-human in the curriculum planning and enactment of outdoor learning developed in contextualised ways through an attunement to place

Finding 4: Teachers' harnessing of the more-than-human was an assembling process that included material, discursive, human, and more-than-human elements.

In the next chapter (Chapter 5), I discuss these findings in more detail and what they mean for broader considerations of practice and understanding of more-than-human pedagogies.

Chapter 5 Discussion

Introduction

In this chapter, I discuss the four findings with reference to existing understanding and research on outdoor learning and related fields. I discuss how the findings from this study suggest considerations for educators more broadly in education in outdoor settings and more-than-human pedagogies. I use these terms in the discussion and the conclusion to show where the unique contributions of this thesis apply. I define these terms as:

Outdoor Learning: formal education outside the classroom and that which is referred to in policy terms in Scotland (Education Scotland, 2011) and other international contexts, for example, New Zealand and 'Education Outside the Classroom' (Ministry of Education, 2016).

Education in Outdoor Settings: This denotes a broader range of practices and fields such as outdoor education, environmental education, outdoor learning, education for sustainability. This terms also denotes established pedagogy in these fields that is humanist and is conceptualised within human-centric practices such as personal and social development in outdoor education (Beames et al., 2012; Christie, Beames, & Higgins, 2016; Waite, 2011b).

More-than-human Pedagogies: This term denotes teaching and learning outdoors that is not humanist. It refers to a range of outdoor pedagogy, including some place-responsive pedagogy (Mannion & Lynch, 2016), that is being conceptualised and researched where humans and the more-than-human are understood as co-extensive (Malone, Truong, & Gray, 2017; Mcphie & Clarke, 2015; Rautio, 2013a; Rautio, Hohti, Leinonen, & Tammi, 2017; Somerville, 2016; Sonu & Snaza, 2015).

I use the term 'more-than-human pedagogies' to denote a range of posthumanist informed outdoor fields that this research can contribute to the understanding of. Collectively, they work with a relational view of the subject and the more-than-human outdoors. I suggest that more-than-human pedagogies are a way of capturing a relational process of teacher + environment + task + learner. In this chapter, I consider each of the four findings in turn and show the contributions this thesis makes to the development of practice and further understanding of more-than-human pedagogies.

The contributions this thesis makes to more-than-human pedagogies can be understood within the postqualitative methodology, and commentary on research reporting, noted by Fox and Alldred (2015a). I use this discussion to report on the findings in ways Fox & Alldred (2015a;

411) suggest as "finding ways to enable lines of flight that 'produce genuinely new ways of being in the world'". The new ways of being in the world this thesis makes contribution to include: contributions to curriculum theory in a range of contexts of education in outdoor setting; the planning and design of learning in more-than-human pedagogies; areas for further research in more-than-human pedagogies.

The chapter is organised in the following ways. First, I remind the reader of the research question then I discuss each of the four findings in turn and show how they relate to research and theorising across outdoor-related fields of education. Finally, I summarise the chapter and signpost the main contributions this thesis makes.

The research question was:

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

5.1 Discussion of Finding 1

This section discusses Finding 1.

Finding 1: The degree to which teachers harnessed the more-than-human into their teaching was influenced by their ability to notice it.

During the rhizoanalysis and production of Finding 1, the Vignettes in Section 4.1 portrayed that teachers, across cases, needed to notice the more-than-human to be able to harness it. Finding 1 suggests that educator's abilities to notice the more-than-human in nuanced ways is an important feature of more-than-human pedagogies. Additionally, in this finding, teachers tended to harness the more-than-human in ways related to the prescribed curriculum. In this section, I discuss the considerations of this finding for educators in outdoor settings and more-than-human pedagogies more broadly. First, I discuss how the more-than-human educators pay attention to can extend learning beyond the needs of a prescribed curriculum. Next, I discuss how Finding 1 shows the potential to support education that could improve human-environment relations through paying attention to the more-than-human.

Empirical research in outdoor learning has already identified how it can be used to meet the needs of a prescribed curriculum. Researchers have found that outdoor learning can be used to meet the aims of a prescribed curriculum (Black, 2013; Fägerstam, 2012, 2014). For example, Fägerstam's (2014) research on outdoor learning in school grounds found that teachers

expressed a pressure to match syllabi with place. In her work, Fägerstam notes that teachers recognised that certain places would be useful for certain curricula requirements; "In the natural and social sciences, the teachers were concerned with the need to find relevant outdoor locations and materials that matched the curriculum" (2014; 73). Using outdoor learning to meet the needs of a prescribed curriculum is already a known factor in existing research that includes place.

In the analysis across the cases that produced Finding 1, it became apparent that the needs of the prescribed curriculum were strong relations that were influencing the harnessing of the more-than-human in outdoor learning. Throughout the reading of the data, and the production of Finding 1, it became apparent that outdoor learning and place could be educationally important *beyond* the prescribed curriculum. In some ways this is not new thinking. In socio-cultural views on place, outdoor learning is understood to be able to extend beyond a prescribed curriculum (Beames & Ross, 2010; Waite, 2013). Waite (2011b) describes how outdoor learning can frame education for children in ways that are not just about instrumental modes of curricula, but that are wider and world-focussed.

Finding 1 suggests that educators in outdoor settings need to be aware of how they pay attention to the more-than-human because this will influence the depth and range of any curriculum they attend to. Paying attention to the more-than-human in certain ways could be useful to educate *beyond* a prescribed curriculum where new possibilities for learning could emerge. Perhaps using the more-than-human as foci could help to open teachers' awareness to the multiplicities of place? In this section, I am particularly driven to consider how any new directions for outdoor learning beyond a prescribed curriculum could be understood by the ways the more-than-human is noticed and subsequently harnessed. Finding 1 also suggests that for education that seeks to improve human-environment relations, paying attention to the more-than-human is something educators would benefit from doing.

In the literature review, I noted how this research was a point of departure from the TiN project (Mannion et al., 2011). Empirical research using data within that project (Mannion et al., 2013) led to a definition of place-responsive pedagogy. Place-responsive pedagogy involves explicitly teaching by-means-of-an-environment with the aim of understanding and improving human-environment relations. Our argument in that empirical research was that "place-responsive teachers need to explicitly attend to the role of the places – the socio-material, contingent events, and relations between humans and other species – in their educational endeavours." (2013; 804). Finding 1 of this research suggests that an educator's ability to notice the more-than-human is an important feature of any place-responsive pedagogy. This thesis makes a distinctive contribution to understanding the practice of place-responsive pedagogy because it

has found that educators need to consider how they notice the more-than-human to be able to harness it into their teaching. In addition, that working beyond a prescribed curriculum is possible and desirable because it can inform education that can improve human-environment relations. I discuss this more deeply with an example from the data and by drawing on Jardine, Friesen and Clifford's (1997) work on a "curriculum in abundance" (*Ibid.*; xiii).

Jardine et al.'s (1997) work is useful to do this because the concept of "curriculum in abundance" connects with an understanding of curriculum through our interconnectedness to the earth and for understanding outdoor learning beyond a prescribed curriculum. Jardine et al.'s (1997) point is that we are already in a world that is abundant in terms of educational possibilities; a world rich in relations that we need to become attuned to, and resist the reduction or simplification of, in our educational endeavours. One important consequence of this understanding relates to how we might improve human-environment relations. Jardine notes, "This is the juncture where the education can become environmental in a deep sense. It can be the place where we might slow the attention and broaden our relations with the earth" (1997; 182). These authors work is predominantly theoretical, but next I discuss how Finding 1, in light of these authors ideas, has potential to develop new ways of understanding how the more-than-human may be noticed to enrich education in outdoor settings beyond a prescribed curriculum.

For example, in the analysis of the data in Vignette 2 Case 5, the needs of a prescribed mathematics curriculum dominated the enactment of outdoor learning with the more-than-human. The teacher in Vignette 2 paid attention to the more-than-human (the sticks) as units to calculate with. In contrast, Friesen, Clifford and Jardine (1997; 30) note mathematics can be understood as a "*living, breathing, contested, human discipline* [original italics] that has been handed to us". Whilst I reject the humanist framing in this quote, I see the way mathematics can be understood as being *already* part of the world, of a field of relations, as helpful in considering how outdoor learning and the more-than-human that is noticed by educators leads to education beyond a prescribed curriculum. From Friesen et al. (1997), mathematics is seen as a complex wonder in the world, not just as a series of skills and facts. The more-than-human that the teacher noticed in Case 2 did not lead to education beyond a prescribed mathematics curriculum. In comparison, there was a different level of attention paid to the more-than-human in Case 1.

In Case 1, the way in which the teacher noticed the more-than-human was more in line with a curriculum in abundance. In Case 1, Vignette 4, the teacher noticed the badger nose marks far from the sett and the vignette portrays the level of knowledge and attention this teacher has built up over time.

Nose marks. **This is really far from the sett.** (Data excerpt, Case 1 Vignette 4)

The teacher in Case 1 noticed disruption to the more-than-human being lived in the outdoor place. Her attention to these nose marks suggests that that educators can notice the more-than-human in profound ways.

The attention paid to the more-than-human by the teachers across the cases differed. For some teachers there was a deeper level of noticing the more-than-human. The significance of Finding 1 also relates to the intermingling and enmeshed view of landscape in this research. Jones (2013) uses Ingold's (2011) concept of the meshwork in his more-than-human research on landscape and notes how the presence of animals is folded into the richness of landscapes. Jones calls these ideas, "ecologies of affective dwelling" (2013; 2) and relates how these are revealed when there are disruptions to "routine meshworks" (*Ibid.*; 2). Although Jones attributes these disruptions to disease outbreaks, I see that the more-than-human that teachers noticed at times in this research, has been revealed through similar disruptions to the meshwork of the outdoor learning sites. For example, the teacher in Case 1, with her knowledge of the badger's movements, was able to notice disruptions to the more-than-human in place. These considerations suggest that Finding 1 is an important feature of education in outdoor settings and more-than-human pedagogies. Educators need to be able to pay attention to the more-than-human in detailed ways if they are going to be able to harness it.

I also see that Finding 1 could inform how education in outdoor settings could lead to improved human-environment relations. I argue this by drawing on the "common worlds" view of outdoor pedagogy in the early years (Taylor & Giugni, 2012; 108). Taylor and Giugni (2012) argue that common worlds are relational worlds which are not just about humans. Their common world position is focussed on decentering the human and challenging anthropocentric notions of place and the environment. They argue that the shift from exclusively human societies to common worlds requires attention to heterogeneous relations. These are relations that may be human, more-than-human and are not *a priori* (already fully understood or categorized). Drawing on an example in their research of a human and animal encounter, they note "a significant cross-species encounter in common worlds, such as this one, begs the question: How might we live together in heterogeneous common worlds in a way that allows difference to flourish?" (2012; 112). If educators paid attention to the more-than-human as foci for teaching outdoors, this could be a way to challenge the anthropocentric understanding of place. This then, could be a starting point for educating with difference not assigned to human dominance over the environment. Letting difference flourish in ways that resist an anthropocentric authority fosters ethical projects of learning based on the more-than-human, rather than on humans alone (Nxumalo, 2018).

