

Play Based Natural Environments and Language Development in Young Children

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Abstract

In order to dispute the assumption that learning and cognitive development only happens indoors, in classrooms and in early childhood centres, this thesis explores the relationship between play based natural environments and language development in young children. Natural settings are gaining increasing recognition as important learning environments because of the associated benefits such as health, fitness, and environmentalism. The three concepts of play, nature, and natural outdoor environments are intertwined. Through play, children adapt to and shape their environments, while the context influences the nature of their play, and their talk. Nature based outdoor environments are dynamic settings, providing multiple clues and meanings for new words to be learnt within that context. This thesis examines the current literature, along with examples from 40 years of experience in early childhood centres in Aotearoa/New Zealand, which is uniquely placed for international curriculum leaders, to contribute to the worldwide understanding of education in the outdoors. Historically, children worldwide grew up learning in the outdoors, but somehow, we have come to perceive learning and development as something that happens in special buildings. Human learning and performance is far more situation specific than has been presumed, therefore, context affects our capacity to learn. Different environments offer different opportunities for learning and impacts on language development. Multi-sensory experiences in natural settings help children to develop the theories necessary for constant intellectual growth, through stimulating imaginations and affording an ideal environment for resourcefulness, inventiveness, and language development. Both in the literature and in my experience the benefits of play relative to other strategies is that children can be more focused, imaginative and innovative, which allows for further practice and for them to play utilising newly developing language. When learning a

language combined with playing in the outdoors children are learning much more than words. They are learning about life itself and how their world works. From this thesis future research should include intervention studies comparing groups of children, controlling for factors such as language, and language usage, and type and situation (within a centre, at home and/or in natural outdoor environments). Studies could investigate the affordances in the environment and how they influence, benefit and affect language development. The role of the adult and the types and use of adult language used in differing environments should be analysed in order to see how this supports language development. The findings from this study ought to accentuate the value and importance of play based outdoor ECE programmes to politicians and Ministry of Education officials, for them to become better informed, and enable these programmes to become mainstream and accessible to all children in Aotearoa/New Zealand.

Dedication

This thesis is dedicated to my family and to everyone, teachers, children and whānau from Play and Learn Early Education centres and programmes, you made this all possible. Thank you for your understanding and support while I completed my studies.

The success of this journey is because of the sacrifices you have made for me.

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Attestation of Authorship

"I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgments), nor material which to a substantial extent has been submitted for the award of any other degree or diploma from a university or other institution of higher learning."

Jan Beatson

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Glossary of Māori terms

atua	God, ancestor with continuing influence
harakeke	flax
hauora	health
kaiako	teacher(s)
kaitiaki	trustee, custodian, guardian, protector
kaitiakitanga	guardianship, environmental stewardship
koro	grandfather
mana	the power of being, authority, prestige, spiritual power, status, control
Papatūānuku	earth, earth mother
Pepeha	ancestors and temporal signifiers - how a speaker introduces themselves through connections to location
Pōwhiri	ceremonial welcome
taha tinana	physical health
taha wairua	spiritual health
taha whānau	family health
taha hinengaro	mental health
tamariki	child or children
tangata whenua	People of the land (literal), descendants of the first people to settle Aotearoa New Zealand, indigenous people (used of Māori), person or people with customary authority over an area that may include land and sea. This authority is held by the first settlement of an area or by succeeding to an area through active occupation and negotiation with the first peoples.
Tāne-mahuta	God of the forest, trees and birds
Tangaroa	God of the sea
Tāwhiri-mātea	God of the wind and weather
te ao Māori	the Māori world
te reo (Māori)	the Māori language
tikānga Māori	Māori ways of doing, including practices, customs and rituals, whanau, extended family, multigenerational group of relatives or a group of people who work together on and for a common cause

Abbreviations

ECE	Early childhood education
IPA	International Play Association
MoE	Ministry of Education
NBOE	Nature based outdoor environments
Te Whāriki (1996)	Te Whāriki refers only to Ministry of Education (1996)
Te Whāriki (2017)	Te Whāriki refers only to Ministry of Education (2017)
UNCROC	United Nations Convention on the Rights of the Child (1989)
WHO	World Health Organization

Chapter One Introduction

Play involves the exercise of autonomy, physical, mental or emotional activity, and has the potential to take infinite forms, either in groups or alone. These forms will change and be adapted throughout the course of childhood. The key characteristics of play are fun, uncertainty, challenge, flexibility and non-productivity (Committee on the Rights of the Child, 2013, 6)

1.1 Introduction

This research report explores the meaning of, and focuses on the value of children's play, theories of play, language development, optimal language learning environments and natural outdoor environments.