Working with these ideas about difference in ecology and education within posthumanism and the more-than-human, Sonu and Snaza (2015; 260) ask, "what is it that impedes the possibility of acknowledging our entanglement with nature?" Seeking a non-anthropocentric way of understanding education and environmentalism, they tell of a writing exercise that tries to capture our co-emergence with the more-than-human. Sonu and Snaza (2015) see potential in taking the more-than-human as foci and for learners to "share freely about their experience in different kinds of communities, to write descriptively about the landscapes that abound, to think of their entanglement with human and non-human entities" (*Ibid.*; 271). Writing and thinking about our co-emergence with the more-than-human could be useful to see how education in outdoor settings can be understood to contribute to improved human-environment relations. Finding 1 contributes to our understanding of education in outdoor settings because it suggests that if we can pay attention to the more-than-human, in ways that focus on our co-implication, then we might educate in ways that could improve human-environment relations.

So far in this discussion, I have shown how the more-than-human could be useful foci for teachers to pay attention to in education in outdoor settings and more-than-human pedagogies more broadly. In addition, I argue this has educational potential beyond a prescribed curriculum. Firstly, paying attention to the more-than-human in profound ways would enable educators to consider ways of harnessing the more-than-human that have potential to improve human environment relations. Secondly, it may be useful for educators in outdoor settings to be able to re-imagine our co-emergence with the world through the more-than-human as they become foci for educational activities. In conclusion, I argue that how educators notice the more-than-human has potential to extend learning beyond a prescribed curriculum, in ways we have not fully thought of yet. In ways that hold promise for outdoor learning that "can become environmental in a deep sense" (Jardine, 1997; 182).

Davies's (2013) work is helpful to further understand this last point by Jardine. She draws on poststructuralist feminism in environmental education and the Deleuzian notion of difference. Davies draws our attention to how environmental education might look with an openness to differentiation; a pedagogy of the "not-yet-known" (2013; 483). A differentiation not based on predefined categories, but one that is based on how things *become* different and continue to *become* different (Davies, 2013). She writes that environmental education would then be about

> openness to multiple ways of being, to evolving, of being engaged in a process of differentiation that is never complete … the initial question becomes, between teachers and their students, what is this place that we are constituting with, and in relation to each other? (2013; 483)

Finding 1 supports the contribution to a deeper understanding of practice in more-than-human pedagogies because it shows that educators need to pay attention to the more-than-human if they are to be able to harness it. In addition, if they notice it in profound ways, it then this has potential to involve learning beyond a prescribed curriculum which could also potentially improve human-environment relations. This section of the discussion produces this summary statement:

More-than-human pedagogies may require educators to notice the more-than-human to be able to encourage learning beyond a prescribed curriculum.

5.2 Discussion of Finding 2

In this section I discuss the considerations of Finding 2 more broadly. In this section of the discussion, I argue that more-than-human pedagogies are derived from educators paying attention to what their learners notice. For example, in the analysis that produced Finding 2, it was found that children could notice the more-than-human differently to their teachers. This, in turn, influenced how the more-than-human was harnessed in the curriculum planning and enactment of outdoor learning. Although the research question for this study did not include the learners, they became important because of the more-than-human they paid attention to.

Finding 2 was:

Finding 2: Teaching with the more-than-human involved paying attention to children's noticing and responses to the more-than-human.

The importance of what children pay attention to outdoors was also a finding in the place-responsive research by Mannion, Fenwick, and Lynch (2013). In that research, teachers saw benefits in children being able to respond in their own ways to outdoor places. For this research, Finding 2 suggests more than this. It suggests that there is a richness to teaching and learning when educators harness the more-than human learners pay attention to in their practices of outdoor learning. In this section, I discuss how these processes could support the development of more-than-human pedagogies in the outdoors.

Foregrounding what children notice as meaningful and affective outdoors is not a new pedagogical approach in outdoor learning. In the next section (Section 5.2.1), I discuss how Finding 2 relates to child-centred approaches to pedagogy in outdoor learning and other related fields. I then go on to discuss how more-than-human pedagogies could be derived from educators paying attention to what their learners notice in Section 5.2.2. I discuss some

contributions that relate to Finding 2 from literature around outdoor child-centred pedagogy first.

5.2.1 Child-centred Pedagogy in Outdoor Learning

In this section, I discuss the significance of Finding 2 with regard to literature on child-centred pedagogy in outdoor learning and related fields. Forest School pedagogy is one field of practice where a child-led approach to pedagogy is suggested (Knight, 2011; Passy & Waite, 2011). It is underpinned by the innate motivations of children and is not driven by specific learning outcomes. In outdoor learning pedagogy, the importance of working with children's choices and desires for learning in a child-centred way are noted to be important (Beames, Higgins, & Nicol, 2012; Joyce, 2012; Waite, 2011a). In addition, Waite (2011b) posits that in outdoor learning the role of the child is seen as a partner in a co-construction of learning and meaning. Similarly, Beames et al. (2012) note that the outdoors is a multidimensional space where pupils have to respond to certain courses of action that affect themselves and others. In Demarest (2015), the teacher is seen as an agent who can encourage and facilitate students' self-direction and discovery in learning outdoors through place. These affirmations for child-centred pedagogy in outdoor learning show there is an established understanding of the importance in what children might notice outdoors.

However, Finding 2 in this study portrays a more complex picture of the practices of planning and enacting outdoor learning with a child-centred approach. Finding 2 suggests there is a richness to welcoming the more-than-human that learner's notice in outdoor learning. In posthumanist thinking on the Anthropocene and education, Somerville (2017) notes that the pedagogical power of the generative encounters outdoors with the more-than-human can be rich and transformative. She writes "it is through these relations with others that we become, and continue to become who we are" (2017; 23). Finding 2, suggests that the more-than-human learners notice can contribute to outdoor learning in powerful ways. If this is as worthwhile as this finding suggests, then there are implications for changes to educators' practice.

It is possible to understand that teachers' pedagogical approaches to outdoor learning are strongly influenced from indoor schooling and hard to change. This could influence how easily they might acknowledge and harness the more-than-human that children pay attention to outdoors. In research on teacher's pedagogical choices, teachers' practice is heavily influenced by their own experiences as learners (Berliner, 2001; Flores & Day, 2006), more-so than being informed by theoretical foundations of pedagogy (Benseman, 2013). We also know that teachers employ classroom strategies in the outdoors, rather than specific outdoor learning ones (Maynard & Waters, 2007). Additionally, Joyce critically acknowledges that, in outdoor

learning, the "outdoor space is not valued for its pedagogical opportunities for learning" (2012; 108).

These examples present a picture of teacher's outdoor learning pedagogy that seems strongly influenced by indoor schooling and that does not take enough account of the pedagogical opportunities of the outdoors. For any enriched outdoor learning, being child-centred in our pedagogical intentions may not be enough. Finding 2 suggests that the more-than-human that leaners pay attention to are important ingredients in outdoor learning that could be enriched beyond the needs of a prescribed curriculum.

5.2.2 More-than-human Pedagogies

Finding 2 also suggests that how children notice the more-than-human has potential for them to be active curriculum agents and to contribute to the development of more-than-human pedagogies. Research from humanist positions in education in outdoor settings offers some worthwhile contributions to this argument. For example, in research on curriculum planning and enactment within a socio-cultural view of place in primary school geography, Catling (2013) argues for taking more account of the world children notice. Catling draws on Mitchell's (2009) work of pupils' 'living geographies' and how these should be taken seriously in trying to energise geography in the curriculum and ground it in real life situations. Catling's (2013), research found that children are recognised as being able to change and develop curricula as "*active curriculum agents* [original italics]" (*Ibid.*; 439).

In place-responsive writing there is acknowledgement of the pedagogical importance of how children notice the outdoors. Wattchow and Brown (2011) argue that educators should notice outdoor places as a child does. These authors argue that this is about developing a "reciprocity to place" (2011; 183). Reciprocity to place is one key signpost of four in their declared 'new' pedagogy of place, "The first step in developing reciprocity with a place involves re-engaging with a way of being in the world that perhaps, as adults, we have forgotten, fail to value, or have learned to treat with suspicion" (2011; 183). Similarly, in a New Zealand study (Cosgriff, 2016), children were involved in a place-responsive project to deepen connections to local places. Cosgriff (2016; 9) alludes to the importance of including students' responses to places in outdoor learning. She notes:

> Engaging students in curriculum design decisions and responsively attending to learning opportunities that arose 'in situ' at the time, generated an engagement and curiosity in students … Furthermore, unanticipated spin-offs arose for teachers themselves from the embracing of inquiry.

These examples, from geography to place-responsive pedagogy, concur with Finding 2 that there is value in harnessing what children notice through place in teaching and learning outdoors. These examples are dominantly humanistic, however. Next in this discussion, I show how posthumanist and new materialist thought informs understanding of Finding 2 for more-than-human pedagogies. In addition, I suggest ways in which more-than-human pedagogies might support education that improves human-environment relations.

The findings in this study suggest that more-than-human pedagogies are derived from what learners pay attention to. Paying attention to learners in early years education using new materialism (Taylor & Giugni, 2012; Taylor & Pacini-Ketchabaw, 2015) informs the 'common worlds' perspective. In this, pedagogy is understood as children *plus* relations. For example, thinking about children and forests in terms of a decentred human, these authors note:

> What matters is the constant co-shaping that takes place and the messiness that these collaborations bring to forest pedagogies. Through these collaborations and co-shapings, we and the forest share complex histories and presents, making all of us vulnerable as we build toward implicated, messy futures. (Pacini-Ketchabaw, 2013; 362)

In this quote, I read that what children pay attention to outdoors is part of a co-shaping of place and pedagogy; children are caught up in the messy production of pedagogies outdoors. The common worlds researchers focus their work on early years but Finding 2 in this study suggests that learners of other ages can play an important role, too.

Considering Finding 2 with the 'common worlds' perspective can inform how outdoor learning, and more-than-human pedagogies might contribute to improved human-environment relations, Rooney's (2018) work is useful here. Working within a 'common worlds' perspective, Rooney conducted walking ethnographic research with early years and the more-than-human to help shape a new environmental pedagogy attuned to the material and learning with other species. Rooney draws on Harraway's (2016) work, who argues that we need to slow down any response to issues such as climate change. This helps us resist finding a quick fix. Instead, we need to "stay with the trouble" (Harraway, 2016; 2). By walking with the weather, in a slow manner, Rooney found that children can become aware of the intertwining of themselves with the weather and the world. She writes; "These every-day moments invoke an affective response in the children's bodies in a way that suggests an intricate entanglement with the work of weathering" (2018; 8). Rooney's work identified that early years children's bodies are a site of affective responses to an intertwined world.

Finding 2 suggests there is potential to harness how learners of other ages can be attuned to the intertwining of the world in similar ways. Finding 2 suggests that the more-than-human which

learners pay attention to are important ingredients in more-than-human pedagogies. There are possibilities to improve human-environment relations in more-than-human pedagogies that are derived, in part, from what more-than-human the learners pay attention to.

In similar ways, Finding 2 resonates with the work of Duhn (2012b) and Rautio (2013a), who both decentre the human in environmental education. Duhn (2012b) argues that, to foster an ethic of care for the planet and human-environment relations, it requires that adults challenge how they understand childhood and enable children to take a fuller part in issues that affect their current and future lives. Paying attention to the more-than-human children notice, has potential to do this. In line with this thinking, Rautio notes:

> Rather than worrying over teachable contents and curricula, we could cherish some of the ways in which children already make themselves available to their material surroundings – such as humanizing everything around them. We would do well to appreciate also the momentary and the seemingly unguided in education. We would need to trust that some of the interaction between children and the world, seemingly irrational and mostly un-reflected, has educational value. (2013a; 455)

This quote identifies the importance of the way children can make themselves available to the material and more-than-human in education. Finding 2 suggests how children notice the more-than-human is important for any more-than-human pedagogy.

In this section, I have discussed how harnessing the more-than-human children pay attention to are useful for the development of more-than-human pedagogies such as outdoor learning. I have discussed how humanist expressions of outdoor learning acknowledge the value of child-led pedagogy. However, across the cases in this study it was found that child-led pedagogy was not common, nor fully embraced. I have discussed how children's noticing of place can impinge on curriculum in significant ways such as place-responsive pedagogy. These ways can shape some understanding around place that adults are not aware of.

Drawing upon new materialism and posthumanism, I have discussed how understanding children and the world as intertwined can help to create more-than-human pedagogies. Children's awareness of the intertwining of the more-than-human world offers chances to slow pedagogy down and resist choosing quick solutions to problems like climate change. In addition, children's bodies are important sites of affective responses to encounters with the more-than-human world. To accommodate these features in pedagogy will require different approaches to curriculum planning.

Finding 2 makes a unique contribution to curriculum planning in more-than-human pedagogies in the recognition that learners noticing of the more-than-human needs to be part of any planning process. For example, planning curricula in outdoor learning may require educators to

work less with predefined learning outcomes and more on hunches, ideas, suggestions or hints to where rich more-than-human encounters may exist outdoors and how to welcome them with children. In addition, planning will need to accommodate an unfolding world that includes many actors, not all of which are human. There are calls for environmental education and education for sustainability to be conceptualised along these new materialist lines (Mcphie & Clarke, 2015; Rotas, 2015). If we do this then perhaps we will achieve in practice what Clarke and Mcphie (2016; 21) ask for in theory when they note:

> These ways of seeing eschew dualisms of nature/culture and subject/object and, we claim, may directly result in actions of care, judgement and sensitivity to the flux of the world.

This thesis contributes to the challenge that Clarke and Mcphie (2016) pose, but the findings have been derived from empirical data.

In this section of the discussion, I argue for how the more-than-human that learners notice can encourage a co-shaping of pedagogies and place. This in turn can contribute to education that could improve human-environment relations and could enrich outdoor learning in new ways. In addition, I have discussed how harnessing the more-than-human learners pay attention to can inform the planning of outdoor learning and the derivation of more-than-human pedagogies. I argue that any planning of learning will need to include strategies that can welcome the more-than-human learners notice and be able to work with them in useful ways. This thesis contributes to curriculum planning in more-than-human pedagogies by showing the importance of harnessing the more-than-human that learners notice. This section of the discussion produced this summary statement:

More-than-human pedagogies are derived in part from what educators' notice and respond to in the environment and what their learners attend to and respond to.

5.3 Discussion of Finding 3

In this section, I discuss how Finding 3 suggests that more-than-human pedagogies are derived from an ongoing attunement to socio-material, human, and more-than-human practices and processes found in places. I first discuss the role of the body in developing attunement then consider how new materialism can inform an understanding of attunement as a material and discursive process. I do this by discussing attunement in more-than-human pedagogies with reference to place-responsiveness (Mannion, Fenwick, & Lynch, 2013; Wattchow & Brown, 2011) and Ellsworth's (2005) pedagogies of sensation. Drawing on Ingold's work (2010; 2013),

I then discuss how attunement to the more-than-human through practices could be understood as a crafting process.

Finding 3 was:

Finding 3: Teachers' harnessing of the more-than-human in the curriculum planning and enactment of outdoor learning developed in contextualised ways through an attunement to place.

Finding 3 concurs with some existing theorisation and research on place and attunement. The importance of educators developing an attunement to place is identified in place-responsive writing. When Cameron (2003b) educates in a place-responsive way, he notes the importance of spending time in places, making repeat visits and undertaking multi-day field trips to deepen the person-place relationship. Relatedly, the idea of apprenticing ourselves to place is put forth by Wattchow and Brown (2011), who note this is a key 'signpost' in place and pedagogy. Using practitioner case studies, Wattchow and Brown (2011) draw on Merleau-Ponty (2002) and phenomenology to portray the importance of experiencing place through the body for place-responsive pedagogy. They note: "A place-responsive pedagogy would require us to become more reliant on local places and peoples, to study a place's history and ecologies, and constantly couple this with experiencing places through our bodies" (Wattchow & Brown, 2011; 192). These established ways of understanding the importance of being attuned to place concur with Finding 3. They do not attend to the socio-material practices of more-than-human pedagogies however.

In this discussion, I argue that more-than-human pedagogies, such as place-responsive education, require attunement to socio-material, human and more-than-human practices. To do this I first turn to Ellsworth's (2005) work on pedagogies of sensation. Her work draws on sources from new pragmatism, and Deleuze, to understand pedagogy and the learning self. Ellsworth understands the self as decentred, that pedagogy is multiple, and that learning emerges in the transitions and changes to self that result.

Finding 3 suggests that educator's development of attunement to place is borne out of socio-material, human and more-than-human practices and processes found in places. These include movement in place and making repeat visits to outdoor learning sites. Ellsworth's concept of "sensational pedagogy" (2005; 27) is particularly useful in understanding the process of developing attunement from the practices of movement in place and repeat visits. By using Deleuzian concepts, Ellsworth foregrounds the importance of movement and sensation in the production of understanding and meaning. Ellsworth notes: "Such pedagogies do not address us

as having bodies but rather address us *as bodies* whose movement and sensations are crucial to our understandings" (2005; 27). For this study, I see that as teachers move through places, walking and making repeat visits, they are bodies intertwined with other bodies; the more-than-human in place. The teacher's attunement to place can be understood to develop through these movements of bodies, changes to self, and understandings that are produced.

For example, in Vignette 10, "The Smuggler's Trail and the Shaded Forest" (page 139), the teacher's pedagogy changed as a result of their movements in place with the more-than-human. Drawing on pedagogies of sensation, I argue that in Vignette 10, that pedagogy and *the self* were "made rather than foreseen" (Ellsworth, 2005; 35). In other words, more-than-human pedagogy involves the changes to self that might come about through movement in places with the more-than-human. Vignette 10 portrays a pedagogy that was *not* foreseen beforehand, it was made through the educator's participation in human and more-than-human practices. In terms of planning with this knowledge, we cannot know what of ourselves or pedagogy we will include in advance. What we can do, Ellsworth suggests, "we can attempt to bring them into existence" (2005; 35). Therefore, more-than-human pedagogy will likely require diverse ways of planning that are more open to changes in self through encounters with place and the more-than-human.

Finding 3 suggests that, as teachers walk and make repeat visits to outdoor places, they are involved in an ongoing attunement to socio-material, human and more-than-human practices. Educators' attunement to these practices and processes in places help to develop understanding of the more-than-human and how it might be harnessed. This thesis makes a contribution to the understanding of curriculum planning and enactment of outdoor learning in that it identifies the importance of attunement to the changes in self that will occur. This has implications for more-than-human pedagogy in that educators will need to welcome and accommodate any changes in themselves as they develop attunement to place.

I now discuss the way Finding 3 informs how attunement can be understood with attention to the material and in-depth ecological knowledge. I also suggest that more-than-human pedagogies can be understood as a crafting process.

5.3.1 More-than-human Pedagogies as a Crafting Process

In this section, I discuss how Finding 3 has considerations more broadly for more-than-human pedagogies and educators in outdoor settings. I do this by discussing attunement to the more-than-human from posthumanist and new materialist perspectives. In doing so, I acknowledge that there is need to be able to work with the more-than-human in responsive ways; as co-ingredients. For example, some posthumanist research in education portrays the importance of the more-than-human as co-ingredients of learning. Taylor et al. (2012) note their research

explored ‘chooks’(chickens) in the classroom with posthumanist thought. They noted how “These non-human others produce their own worlds in relation to a wider worldly web of multiple beings and becomings, including us” (2012; 56). The chooks and their vitality were more than just objects in the classroom, as co-ingredients the chooks demanded that the learning *occurred with,* and not about them. These researchers argue for understanding this approach to learning as

> a move away from the sort of curriculum that would have autonomous individual children learn about things, to one that emphasises multidirectional human/non-human relationships, the need to acknowledge our shared response-abilities and learning with all of the others in our more-than-human worlds. (2012; 60)

Teachers in this study have shown similar considerations to the companion species curriculum noted by Taylor et al. (2012) in how they saw the more-than-human as co-ingredients in teaching outdoors. How might this be understood in the development of more-than-human pedagogies? In the next section I argue that being attuned to the more-than-human through socio-material, human and more-than-human practices could develop more-than-human pedagogies in practice.

Considering the role of attunement in more-than-human pedagogies and being inspired by Ingold (2010, 2013), I argue that curriculum planning and enactment with attunement to the more-than-human could be compared to that of an artisan working with physical materials. For example, a woodworker or basket weaver producing an artefact is a process of crafting developed via a sense of how to respond to materials in a unified relational field; a meshwork (Ingold, 2010). In this study, Finding 3 suggests similar forces at work in teachers’ curriculum planning and enactment with an attunement to the more-than-human.

Drawing on new materialism allows us to consider outdoor learning, and curriculum planning and enactment, as a crafting process. Just like an artisan working with materials, educators could benefit from intimately knowing the more-than-human. Within new materialism, the matter-discursive threshold is neither unified nor distinct, and matter can therefore be as important to meaning-making as discourses (Braidotti, 2013; Coole & Frost, 2015). Ingold (2013) draws on Barad’s (2007) work when he acknowledges her thinking in his ideas around how we develop knowledge about the world because we are *of* the world, not separated from it. Drawing on Ingold’s work, I will argue that developing more-than-human pedagogies requires an attunement to socio-material practices. With these ideas, any curriculum planning and enactment would require becoming attuned in a very material sense.

Ingold puts forth compelling arguments that show how making and knowledge are intertwined with our immersion in the environment (2013). Ingold sees the development of craft knowledge as a traditional form of ecological knowledge that is intertwined with an environment (2004). Although he talks about this in respect to indigenous cultures, I argue there are similar forces at work for teachers who are becoming attuned to places through socio-material practices. Ingold contrasts two forms of knowledge; one passed down through generations and bound with rules and conventions, and the second where the environment plays a constituting role. For my argument around crafting, it is the latter in which I am more interested in.

Ingold argues that this knowledge is not in our heads per se, but in the environment. He notes that it is generated and regenerated through skilled and practical involvement with the environment. He notes, "it lies in the mutually constitutive engagement between persons and environment in the ordinary business of life" (2004; 307). What is also key for Ingold is that this knowledge never stops changing; it is always building. It is a growth, a "growth of persons, in the context of their relations with one another and with the environment" (*Ibid.*; 308). This analogy of crafting helps to understand the kinds of attunement to the more-than-human that are possible through socio-material practices.