For many years I have been interested in the benefits of outdoor play. Over this time I have observed that children use playful and often excited language in the outdoors. Additionally, there is always significant inquiry-based conversation and questions. I decided to investigate more systematically how language is acquired and what might be occurring when children play in the outdoors. This led to my research question: Do play based natural environments provide a context for language development in young children? This thesis is an examination of the literature relating to play based natural environments and language development in young children.

There have been increasing concerns raised about language development in young children (Jones, 2018; van Hees, 2011), revealing that many children in Aotearoa/New Zealand are beginning school with poor language skills. Warren (2015), CEO City of Manukau Education Trust (COMET) identifies that Aotearoa/New Zealand has long-standing literacy issues, emphasising, that early oral language is fundamental to later learning and success. Warren also highlights that 24% of Auckland children leave primary school below the national literacy standards. This would indicate that there is an urgent need to identify optimal environments that support language development.

A number of authors (Gill, 2007; Gray, 2015; Louv, 1995; Waite, 2010) raise concerns about increasing anxieties and the changing nature of childhood, which appear to play

a critical role in limiting or determining children's play opportunities (Gill, 2005; Louv, 1995, 2011; Rickinson et al., 2004; Tovey, 2007; Waite, 2011). Conversely, there is increasing literature, mostly from Australia, Scandinavia, the United Kingdom and the United States, on the importance and benefits of children's early learning in the outdoors. Aotearoa/New Zealand researchers and writers (Cullen, 1999; Greenfield, 2004, 2007; Kelly & White, 2012; Stephenson, 1998, 2003) have contributed to this growing body of evidence promoting children's active engagement with the natural world. Despite this, there is a paucity of research on nature based outdoor environments (NBOE) used for early childhood programmes (ECE) in Aotearoa/New Zealand.

Over 95% (198,923), of children in Aotearoa/New Zealand attend one of 5,000 Early Childhood Services (ECE). These include teacher-led services (childcare centres and kindergartens), home based childcare services, parent-led services (Playcentre, kōhanga reo, punanga reo and Pacific Island language nests) and playgroups (MoE, 2019a). Despite this large percentage of children attending ECE services there is minimal data on programmes which operate regularly in the outdoors. This thesis may contribute to the paucity of research in this field.

All children play. Play is crucial for developing children's language and communication skills. Pramling Samuelsson and Johansson (1996) discuss that both play and learning are related to experiencing and constructing meaning from the world. Throughout the western world there has been a devaluation of play with increasingly limited opportunities for self-directed and unstructured play (Gray, 2016; Louv, 1995; Whitehead, 2010). This study will provide an overview from a range of disciplines, (anthropological, cultural, environmental, historical, psychological, physical and educational), emphasising the benefits of play in order to understand the value of language in general and its development. It will also include some of the consequences of a lack of play opportunities. It is important that the value of play is scrutinised, examining the opportunities which may support children's play and development.

The motivation for this study has been my involvement in outdoor nature-based programmes for the past 40 years. Over the past two decades nature (or forest/ bush) programmes, have gained enormous popularity internationally, and are spreading rapidly across the world (Knight, 2011). Interest is beginning to develop in Aotearoa/New Zealand, however Kelly et al. (2013) caution that without the particular, “professional ethical, financial and philosophical commitment” (p. 6), it is unlikely these programmes could exist here. Kelly et al. also identify that natural outdoor environments are vastly underutilised as early childhood spaces, and may contain numerous possibilities for play and learning. Through a careful examination of the existing literature this study may help whānau, kaiako, teacher educators and politicians to be better informed and to make more informed choices about the value of such programmes.