Finding 3 suggests that more-than-human pedagogies could be thought of as a crafting process developed through skilled, practical, and material attunement to the more-than-human. This thesis contributes to understanding how more-than-human pedagogies are derived by the need to attend to socio-material, human, and more-than-human practices in outdoor places. Ingold, and new materialists, view the ontological and epistemological situation as where we are of the world and not separate from it. As a result, understanding curriculum making as crafting is one solution to the concerns of representation in education in outdoor settings and more-than-human pedagogies. Because we cannot be removed from the world and our knowledge of it, a range of options open to us for curriculum making outdoors will be constrained, constrained because we have no choice but to work with the materials of the world in ways we cannot be removed from. In other words, designing and planning more-than-human pedagogy in practice is purposefully informed by the idea of crafting because only certain ways of working with the ontological situation are available to us.

In this section, I have shown how Finding 3 suggests more-than-human pedagogies are developed with being attuned to socio-material practices of movement in places and paying attention to the material and ecological contexts. This process of crafting, that deliberately attends to the material and situated nature of ongoing attunement to the more-than-human, is one of the options open to us if we agree with the new materialist view of the ontological and epistemological situation. This section has produced the summary statement of:

More-than-human pedagogies are in part derived from educators' ongoing attunement to socio-material, human, and more-than-human practises and processes found in places.

5.4 Discussion of Finding 4

In this section, I discuss how more-than-human pedagogies are assembled in collaboration with humans and the non-human. This section of the discussion draws on Finding 4, which was:

Finding 4: Teachers' harnessing of the more-than-human was an assembling process that included material, discursive, human, and more-than-human elements.

In this section, I discuss the challenges of working with the other adults and learning professionals who were assembled with the more-than-human in Finding 4. I go on to show how they can be understood as important through the assembling that can occur with the more-than-human relations of their practices. I then discuss how Finding 4 suggests there are key roles for the more-than-human in curriculum making, especially as these can inform how we understand more-than-human pedagogies that support education in rich ways beyond a prescribed curriculum. I end this section with a discussion on the contribution this thesis makes to curriculum theory in more-than-human pedagogies. I show how Finding 4 suggests that an integrated model of curriculum (Jardine et al., 1997) helps to inform more-than-human pedagogies within a world we are co-emergent with. I also suggest how assembling more-than-human relations might inform education in ways that could lead to improved human-environment relations.

In Finding 4, the way in which teachers harnessed the more-than-human by assembling material, discursive, human, and more-than-human elements seemed to offer possibilities to enrich outdoor learning. Across all the cases, the involvement of other learning professionals, or knowledgeable adults, played a nuanced role in any assembling with the more-than-human. In the analysis of the data that produced Finding 4, it was noted that other learning professionals, or knowledgeable adults, *and their practices* were important in the more-than-human that was being assembled in the outdoor learning. The role of these humans in the assembling process was challenging for me to understand. The involvement of other adults and learning professionals were dominant relations that surfaced in the data, and as I considered this data in the early stages of analysis I feared I was focussing on the humanistic dimensions. Throughout the rhizoanalysis I sought to remain concerned with the more-than-human that was assembled in the curriculum planning and enactment. I wanted to resist the temptation to understand the

learning professionals as having sole agency in bringing more-than-human relations into the outdoor learning.

In similar ways to Nxumalo (2018), I found working with the more-than-human data difficult. Her work in early childhood research and the more-than-human notes the challenges around how to express the pedagogical encounters of human and the more-than-human. She writes "I am continually challenged to seek ways to describe these pedagogical encounters in ways that centre both human and more-than-humans as active" (2018; 158). What helped me was to see that the other learning professionals and *their practices* were part of an assemblage with the more-than-human, and that agency was distributed. This view of the human is reflected by Sonu and Snaza (2015). In posthumanist thought in education for improved human-environment relations, Sonu and Snaza argue for not "abandoning a concern with the human, but instead [requires us] to think of the human as the result of ontological entanglements with a multiplicity of nonhumans and their agencies" (2015; 262). In this discussion, this quote is useful because it helps us to understand how the humans in the data were seen as part of the greater set of relations of the more-than-human. Next, I discuss how existing ideas for including other learning professionals in pedagogy in outdoor learning have been conceptualised from a humanist position. I then discuss the considerations for educators that Finding 4 poses: that outdoor learning and more-than-human pedagogies can be enriched when we understand it within process of assembling with the more-than-human.

In socio-constructivist approaches to outdoor learning practice the role of other learning professionals is seen as important. Peacock (2011; 197) refers to adults who are not the class teacher but involved in outdoor learning as "learning professionals", for example, someone employed in an educational capacity such as a ranger. Peacock (2011) notes how these learning professionals are able to access knowledge and practices that extend into the real world of research and enterprise which are not always available in schools alone. They act as a bridge between the different learning communities of a school and other places such as a national park. Understanding the rich contributions to outdoor learning that can come from sources outside the school is an example of a relational view of outdoor learning and place (Waite, 2011a), where the child, others, place and communities combine in pedagogical terms. Finding 4 suggests that, in this research, this was also the case. The other learning professionals and their practices were able to enrich outdoor learning through the topics and knowledge around the more-than-human they were part of.

Finding 4 also suggests that humans alone are not the only relations of importance in any more-than-human pedagogy. Whilst other adults or learning professionals were seen to be important in the analysis of the data, in Section 4.4 there were also material and discursive aspects of note,

too. Finding 4 confirms the work of researchers who take a less humanist position on the importance of other adults in outdoor learning and who draw on postcolonial and poststructural theory to inform our understanding of their role. For example, the materiality of school grounds, and places beyond schools, was an important finding of Green and Somerville's (2015) work on sustainability education and place. These authors noted how sustainability education was informed by the coming together of "teachers, students, and generations who engage with the materiality of local places" (2015; 840). In other writing, Somerville and Green (2011) identify community educators as place-makers. Through their vocational callings they can play strong roles in the understanding and meaning making of places. Somerville and Green (2011) note that other adults can enrich outdoor learning through being "diverse communities of knowledge" (2011; 29). Their work identified community members as contributing to "alternative ways of understanding the nuances of nearby places through a vast array of local community people who bring their own local knowledges of place to the learning table" (*Ibid.*; 29). These research projects found that other adults can play important roles in outdoor learning that involve the material, the narrative components of place, and place environmental knowledge. In the sections that follow I consider the importance of the material and non-human aspects of place and the processes of assembling in views of curricula for outdoor learning and more-than-human pedagogies more broadly. To do this I discuss models of integrated and interdisciplinary curricula.

There is some appeal to considering an interdisciplinary curriculum, one that draws on many subjects across a range of disciplines (Helmane & Briska, 2017). This can be purposeful to reconceptualise science education (Gray & Colucci-Gray, 2014) and outdoor education (Takano, Higgins, & McLaughlin, 2009) in ways to address environmental concerns. However, I see that being interdisciplinary is still working with categories and boundaries of a prescribed curriculum. Because of this I rejected it for further discussion in this thesis. Instead, I consider the idea of an integrated curriculum.

An integrated curricula is concerned with a holism and relevance to the real world (Fraser, Aitken, & Whyte, 2013). Rennie, Venville, and Wallace (2012) note that there are many ideas as to what an integrated curriculum is, but the general agreement is that "integration means whatever someone decides it to mean as long as there is a 'connection' between previously separated content areas and/or skill areas" (2012; 1). Rennie et al. (2012) suggest an integration of curricula is concerned with "a holistic view of knowledge, grounded in students' experiences, relationships and contexts" (2012; 99), what they call a "worldly perspective" (*Ibid.*; 99). Their version of curriculum integration identifies the importance of locality for linking to global concerns. In their research, they found that science tended to dominate

integration in practice, and gaps were noted in the integration of knowledge from social, ecological and political domains. Whilst these authors acknowledge how place-based education can be a useful way of integrating a curriculum, their worldly perspective takes an impoverished view of place and the more-than-human. Instead, I argue that Jardine et al.'s (1997) ideas around integration are more useful.

Jardine et al. (1997), argue that we should acknowledge the already abundant world we live in as an integrated curriculum. In other words, the *world* is already integrated in an abundant world of relations. We cannot impose an external integrated curriculum onto it. Jardine and his co-authors' views on integration are a departure from discipline-centred approaches. The concept of abundance informs how we might imagine a rich curriculum for outdoor learning that more fully accepts the assembling with the more-than-human world. Jardine sees any integrated curriculum as "an expression of the already existing interconnectedness of things themselves" (1997; 172). As a result, more-than-human pedagogies can be understood as assembling human and non-human aspects of an already integrated and intertwined world. This has implications for planning and designing more-than-human pedagogies.

Finding 4 of this study identified that when educators work with forces of assembling in more-than-human pedagogy, rich education beyond a prescribed curriculum can occur. This finding suggests that integrated curricula, such as 'curriculum in abundance', are useful conceptual tools to understand how such assembling might be informed in practice. In addition, Finding 4 suggests that other adults bring important more-than-human relations into any assembling process in more-than-human pedagogies. If we see these other learning professionals, and their practices, as 'bodies' that can do certain things within assemblages of learning, how do we welcome these capacities and relations into planning? Especially those capacities of the more-than-human? Quinn (2013) describes the educational implications of an assembled, or posthuman, view well when she writes:

> One of the strengths of a post-human perspective is that it reveals the interconnectedness of all matter, so that the project of learning becomes not what distinguishes me from all that is around me and makes me superior to it, but what makes me part of it. (Quinn, 2013)

I see that working with an assembled view of the more-than-human, using curriculum in abundance within outdoor learning, is a way to foster this appreciation.

The implications of working with relations assembled by other community members is powerful for human-environment relations. Duhn (2012b) identifies the success of developing pedagogy of place in early years education with a focus on ecological sustainability when

communities and educators get intertwined. In particular, some teachers notice place as a complex assemblage of the material and discursive. She calls on us to challenge the romanticised notion of children and the dichotomy of nature and culture. Duhn (2012b) argues that education with place seen as an assemblage is enriched through the community members.

This co-extensive situation is noted by Sonu and Snaza (2015). They discuss how posthumanist educators could re-imagine environmental education with a less anthropocentric view of ecology and suggest a useful way of appreciating the human in this. For them, education is about seeing humans as part of our entanglement *with the more-than-human.* These authors note:

> We need to figure out how to educate in ways that attune to the human as entangled with the more-than-human without hypostatizing "the human" as if it were separate or separable. (Sonu and Snaza, 2015; 262)

These views on posthumanist environmental education and education for sustainability show the potential for improved human-environment relations within such assembled and integrated views of the more-than-human pedagogy I have suggested. This is another contribution this thesis makes to the field of environmental education in that there is potential for assembling the more-than-human within integrated views of curricula to improve human-environment relations. This is an area that would benefit from further research.

In this section of the discussion, I have noted the importance of other learning professionals and their practices in understanding how the more-than-human can get assembled in outdoor learning. I have discussed contributions to this from humanist and new materialist positions. In the pursuit of understanding a model of curricula that fits with an assembled view I discussed how integration is useful, especially the 'curriculum in abundance' concept from Jardine et al. (1997). I noted that the 'availability' of any more-than-human relations were not governed by humans alone, but through the *assemblage* of humans, their practices and the more-than-human. This shift in focus towards the assemblage in outdoor learning and environmental education research is receiving attention (Clarke, 2017; Clarke & Mcphie, 2014; Somerville, 2017). *Yet, how it could be accommodated in practice* is not well understood. This thesis contributes to this understanding in that more-than-human pedagogies are assembled with multiple relations of human, non-human, material and discursive kinds: that other adults/learning professionals and their practices are important ingredients in this assembling.

In new materialist and posthuman orientations to outdoor learning and environmental education the 'human' is not a solid category or bounded subject. A new materialist frame allows us to playfully understand the relations brought through experts and community members as

assembled capacities. Perhaps it is the becoming-with these new relations and the more-than-human that is important in a view of curriculum planning for improved human-environment relations? For this research, I see that the more-than-human relations that are entwined with any assembling of other adults or learning professionals and their practices, are worth harnessing into more-than-human pedagogies. This discussion has produced the summary statement:

More-than-human pedagogies are made possible through coalescences with humans and the more-than-human.

5.5 Summary

In this chapter, I have discussed the four findings in turn and argued that they inform more-than-human pedagogies in important ways. Finding 1 suggests the more-than-human that educators pay attention to can usefully inform any planning and enactment in education in outdoor settings. In addition, Finding 1 suggests that educators need to be aware of how they pay attention to the more-than-human because this will influence the depth and range of the curriculum they work with. I discussed how Finding 1 suggests how educators pay attention to the more-than-human could be a way of understanding difference in non-athropocentic ways. The attention to difference in such ways can also extend learning beyond a prescribed curriculum. In summary, Finding 1 supports the contribution to a deeper understanding of practice in more-than-human pedagogies because it shows that educators need to pay attention to the more-than-human if they are to be able to harness it. In addition, if they notice it in profound ways, there is potential to educate beyond a prescribed curriculum which could also potentially improve human-environment relations. The summary of this section can be captured in the statement:

More-than-human pedagogies may require educators to notice the more-than-human to be able to encourage learning beyond a prescribed curriculum.

Although child-centred pedagogy is relatively dominant in outdoor learning literature, Finding 2 suggests that letting children direct learning outdoors can be overpowered by the needs of a prescribed curriculum. I discussed how children's noticing of the more-than-human can impinge on curriculum planning and enactment in significant ways such as in place-responsive pedagogy. For example, the more-than-human that learners notice can shape some understanding around place that adults are not aware of. Drawing on posthumanist and new materialist thought, I argued that we can understand children and the more-than-human as co-emergent. If we do so, this informs more-than-human pedagogies in important ways. I have argued that this thesis contributes to curriculum planning in more-than-human pedagogies

through the recognition that learners noticing of the more-than-human needs to be part of any planning process. As a result, planning teaching and learning within more-than-human pedagogies will require educators to work less with predefined learning outcomes and more with the more-than-human encounters learners are part of. This will require certain competencies around planning and designing more-than-human pedagogy, for which I suggest further considerations in the next chapter. The summary of this section can be captured in the statement:

More-than-human pedagogies are derived in part from what educators' notice and respond to in the environment and what their learners attend to and respond to.

Finding 3 suggests the importance of attunement to place through socio-material practices and spending times outdoors in the development of more-than-human pedagogies. I have argued that more-than-human pedagogy is informed by the changes to self that come about through movement and attunement to the more-than-human in outdoor places. This is a contribution that this thesis makes to the design and planning of learning in any more-than-human pedagogy, in that attunement to place through socio-material practices is a key feature that needs to be attended to. I suggest that this could be understood as a process of crafting through skilled, practical, and material attunement to the more-than-human. This is potentially, a useful contribution to the development of more-than-human pedagogy because of the ontological and epistemological situation is one where we are of the world and not separate from it. As a result, designing and planning more-than-human pedagogy in practice is purposefully informed by the idea of crafting because only certain ways of working with the ontological situation are available to us. The summary of this section can be captured in the following statement:

More-than-human pedagogies are in part derived from educators' ongoing attunement to socio-material, human, and more-than-human practises and processes found in places.

Finding 4 suggests that more-than-human pedagogies can be derived from assembling with human and non-human aspects. Of particular interest is how the more-than-human relations that other adults, or learning professionals, bring to any assembling of learning inform the development of more-than-human pedagogies. Finding 4 also highlights the important more-than-human relations that other adults and their practices make available in education in outdoor settings and that these can extend learning beyond a prescribed curriculum. In conclusion, I draw on Jardine et al.'s (1997) view of an integrated curriculum to argue that 'curriculum in abundance' is a useful conceptual tool to understand how such assembling might be informed in practice. Another contribution this thesis makes to the field of environmental education is that there is potential for assembling the more-than-human within integrated views

of curricula to improve human-environment relations. This is an area that would benefit from further research. The summary of this section can be captured in the following statement:

More-than-human pedagogies are made possible through coalescences with humans and the more-than-human.

Chapter 6 Conclusion and Implications

> Everything is 'field work', so every task (punctuation, right angled triangles, gardening, sled design (see the galileo site) [*sic*], outdoor explorations, designing the playground, historical maps of small towns) is 'ecological' in this sense. This is why I have veered away from environmental education, because it takes 'the environment' too literally as an object of science education. We've suggested, with the idea of abundance, that education itself is environmental — working in living fields, whether the local marsh or the work of Van Gogh. (David Jardine, personal communication)

During the rhizoanalysis, I had contacted David Jardine by email because his work on curriculum of abundance was making sense to my understanding of the data. His comments in the above quote on how environmental education is overly concerned with science really resonated with me throughout the writing of the thesis. This view of focussing less on subject boundaries such as science and more on abundance really struck me as I started to consider the implications of the findings. I felt that it really represented the importance of viewing the ontological situation as one where we are always and already, intertwined with everything in the meshwork (Ingold, 2010).

David Jardine's comments really resonated with me and the aims of this research that I outlined in the introduction. In the introduction, I noted that I wanted to further understand how outdoor learning could be a rich educational activity that extended beyond learning aims or prescribed curricula. By focussing on the relational aspects of place and the more-than-human, this research has made some key findings that will inform various dimensions of more-than-human pedagogies in terms of practice and further research. As I noted in the discussion, Jardine's comments on curricula (Jardine et al., 1997) foreground the importance of being attuned to the abundance that already exists in the world. It is about treating teachers' and pupils' questions "as abundant" (1997; 10) and allowing learning to emerge in the ongoing, questioning, and understanding that such complexity generates.

In this study, I became aware that some of the teachers understood place and the outdoors as something we are separate from. As I have noted throughout this research, I see that place can never be just a 'backdrop' pedagogically. The world is full of abundant meaning that can link us to the earth and the co-implication of any human-environment relations. One key contribution this thesis makes to the fields of education in outdoor settings is set within a certain understanding of the ontological situation. If we see ourselves as not separate from the world but as relationally co-implicated, then pedagogy can be enriched, but requires certain competencies and strategies towards the design and conceptualisation of it.

The attention to the ontological situation was a central feature of this research and was key to the methodology design. The postqualitative approach to methodology and methods in this research enabled the collection of data on the material and discursive aspects of place and the more-than-human. Performing a rhizoanalysis with the data, produced findings that were not reliant on an objective view of the world and gave room for the more-than-human to be considered and analysed. This research produced findings that contribute to the growing field of new materialism and more-than-human pedagogies. This thesis contributes to the empirical research in these fields by concurring with, and providing new insights, to theorisations about educating with the more-than-human dimensions of place (Mannion & Lynch, 2016; Mcphie & Clarke, 2015; Ross & Mannion, 2012). The need to work with the human as decentred was challenging and often I felt like I was working across the boundary of what was known and what could be known.

6.1 Limitations of the Research

There are several limitations in this research that are important to note. Firstly, the research did not seek any views or data from the learners. These could have contributed to the findings in significant ways. The learners' experiences could have added more clarity on curriculum making with the more-than-human by knowing what was learnt and what was not. As it was, the process of data collection with attention to the more-than-human in place through walking interviews and the material aspects collected in the memory box, were time consuming methods. To include learner's views would have broadened the study in unhelpful ways.

Secondly, by focussing on methods that elicited place sensitive and material data, I have excluded data that could have informed this research. Methodologically, I have paid attention to the mobile and material in the data around the more-than-human. Focussing on the mobile and material data through the choice of the walking interview method will have excluded data that was not on the move (Spinney, 2015). There are also data that would have been useful to collect that were not; these include data on teachers planning over time as well as more data on the range of practices around planning they used. In the research, there were data that suggested teachers developed a disposition to place-responsive outdoor learning over time, but this too has not been further explored.

Methodologically, there are other limitations to note. In general terms, the postqualitative methodology used in this research has included me as the researcher in deliberate ways. I have sought to do what Koro-Ljungberg and MacLure (2013) argue for by re-thinking how we create and use data in postqualitative research. They argue that we need to "imagine more complex, creative, and critical engagements with data" (2013; 219). I have attempted to do this through

the rhizoanalysis and the vignettes but in doing so I am aware of my role in the processes of being affected and affecting in the rhizoanalytical tools. Whilst this could be seen as a bias in more conventional research approaches, I have sought to minimise my judgments by portraying the vignettes and their production in transparent ways to encourage the reader to see my conclusions as plausible.

New materialist expressions of postqualitative research have come in for recent critique. For example, Rekret (2016) sees new materialist theories failing to acknowledge the ethics around the entanglements we form as human and non-human entities. If we become assembled, or entangled, with the more-than-human we could do so in ways that oppress or marginalise others. Similarly, Brunning argues that what should be included in our concern is the "purpose and whose interests specific kinds of materialisations serve" (2016; 36). In this research, I could have paid more attention to these ethical concerns in the consideration of the assemblages I came into formation with.

Part of this ethical problem is the way that new materialist researchers handle the agency of matter and the human in the formation of assemblages. For example, Petersen (2018) argues that Banjeree and Blaise (2013) go too far in how they see material data as 'finding them' and as a result fail to address the wider conditions around how the material was part of any intertwining. Petersen argues that researchers using new materialism must acknowledge how they affect the data as they work with it.

In this research, I sought to address these concerns in the vignettes by showing how the data affected me and how I affected the data. I sought to portray the vignettes in ways that showed these affective changes and how they produced new ways of thinking and being in the world. Coleman and Ringrose (2013) identify this ethical problem in their discussion of Deleuze and research methodologies. They argue that what emerges is an ethics based on immanence "which resides within (rather than above or outside) matter and practice, and which seeks to evaluate relations as they emerge, rather than judge them *a-priori*" (2014; 11). In the vignettes I tried to deal with relations as they emerged in my reading of the data and the affects that were produced in me. For example, the lack of biodiversity noticed in Vignette 1 could be seen as relations of land management practices that hinder biodiversity in farm woodland planning. Space in the thesis did not permit fuller explorations of such issues.

6.2 Conclusions, Implications and Provocations

The research question in this study was:

How are the more-than-human elements found in outdoor places harnessed into the planning and enactment of curricula for outdoor learning?