The aim of this study is to scrutinise the existing empirical research on play, language development and natural outdoor environments to reveal if these are an optimal context for language development and learning. I will examine current literature and draw on examples and observations from my experience over the past 40 years. I will then synthesise the findings and explore the links to show if play based natural outdoor environments do provide meaningful and appropriate ways to facilitate language learning in Aotearoa/New Zealand.

1.2 Background

My own childhood, along with the programmes I operate, are the motivation for this study, as I would like to see opportunities for these programmes to be available as mainstream options in Aotearoa/New Zealand.

My childhood included many experiences of freedom and roaming in outdoor spaces together with groups of neighbourhood children and my younger siblings. Much of this time was spent in natural outdoor spaces, playing in creeks, exploring, building huts,

climbing trees and hiking long distances while making sense of the world. Anthropologist Peter Gray (2015), comments that throughout history this was how children grew up, exploring, playing and learning in groups with neighbourhood children.

For me this was about freedom and empowerment, adventure, play, hard work and fun. Having had a very deprived and abusive childhood himself, my father was, and would be called today, abusive and probably schizophrenic. With the full support of our mother, we took every opportunity to be out from under his gaze and control, often leaving early in the morning with a packed lunch and not returning till dusk. This was considered normal for my generation. Living on the outskirts of Dunedin next to farmland and native bush, hands-on nature experiences were a part of everyday life. Rather than being bitter about an abusive childhood, I have wonderful memories of play, challenge, adventure, exploration and roaming, which have sustained me for the rest of my life. Moore (1997) would identify with my memories when he discusses a childhood immersed in nature as he alludes to debate about the meaning of childhood.

My parents were not aware that as I roamed and played in the bush with the neighbourhood children that they were providing me with rich educational experiences. I am sure that my mother viewed the opportunities for my siblings and I to roam free as a way of protecting her children from the mental and physical abuse which occurred from my father when we were getting on his nerves.

Kellert (2005) describes the theory of biophilia, as human dependence on nature being more than connection to the material and physical of the “direct ongoing experiences of nature, in relatively familiar settings” (p.81). While they were unaware of such benefits derived from my nature play, it was my parents not curtailing my activities that meant those times in nature were a vital source for my physical, emotional and intellectual development, shaping who I am as a person.

When we went fishing for guppies and lobbies under the rocks, or identifying the so-called poisonous plants that would kill us if we touched them, or playing in the dungeons at Larnach Castle (we hiked the 12 miles up there one day) we were developing fitness and stamina together with gaining an understanding of science, mathematical concepts, curiosity, invention, classification and experimentation. There was often considerable discussion, debate, opinion and theories to put forward when arguing with other children. There were no adults to guide us or explain that our theories were wrong, and we were also not aware that this was contributing to our learning about language in a meaningful environment (Ministry of Education, 2017) (MoE). In the same way Bilton (2010) identifies that the outdoors is both an educational and social experience with lots of conversation, negotiation and learning.

I am sure that this freedom, roaming and exploration helped to shape my worldview. I have always enjoyed and valued autonomy and freedom and have always believed in the importance of replicating this for the children in my care. I also have a self-belief that nothing is impossible if you try hard enough. I have roamed the world and have valued many wonderful experiences with different cultures.

When I had my own children (three children in two and a half years), I instinctively understood that I wanted them to have some of these same types of experiences. I joined the local Playcentre which was located on the side of Mangere Mountain. This was to be the beginning of another journey which shaped my life. I was able to climb with the children to the top of the mountain, to see the whole world, to discover volcanoes and kumara pits and geckos and cow pats. There were many opportunities to wonder and to dream. Although they were always supervised, they could run, roam, hide and explore by themselves. This was the best I could envisage in order to give them some of the experiences I had enjoyed.

Playcentre was also where I was to come to understand that children actually learnt through play. Until then I had no idea that as children played in the sandpit they were actually discovering and understanding maths and physics. I was very curious and

interested in knowing more. Over a period of 15 years I became very involved, not only my own Playcentre but also within the local region and the Playcentre Association. I gradually undertook my training, along with supportive groups of wonderful, amazing and knowledgeable people. I attended and organised conferences and conventions, was on various training and equipment committees, facilitated training groups and supported other people.