This research was conducted to further our understanding around how the more-than-human found in places of outdoor learning was harnessed in the planning and enactment of outdoor learning. The research was conceptualised and informed by a view of the ontological situation where we are immersed within a unified relational field (Ingold, 2011). As a result, we cannot be removed from the world to understand it, or research it. In terms of outdoor learning, education in outdoor settings, and more-than-human pedagogies, this means we are always in relations with the world and the more-than-human. What this research found was that the more-than-human could be harnessed in ways that can enrich the curricula, and potentially contribute to education that improves human-environment relations. Yet to do this, educators and learners need to be aware of and attuned to, the more-than-human in outdoor places. As a result, this study has found the role of the more-than-human could play significant roles in education in outdoor settings if it was noticed, and able to be harnessed.

This study has found that harnessing the more-than-human can extend education beyond the needs of a prescribed curriculum. This is one contribution that this thesis makes to the fields of outdoor learning, and education in outdoor settings. Harnessing the more-than-human can do more than just link aspects across curricula, it can include learning of new topics and concepts outside that which is prescribed. In this study, these included subjects relating to archaeology and land practices of crofting.

This research has also found that the more-than-human learners notice are pedagogically important. This thesis contributes to the consideration of learners in the design and implementation of more-than-human pedagogies. Children can be attuned to places and the more-than-human in ways that that adults are not, or are no longer able to be (Rautio, 2013b). This thesis contributes to the understanding of how more-than-human pedagogies are devised with learners. In other words, the diverse contributions children can make to the planning of more-than-human pedagogies is important. One recommendation is that initial teacher education and professional development of outdoor learning should be devised to include the more-than-human. This should be particularly sensitive to the way learners in a given setting are drawn to notice and respond to the more-than-human. Another recommendation is that initial teacher education and professional development of outdoor learning should include time

for trainee educators to work with learners as they respond to and engage with the more-than-human.

This research found that more-than-human pedagogies are derived from ways that educators become attuned to the socio-materials aspects of places. This is a skilled and material attunement to the more-than-human that develops over time spent in places. In particular, this thesis contributes to the field of place-responsive outdoor education in ways that extend the ideas put forward by Wattchow and Brown (2013) and Wattchow (2006) on the crafting of outdoor education design. In his doctoral thesis, Wattchow notes, "Part of the role of the outdoor educator then is to craft through programme design, a responsive negotiation between participants and place" (2006; 253). This thesis has shown in addition to a responsive negotiation, there are important material and relational dimensions to crafting more-than-human pedagogies, too. As a result, educators would do well to allow themselves to become attuned to the social-material practices through time spent in places and working with the material dimensions of place. The development of teachers' practice of place-responsive pedagogy could be purposefully informed by the importance of becoming attuned to the more-than-human in such ways.

This research also found that more-than-human pedagogies can be seen as a process of assembling with multiple human, non-human, material and discursive relations. Other adults/learning professionals and their practices are key ingredients in this assembling. This has implications for how we include other learning professional and adults and how we understand curriculum making as an assembling process. There are implications for community networking and the involvement of outdoor agencies and expertise in more-than-human pedagogies produced from the findings in this thesis. One contribution this research makes is to raise the importance of practices and more-than-human relations in education. Local people, education professionals, and agencies from outside of schools can invigorate more-than-human pedagogies.

The answers to the research question have been produced from the key findings. What this thesis has found has implications for future practice and research. I present these as provocations for consideration in the development of more-than-human pedagogy practice and directions for further research.

6.2.1 Provocation 1:

In education in outdoor settings, educators should pay attention to the more-than-human: -they notice; -that leaners notice; -that can be welcomed through the involvement of other learning professionals and their practices

This provocation contributes to the debates around how we design and enact **education in outdoor settings** in ways that attend to the relational. This provocation informs the ways that CPD and Initial Teacher Education could be developed to support education in outdoor settings. The supporting documentation that is available for educators of outdoor learning in Scotland (Education Scotland, 2011) portrays the teacher as the dominant negotiator for outdoor learning curricula. The implication is that further support is needed to encourage educators to pay attention to the more-than-human in relational ways.

This provocation could also inform future practice in countries that are developing more place-responsive outdoor education. In New Zealand, there have been recent developments (funded in part by the Ministry of Education) to critically examine school camps practices. Online resources have been created to support teachers to be more place responsive in local settings, and rely less upon distant commercial camps (Irwin, 2018). Using this provocation in such a context could inform continuing professional development of teachers of place-responsive outdoor education.

This provocation also creates questions, and sub-questions, for further research to more deeply understand the relations between the more-than-human educators pay attention to and more-than-human pedagogies. Some questions raised by this thesis for further research are:

(1) What features of the ways educators pay attention to the more-than-human are important in the development of more-than-human pedagogies?

(2) What features of teacher expertise exist in more-than-human pedagogies?

(3) How can educators be encouraged to harness the non-anthropocentric dimensions of place in more-than-human pedagogies?

    (i) How do educators develop a disposition to noticing and paying attention to the more-than-human in place?

6.2.2 Provocation 2:

How could we develop attunement to the more-than-human in places we cannot walk in?

The findings in this research have identified that becoming attuned to place was important for the development of more-than-human pedagogies. A question that arises from this finding is around how it might be possible to plan education in outdoor settings with an attunement to the more-than-human without physically being there first? I see there are several situations where this might be the case. When a place is not physically accessible because of limited mobility (wheelchair access for example) or cost (transport). From this provocation, I propose some considerations for future research around the development of attunement to the more-than-human in places we might not be able to visit:

Digital Technologies such as Virtual Reality

With the development of digital technologies relating to augmented and virtual reality there are possibilities for developing an attunement to the more-than-human without physically being in a place. I see that these processes of attunement could undermine the primacy of place that I understand to be educationally important (Mannion & Lynch, 2016). However, from the Deleuzoguattarian resources (such as sensations, percepts and affects) I have drawn from in this study, it could be possible to see the virtual reality encounter with the more-than-human as flows of affect. As a result, virtual reality technology could contribute to a degree of attunement to place in the educator or learners through the production of sensations via the affective flows of the visual. In addition, virtual and augmented reality experiences of place may be a useful tool to use *before* an actual visit to the place. The kinds of capacities these affects produce in terms of pedagogy and attunement with the more-than-human would be useful to research.

In terms of virtual reality, there are already tools that allow us to 'visit' certain virtual landscapes through applications such as "Google Expeditions" (Google, 2015) via inexpensive cardboard headsets. These virtual landscapes are created by 360-degree photography and could produce affective encounters with the more-than-human, or place, that could contribute to attunement. This idea does respond to calls in environmental education that suggest we should draw on emerging trends in technology noted by Ardoin, Clark, and Kelsey (2013). Whilst I am cautious about the potential for the development of attunement to the more-than-human through digital technologies, it does seem that further research in this area would be useful. Possible research questions are:

1. What features of virtual reality support the development of attunement to the more-than-human?

2. How does virtual reality support the development of attunement to the more-than-human in outdoor learning curriculum planning and enactment?

6.2.3 Provocation 3

More-than-human pedagogies can improve human – environment relations

In this research there are inferences in the data and the findings that suggest how educators pay attention to the more-than-human can link to improved human-environment relations. As noted in the discussion, the findings suggest there is a role for more-than-human pedagogies to inform education for improved human-environment relations. The potential of these relational ways of understanding places, to lead to an education that could improve human environment relations, is noteworthy.

Discourses around how we can understand the relationship with the more-than-human in education for improved human-environment relations, provoke us to consider changes to our practice. For example, Somerville (2017) and Gibson, Rose, and Fincher (2015), see that epistemologically we must not see humans as separate from nature or the environment. Different concerns in posthumanist education include suggestions that we acknowledge the human as decentred, which as a result raise political considerations. Snaza et al. (2014) write that, to save the planet and address the environmental crisis, we need to work within a political frame that reduces the humanist dominance. They argue for a politics that puts humans back *into* the web of life through humans as animals. Getting rid of the dualism not only prevents the destruction of animals as a subset of our worlds, but also sets humans against nature as something we can destroy for our gain (2014; 49). This 'rethinking' of posthuman curriculum entails that "Curriculum studies must return to its emphasis on democratic forms of being-together in learning without insisting on human exceptionalism" (2014; 50). These calls for such democratisation have led me to suggest new contributions to the manifesto for place-responsive teaching (Mannion & Lynch, 2016). It is through the new contributions to this manifesto that I encourage ways to change practice that could harness the key findings of this research. I argue that these changes to practice have potential to support place-responsive pedagogy in ways that could improve human environment relations.

As we noted in the original work (Mannion & Lynch, 2016; 91), the manifesto was devised to encourage a coming together of ethics, experience, concerns of ontology and epistemology. From the empirical work in this thesis there are new prompts we can seek to include in our practice.

From the conclusions of this research I offer extensions to this manifesto that can accommodate changes to place-responsive education that this research has found as important. The manifesto was originally produced without empirical data. Drawing on the findings from empirical data in this study I see we could now use new prompts in the manifesto – these are displayed in bold.

A Manifesto for Place-Responsive Teaching

In my teaching ...

1. I strive to gain an *in-depth knowledge of places* to inform what I do as an educator **by paying attention to the more-than-human I notice.**

2. I strive to help learners respond with, in and through place-based experiences:

    a. Before, during and after educational excursions to places, I strive to help learners gain an understanding and appreciation of places and what is distinctive about them.

    b. When appropriate, I bring learners back to the same or similar place to enable a greater depth of response to place.

    c. I strive to get learners to make responses to place that are embodied, cognitive, emotional, aesthetic and ethical.

    d. I actively invite learners to respond to selected happenstance, contingent, and unforeseen events encountered in places.

3. I strive to harness the *distinctiveness* of places in my teaching…

    a. Whether indoors or outside, I facilitate learning in ways that could not be easily replicated in a different place.

    b. When teaching outdoors, I facilitate learning in ways that could not be easily replicated in a different outdoor location.

    c. When planning teaching, I am attentive to opportunities for harnessing the more-than-human elements that become important to me, the learners and others.

    d. When planning teaching, I identify networks of other knowledgeable adults who have expertise and practices that can increase the opportunities for harnessing the more-than-human.

    e. When planning teaching, I develop my attunement to place through paying attention to the discursive and material aspects of place.

4. I invite learners to make their own efforts to *create viable and more sustainable* responses to place in ways that advances environmental and social justice and equity in their own lives and the lives of others.

In conclusion, I hope this thesis is able to contribute meaningfully to the development of more-than-human pedagogies in ways that will deepen and extend learning beyond the prescribed curriculum. Also, that it can contribute to ways that education in outdoor settings and more-than-human pedagogies could lead to improved human-environment relations. Like Haraway (2016), I see that to do this we need to rethink the hierarchy of the relationships we think about, and form, with the more-than-human and ourselves. I am inspired by her ideas around 'compost' and that we should build, and form, unexpected connections and communities. She notes, on the relationships we allow to form and nurture with the earth and non-humans, that we "require each other in unexpected collaborations and combinations, in hot compost piles" (Haraway, 2016; 4). In these provocations, the future practice and directions for research I have suggested have been produced with the intention of encouraging 'compost piles' of educators and researchers to work more relationally with place and the more-than-human.

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Appendix 1 – Memory Boxes

Pictures of a blank memory-box

Opened

Closed

This text was glued into the memory-box so the teachers and pupils would know how I wanted it to be used:

Class Outdoor Learning Memory Box

Please put in this box anything that helps/has helped you plan or teach outdoor learning.

Ideas might be:

1 Objects, natural or otherwise from outdoor learning planning activities or real teaching events.

2. Photos of outdoor learning, of outdoor learning planning or teaching, or photos the children have taken.

3. Pupils' work, or photos of pupils' work from outdoor learning.

5. Lesson plans of outdoor learning.

6. Useful resources that help you plan outdoor learning and teaching.

Colour the box, paint it, decorate with the pupils – use it how you best see fit. Let it capture what you feel is important in **your planning** and teaching of outdoor learning.

In any future interviews it will be useful to use this as a talking point.

Appendix 2 – Table of Vignettes

Table of Vignettes

Vignette No	Case	Curriculum	Method	Title	Finding
1	Case 2	Planning	Walking Interview	"Teacher's Noticing of Missing Biodiversity"	**Finding 1: The degree to which teachers harnessed the more-than-human into their teaching was influenced by their ability to notice it**
2	Case 5	Enactment	Walking Interview	"Needing to Apply Maths: Counting for Counting's Sake?"	
3	Case 4	Enactment	Walking Interview	"Hopes and Desires of the Wheelchair Girl"	
4	Case 1	Enactment	Walking Interview	"Badger Nose Marks"	
5	Case 5	Planning	Walking Interview	"Noticing Tadpoles"	**Finding 2: Teaching with the more-than-human involved paying attention to children's noticing and responses to the more-than-human**
6	Case 2	Planning	Memory-box Interview	"Children's Noticing of Spontaneity"	
7	Case 3	Enactment	Walking Interview	"Stung Lips and Curling Ponds"	
8	Case 4	Planning	Walking Interview	"Welcoming the Waterfall"	**Finding 3: Teachers' harnessing of the more-than-human in the curriculum planning and enactment of outdoor learning developed in contextualised ways through an attunement to place**
9	Case 5	Enactment	Walking Interview	"Sphagnum Moss as Capacity"	
10	Case 3	Enactment	Memory-box interview	"The Smuggler's Trail and the Shaded Forest"	

11	Case 1	Planning	Walking Interview	"The Children's Desires and the Record Centre"	**Finding 4: Teachers' harnessing of the more-than-human was an assembling process that included material, discursive, human, and more-than-human elements.**
12	Case 3	Planning	Memory-box Interview	"Planning Means I miss out on Certain People's Experience"	
13	Case 5	Enactment	Walking Interview	"Children Making Leaves and Learning to Look Closely"	
14	Case 3	Enactment	Memory-box Interview	"Noticing via Parents, Maps, Experts and Magazines"	

Appendix 3 – Ethics Form

****PLEASE COPY THIS FORM ONTO YOUR OWN COMPUTER PRIOR TO COMPLETION****

RESEARCH PROJECT

REQUEST FOR ETHICAL APPROVAL FORM

UNIVERSITY OF STIRLING

SCHOOL OF EDUCATION

For all SoE Staff and Student projects

Principal Investigator/Student	Jonathan Lynch
Full Title of Project	Teachers' consideration of place in their curriculum planning, and enactment of outdoor learning
Funding Agency/Course	PhD Education (part-time
Proposed Start Date	March 2013
Proposed End Date	March 2015

Is Ethical Approval required?

Yes (my research involves human participants) [Y] Please fully complete the form

No (there are no human participants in my study) [ ] Students – your supervisor should complete the 'For student applications only' section at the foot of the page.

Date by which ethical approval is required	February 26th 2013

Is this a full or staged application? **Full** [Ful l] **Staged** [ ] (are further applications for this project anticipated at this stage?)

Is Chair's interim ethical approval sought? (see p. 2) **Yes** [Y] **No** [ ]

Is ethical approval required from another governing body/agency? **Yes** [ ] (please provide details and attach any supporting documentation) **No** [N]

DECLARATION:

This proposal has been submitted for approval by the School of Education Research Ethics Committee.

I confirm that the Research will be undertaken in accordance with (please select one):

(a) British Educational Research Association's Revised Ethical Guidelines for Educational Research (2011) [x]

(b) Scottish Educational Research Association's Ethical Guidelines (2005) [ ]

(c) Other [ ] (please detail) [ ]

Signed [ ] **Date** [ ]

FOR STUDENT APPLICATIONS ONLY:

Supervisor's decision: **N/A** [ ] **Approve** [ ] **Refer to the SoE Research Ethics Committee for consideration** [ ]

Supervisor's signature: [ ]

PREAMBLE

The following questionnaire is designed to enable the School of Education's Research Ethics Committee (**SoEREC**) identify potential ethical issues in your research project. Completion of this procedure is necessary for all research involving human participants (whether funded or not) carried out within the Institute of Education.

It is our hope that engaging with this process will be of value to your project, in thinking through its ethical implications. If ethical issues arise during the course of your project, you are advised to consult the SoEREC in regard to ethical dilemmas etc. at any point.

WHERE DO I SEND MY COMPLETED FORM?

STAFF: Please send this in electronic format and a hard copy of this form with a copy of your research proposal to the Research Secretary (Laura Adam) who will submit it to the next available SoEREC meeting. If ethical approval is needed before this, Chair's interim ethical approval can be given. Please indicate if this is required on the front cover.

STUDENTS: Please give the completed form to your project supervisor. If they are satisfied that you have appropriately dealt with any ethical implications, they can approve your application. Supervisors should sign the form and send it to Laura Adam. If there are any ethical issues which supervisors feel need further consideration, then they should refer the application to the Research Ethics Committee. This should be indicated on page one of the application form. The signed form along with an electronic copy should be sent to Laura.

If you request Chair's interim approval your proposal will be considered by two members of SoEREC and will then be reviewed at the next meeting of the full committee.

QUESTIONNAIRE

A) Non- The SoEREC membership is diverse and includes representatives from other departments and

technical summary (maximum 100 words)

Please note that it is necessary to add a non-technical summary here, covering the points listed above

organisations from the wider community. It is therefore helpful to provide a non-technical overview. Things you might consider here:

- who will be involved?
- what will they be asked to do?
- what will happen to the data gathered?
- how will the implications of the findings impact on the participants or others?

Teachers in selected schools in Scotland will be asked to participate in the data collection for my PhD study on their considerations of place in their curriculum planning and enactment of outdoor learning. Most of these teachers have previously been involved in a commissioned research project with the University of Stirling (School of Education) through Scottish Natural Heritage (called 'Teaching in Nature') in 2010. This previous research was conducted by my supervisor Dr. Greg Mannion who found that place has a significant influence on how teachers' plan and enact curriculum outdoors. Outdoor learning is growing in interest internationally yet empirical research on how teacher's plan and enact curricula within the field is not well known. The research will involve going back to these teachers and asking them to be involved in audio recorded walking interviews to the places they use in their outdoor learning lessons. In addition, I will conduct semi-structured interviews using artefacts as stimuli such as pupils' work, lesson plans and natural objects, which will be audio recorded. Photographs of significant place features will be taken during these visits of outdoor learning sites, and of pupils' work, and artefacts used in class and outdoor learning lessons. The photographs will not contain any images of people. The digital data will be used to create the doctorate, used in teaching and conferences. Names and identities will be kept anonymous throughout this process. The findings may identify areas of teachers' practice that could lead to better use of outdoor learning.

B) Summary of design, methods and analysis

Please note that it is necessary to add summary of t he design, methods and analysis in this box.

This instrumental case study (Stake, 1998) will use ethnographic methods (after Wolcott, 1987). I will employ several qualitative methods that are orientated within, to some extent, a socio-material approach, and more significantly a non-representational approach (Thrift, 2006) and are; (1) a walking ethnographic style interview whereby teachers will be asked to show me the places they use for outdoor learning in their single, chosen outdoor learning site; (2) The artefacts collected on these walking interviews will contribute to a memory box interview in the school where these materials will provide a focus for discussion on outdoor learning curriculum and enactment; (3) photos of teachers' outdoor learning sites, artefacts used in and outside the classroom, pupils' work and documents (lesson plans) will also be collected and used to build understanding of the case (there will be no photographs of people/children). Analysis may take the form of 'diffractive' readings (Hultman and Tanguchi, 2010) of the data that follows the traces of the material into the curriculum planning and enactment. The flat ontological worldview as noted by Ingold (2011) is central to the study. The interviews will be seeking to portray the teachers' considerations of place through the assemblages of people, place, and pupils.

1. Informing Participants

1.1 What will participants be told about the study?

That the study that will explore teachers' consideration of place in their curriculum planning and enactment of outdoor learning. They will be told that the study will involve on-going visits to outdoor learning sites and schools to research their teaching practice outdoors, through audio recordings of walking interviews and collection of artefacts for indoor interviewing. I will also be taking photos of outdoor learning sites and pupils' work, and collecting documents such as lesson

plans.

1.2 How will participants be informed of the nature and purpose of the research?

Teachers will be written to or emailed informing them of the study, all teachers will have previously been involved in the project that this study follows on from, Teaching in Nature (TiN). Teachers will be contacted by email, I am known to them through my participation in the TiN study

1.3 How will participants consent to being involved?

Teachers will sign a consent form agreeing to the nature of the study. At each stage of the study the teachers will be asked for consent orally. Permission will be sought on the consent form for the onward use of photographs and documents (lesson plans etc) for publication and teaching purposes.

1.4 Will children or vulnerable adults be involved in the research?

Yes [ ] Please continue below **No** [no] Go to question 1.5

What steps will you take to ensure that they understand the nature and purpose of the research process?

1.5 How will participants be informed of their formal right to complain to the Head of SoE if they have any concerns about the research process?

During initial email contact and following written consent forms

1.6 Will data be stored in a national archive and/or used for other purposes in the future?

Yes [Yes] Please continue below No [ ] Go to question 2

Please give details:

Data will be stored in secure filling cabinets (hard copies) and password protected files (digital). Data will be used in onward publications, research conferences, and teaching where images and sections of transcribed interviews may be used.

1.7 How will participants be advised of this?

By letter agreeing to consent and orally.

2. Offers of Confidentiality

2.1 What offers of confidentiality are you making?

That identifiers will be removed making the data making it non-traceable; that the information they give will be treated confidentially and that anonymity will be ensured through the use of false names. Although the data collected will be confidential, small sections of data (including photos) will be used in the doctorate, research outputs and will be discussed with my supervisor

2.2 How will you put these

Non-traceability will be achieved through the removal of identifiers of school names, locations and teachers. Anonymity will be achieved through the use of false names of

into practice?	teachers, schools or locations when they are referred to in the doctorate or onward teaching and research outputs. Confidentiality will be maintained through password protected digital storage and locked cabinets for any hard copies. Photos used will not include images of any people and will be given false locations.	
2.3 How will participants be informed of confidentiality?	Teachers will be informed that the data collected will be kept in password protected files and only shared with members of my supervising team. In publications and teaching the data will only be used in small sections and all identifiers removed (non-traceability) and false names will be used (anonymity).	

2.4 Will information about the participants be obtained from sources other than the participants themselves? **Yes** [Yes] Please continue below **No** [ ] Go to section 3

Please give details:	These teachers took part in a previous SoERC approved research project (Teaching in Nature, 2010) and the data from this project that includes this sample of teachers may be used to give early historical and benchmarking data about these teachers outdoor learning practice. Data will be collected through interview and photographs of classrooms, pupils work and lesson planning. Interview data and photograph data will be collected on location in outdoor learning sites
Please give details of how you will maintain confidentiality of this source of information:	Pupils work, lesson plans, photographs of classrooms will all be used to build understanding of the case and in the event that they are used in the final doctorate, teaching or research outputs they will have identifiers removed and false names attached.