My experiences in Playcentre led me to be curious about what was happening with my children once they went to school, so I then became involved in my local school and school committee. When the new initiative of *Tomorrow's Schools* (MoE, 1988), was established I became the chairperson of my local Board of Trustees. This was a new initiative, designed as a partnership between local schools and their communities, instigating parents as governors of their local schools. Due to my prior experience I took an active role and became heavily involved with the School Trustees Association (STA), organising training for trustees as none was offered originally by the Ministry of Education. I organised and convened the first National Conference (much along Playcentre lines), with lots of volunteers, then further national and local conferences. I became the first female chairperson of the Auckland School Trustees Association and was an Auckland representative to the National Committee. This allowed me to develop strong relationships with the Ministry of Education and local principals. Over the next 10 years I was the STA representative on the Council of the Auckland College of Education, Ministry of Education, and numerous advisory boards. I was kept well informed about educational matters through regular meetings with the Secretary for Education and policy advisors. This all gave me a good understanding of how the education system worked. As a parent, I felt empowered to be involved in my children's education and to be taken seriously and consulted by the principals and teachers in the schools. The then Prime Minister and Minister for Education, David Lange, advised that parents would now be consulted on children's education. Additionally, with a

downscaled Ministry of Education, funds were to be redirected to local Boards of Trustees, advocating that schools would never have to fundraise again!

For eight years in the 1980s and 1990s, I worked on Saturdays for the Department of Corrections, operating a crèche for the children of detainees at the Periodic Detention (P.D.) centres in Otahuhu and Mangere. Children attended while their parents served their sentences. The crèche had been established to support detainees, with childcare for their children. I was provided with a prefabricated classroom and a small outdoor area. Once again, my need for freedom and exploration kicked in. I reasoned that these children (0-10yrs) were not serving P.D. so why should they be cooped up for eight hours? I managed to organize a van (used for transporting work parties to various destinations) for use during the day. We visited various outdoor destinations such as Mangere Mountain, Ambury Farm, Mt Wellington, and the Botanical Gardens. Although these children all lived in the South Auckland area, none had previously been to any of these destinations. On one occasion we went to Ambury Farm and one child (aged five or six) was terrified. On investigation it turned out that he had seen what he thought was a lion and thought it would eat us. It turned out to be a sheep. I was astounded that a child growing up in Aotearoa/New Zealand and attending primary school would have no idea what a sheep was. This had a profound effect on me and it became a priority for me, in any future service, to get children out and about.

I worked for four years as a coordinator for Barnardos' Home based service, establishing and operating schemes in South Auckland. This service aligned with my philosophy as children were able to get out and about.

In 1994 I became concerned with the number of new childcare centres which were beginning to open, with what seemed to me to be very limited outdoor areas and static equipment. I decided to open a small early childhood centre (ECE) from my home in Papatoetoe (Play and Learn Early Education centre). I had hoped to offer a home based/Playcentre type of environment with an emphasis on getting children out into the community in order to experience the local and wider world. My philosophy was very

child centred, following children's strengths and interests in an atmosphere of unstructured play.

This coincided with the launch of *Te Whāriki* (MoE, 1996), a socio-cultural curriculum with the principles, of whakamana/empowerment, kotahitanga/holistic development, whānau tangata/family and community and ngā hononga/relationships. These were woven with strands and goals; mana atua/wellbeing, mana whenua/ belonging, mana tangata/contribution, mana reo/communication and mana aotūroa /exploration, which all fitted with my personal philosophy.

Initially we would walk every day, taking children around the local supermarket, or just up and down the street. Play and Learn further developed into several centres. As part of my philosophy it was always important to deliberately choose sites with large, natural outdoor areas, within walking distance to local amenities, and with room for children to run and climb. We were based in low socioeconomic areas with a high cost programme. We used our funding for extra staffing and therefore did not have the funds for the expensive playground equipment which was fashionable at the time. Instead we focused on junk materials such as pallets and cable reels, movable equipment or loose parts (Nicholson, 1971), materials which could be moved around, combined, remodelled, built, taken apart and put back together in multiple ways.