3. Right to Withdraw

3.1 How will participants be informed of their right to withdraw?	In the consent form the right to withdraw will be clearly stated and that the respondents can withdraw at any time.
3.2 Will they be reminded of this?	Yes, at each stage of the data collection; each walking interview or other interview such as the memory box.

3.3 Will there be significant power differences between researcher and researched? (e.g. with young children) **Yes** [ ] Please continue below **No** [no] Go to section 4

What is the nature of these power differences?	

What steps will you take to address these?

(eg with young children how will interactions be arranged to make withdrawal possible?)

4. Data Storage

4.1 Will all data to be held on computer be stored in compliance with the Data Protection Act? Information on this can be found at: http://www.rec-man.stir.ac.uk/data-protection/index.php

Yes Yes **No**

Please give details: A separate hard drive will be used, backed up to a second hard drive – one will be password protected networked storage drive and the second will not be networked and password protected

4.2 How will hard copy data be stored? Hard copy of data will be lesson plans, copies of worksheets or texts used in teaching and some photographs. These will be kept in a locked filing cabinet

4.3 What steps will be taken to ensure the safe disposal and storage of data (both hard copy and electronic) at the end of the project? Data will be stored for approximately five years then destroyed useing the university's secure system..

5. Outputs

5.1 Will participants be able to identify themselves?

(e.g. in any reports or dissemination material, by name directly, or by any other means that will permit you to match data to specific participants?)

Yes Please continue below **No** No Go to question 5.2

Please give details:

5.2 How will any assurances of confidentiality / anonymity/ non-traceability be adhered to...

i) with regard to data analysis? Data will be rendered anonymous and a coding system will be used. In the analysis working across cases will take aspects out of context and will decrease traceability. The identity of schools will be included in the research project appendix with the schools consent only.

ii) with regard to subsequent When subsequent publications are produced there will care paid to ensuring identity and locations of participants are kept anonymous and non-traceable..

	dissemination?					
5.3	**Do you intend to use research data for teaching purposes?**	**Yes**	Yes	Please continue below	**No**	Go to section 6

Please give details:	Some samples of data will be used in teaching, participants' identifiers will be removed, they will be given false names and potentially sensitive sections of data or topics will not be used.

6. Use of Photographs, Video or Audio Recordings

6.1	**Does the research involve the use of …**	**…photographs?**	Yes			
		…video?				
		…audio recordings?	Yes	**No to all**		Go to section 7

i) What permissions will you seek?	Permissions to collect this data will be sought through the consent form and again, verbally, at each stage of data collection
ii) How will this data be used?	The audio recordings will be transcribed by a third party who will be sent a copy of the audio file which will titled under a false name. The audio file and transcript will be kept confidential through the data analysis process but may be shared with members of the supervising team. The photos will be used in the data analysis process and may be used in onward publications and research outputs if permission has been given.
iii) How will this data be stored?	Digital data will be stored in password protected files storage systems, and hard copies stored in a locked filing cabinet. Third party transcriber will be asked to delete the audio files after transcription.

7. Other Issues

7.1	**Are there issues in the proposed research which could be anticipated to be contentious or ethically problematic?**	**Yes**		Please continue below	**No**	No	Go to question 7.2

Please provide details and a justification:

7.2 Will any inducement be used to obtain the subject's participation? **Yes** | Please continue below **No** | No | Go to question 7.3

Please provide details:

7.3 Will your research involve deception? **Yes** | Please continue below **No** | No | Go to question 7.4

Please provide details and a justification:

7.4 Does the study involve a risk of either physical or emotional stress to participants, or is there any reason to think that some participants might anticipate such stress? **Yes** | Please continue below **No** | No | Go to section 8

Please provide details and a justification:

8. Research Staff

8.1 Are there any expectations that research staff will be subject to risky or stressful situations? (e.g. research in a participant's home, or exposure to a potentially distressing situation? **Yes** | Please continue below **No** | no | Go to section 9

What measures will be in place to support such staff?

9. Completion Instructions

PLEASE ENSURE

☑ **You give sufficient time (minimum 14 days in order that members of the Committee can consider your form.**
☑ **You have included a brief non-technical (no jargon) summary in part A.**
☑ **You have included a non-technical (no jargon) summary of design, methods and analysis in Part B.**
☑ **You have included your research proposal if appropriate.**

Thank you for completing this form.

Please send this in electronic format to:

laura.adam@stir.ac.uk

And ***a hard copy of this form together with a copy of your research proposal*** to:

Research Secretary (Laura Adam)
School of Education
Pathfoot Building
University of Stirling
FK9 4LA.

Appendix 4 – Prospective Participant Letter

Jonathan Lynch
University of Stirling
Stirling
FK9 4LA

22nd Nov 2012

Dear Teaching in Nature participant,

As you will remember I wrote to you this time last year asking for permission to re-visit the original Teaching in Nature data that was collected during that project, which you kindly agreed to. I also asked if you would be willing to let me collect more data from you and I am now writing to you about this. I have been working on how I want to do this and now am in a position to offer more details and to seek your agreement.

I hope to do two types of interviews with you:

- An outside walking interview where you would take me on a walk of the outdoor learning site you use most frequently.
- And at least one indoor interview that I plan to do sometime after the walking interview, this would take place at the school focussing on aspects of your planning of outdoor learning.

I want to arrange the walking interview with you first and I will explain it in more detail here:

The walking interview will be in a local, natural place you undertake the majority of your outdoor learning (similar sites that you used in the Teaching in Nature project, not school grounds). The interview would involve us both walking around the place you use in your outdoor learning and talk about how you work with/within it. I expect these walks to last about an hour, and I will be recording our conversation and taking pictures of place features we talk about. These would not involve the children, and they could be conducted outside of school time. I would be keen to try to do this (weather permitting) quite early next year, ideally before March 2013.

If you could communicate your interest in helping me I would be very grateful, please reply to this email and I will arrange a time to call you and discuss which dates and times would be most suitable for a walking interview next year.

I have attached a sign off sheet at the bottom of this page, which you could return by email or I can collect it on the day. You have the right to withdraw at any stage of the process.
I thank you and appreciate your support and involvement.

Yours Sincerely

Jonathan Lynch (Part-Time PhD student)
University of Stirling.

Contact details

Email - Jonathan.Lynch@cumbria.ac.uk

Work Phone – 01768 893517

Consent Form for Participating Teachers

Consent form

Please delete as appropriate

1. I offer general consent to my involvement in the research and understand my role in it.

   YES NO

2. I understand that in reporting and outputs pseudonyms will be used and obvious identifiers removed

   YES NO

3. I consent to data about me and my case (class, project) being subsequently used for research and teaching (courses, reporting, academic writing, conferences, other publications) in these ways:

   a. I consent to any transcribed or written data being used at researchers' discretion.

      YES NO

   b. I consent to use of visual data (video or photographs) at researchers' discretion.

      YES NO

   or

   c. I consent to visual data being used but only with my expressed consent for use.

      YES NO

Signed:_____

Teacher (please print name) _____

School: _____

Date _____

Note: University researchers will be subject to the approval of the Stirling Institute of Education Research Ethics Committee and will conform to the ethics code of the British Educational Research Association: http://www.bera.ac.uk/publications/pdfs The head of department Professor Richard Edwards (tel: 01786 466140. E-mail:r.g.edwards@stir.ac.uk,) or Dr Greg Mannion (tel: 01786 467614. E-mail: greg.mannion@stir.ac.uk) are points of contact beyond the research team.

Appendix 5 – Interview Information for Prospective Participants

Walking Interviews on Outdoor Learning Planning and Teaching – Information

Aim: I want to find out about how you consider the 'place' that you use for outdoor learning planning and teaching.

The Interview: The interview will be a walking interview and I would like you to take me on a tour of the outdoor learning site you use, it can be as long or as short as you like. On this tour it would be great to hear how the outdoor place (you use) influences your planning and teaching sessions of outdoor learning, telling me stories of what you do, where and why. I am particularly interested in the where and the why. If you could also have a think about how you have developed your skills in the planning and teaching of outdoor learning that would be great to hear about too.

I will be recording our conversation on a digital audio recorder and will take photographs of the various aspects of this place we talk about.

I will leave you with something called a 'memory box' (a blank paper, covered shoe box) that you can use how you like with the class but I thought it might be used to collect things that you use for outdoor learning planning and teaching. For example, you and the children might decide to put in pine cones, stones, photos, lesson plans etc whatever you and the children think should go in it. As the box is 'blank', you can 'make it your own', and decorate it, stick things on it, for example. At a later date I would like to hear about how the box has been used and what is in there, if you were willing I would visit again to talk about this with you.

Many thanks for your participation and let's hope for some good weather!

Appendix 6 - Field Letter and Consent Form

University of Stirling
Stirling
FK9 4LA
26th February 2013

Jonathan Lynch Research Consent form

This research is part of an ethnographic style case study that will explore teachers' consideration of place in their curriculum planning and enactment of outdoor learning. The study will involve ongoing visits to outdoor learning sites and schools to research outdoor learning teaching practice through audio recordings of walking interviews and the collection of natural objects for indoor interviewing. Photos of outdoor learning sites and pupils' work will be taken, and documents such as lesson plans will be collected and used. Teachers' names, school names, locations and pupils' names will not be included if not consented to. Visual data such as pupils work will be rendered confidential unless consent for onward public use is given, by teachers and parents.

Participants will have the right to withdraw from this research at any time, and information provided as part of the research will be confidential to the researchers Jonathan Lynch, and supervisor Dr. Greg Mannion. In the production of reports and other outputs, the intention is to make the participants as anonymous as possible, data will be kept in confidence within the research team, and in a secure place. Data will be rendered non-traceable insofar as this is possible and practical. The visual records will mainly be used to understand the project within the project team and within interviews. Please confirm your own agreement (below) to the relevant aspects of the consent

Note: University researchers involved in the project will be subject to the approval of the Stirling Institute of Education Research Ethics Committee and will conform to the ethics code of the British Educational Research Association: http://www.bera.ac.uk/publications/pdfs The head of department Professor Richard Edwards (tel: 01786 466140. E-mail: r.g.edwards@stir.ac.uk,) is a point of contact beyond the research team.

Many thanks,
Jonathan Lynch.
07808579996

Place and Outdoor Learning Research

Consent Form for Participating Teachers Please tick the appropriate boxes.

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4. I offer general consent to my involvement in the research and understand my role in it.
   YES NO

5. I understand that in reporting and outputs pseudonyms will be used and obvious identifiers removed.
   YES NO

6. I consent to data about me and my case (class, project) being subsequently used for research and teaching (courses, reporting, academic writing, conferences, other publications) in these ways:
   a. I consent to any transcribed or written data being used at researchers' discretion.
      YES NO
   or
   b. I consent to use of visual data (video or photographs) at researchers' discretion.
      YES NO
   or
   c. I consent to visual data being used but only with my expressed consent for use.

Signed:_____

Teacher (please print name) _____

School: _____

Date _____