Our trips progressed to catching local buses and trains to take us further afield. Several years later we purchased a van, enabling us to explore the wider area focusing on specific destinations. These were mostly centred on natural spaces (as these were free) plus others such as the zoo, museum and airport. In the late 1990's one father told me how grateful he was that his girl was able to go to such places. He explained that they did not have a car, but even if they did, they would not know that such places existed. This programme has always been expensive to operate as we did not charge any extra for excursions (or some children would always miss out) and we needed to employ extra staff in order to cover ratios both within the centre and out on our excursions.

In 2001 I visited the Reggio Emilia travelling exhibition in Hong Kong. My thoughts were provoked by not only by the empowerment of, and respect for their children, but with the way they were continuously taken out into the real world, into fields, down caves, up towers and to visit local statues and piazzas. I was inspired by this and continued to study their work. However, I believe that society in Aotearoa/New Zealand does not respect and value children in the same ways or treat them as competent in the ways they do at Reggio Emilia. I could not comprehend our local supermarket closing for the afternoon in order for the children to have free range to study and draw, or for the local council to lend a city engineer to work with the children.

In 2000, as part of a family holiday, I visited Egypt. I was amazed at very young children (probably about age five) paddling small homemade boats out into the Nile to ask for money from tourists. Not only were they very adept at paddling these craft (with what looked like plastic ice cream tub lids) but they had a sufficient grasp of many languages to call out and ask questions. I could not imagine our children having the skills to do this. This experience called into question my understanding of confident, competent children (MoE, 1996, 2017).

In 2003, again as part of a family holiday, I travelled to Denmark and observed three forest schools (kindergartens). At this time in Aotearoa/New Zealand there was an emphasis on regulations, risk mitigation and health and safety measures. I had not been able to find any actual information on the concepts (as this was pre Google). I had imagined we would see children undertaking nature study. What I experienced, however, was a strong sense of coming home. Children were playing in exactly the same ways I had when I was a child, climbing trees, making huts, building and cooking on fires, using tools to chop and saw wood, roaming through forests along with wandering deer and no fences. There was no adult intervention unless they were invited. We saw children laughing, having fun, working together in small groups, chatting away while they waited for turns with tools. In all three centres we saw no upset or crying children, just busy happy children who knew the few rules which were

imposed and followed them. We questioned the teachers about the lack of fencing, unsupervised children making fires, no doors on kitchens, babies sleeping outdoors in one-degree temperatures with no adult supervision (apart from a baby monitor). When we stated that this would not be possible under Aotearoa/New Zealand regulations the responses were always oh no, your poor children, how deprived they must be, or how ill they must be. All adults were very sad and surprised that in a country such as ours with a reputation for the outdoors, healthy living and a progressive curriculum, that this was not compulsory in Aotearoa/New Zealand. They were astounded that our children did not have these opportunities. I once again reflected that we had always thought that we were providing opportunities to develop confident competent children, healthy in mind, body and spirit (MoE, 1996), but now realised that that we were depriving them of so many opportunities.

Upon returning to Aotearoa/New Zealand I discussed this with my teachers. They were a very multicultural team, however, I soon discovered that although most were born and raised overseas, they all had similar childhoods to me, whether it was roaming the streets and climbing mango trees in Mumbai, burning rubbish and roaming in Samoa, cooking rice for lunch in the paddy fields in China, or roaming in the forests in Fiji, we all experienced freedom, roaming and importantly were treated as competent. We began to give our children much more freedom. We discussed with whānau, revised our perceptions of risk, changed our risk analysis, then when we were out and about, and it was safe to do so, we let children run freely, climb, roam and play out of either sight or hearing. We observed that children gained in confidence and competence. This led to us sending two teachers in 2009 and 2010 to the U.K. to undertake forest school leader training, as well as a study tour of forest schools in Scotland. Although this did not reflect the values of an ECE Aotearoa/New Zealand context, (it was designed by secondary school teachers for a U.K. qualification), we had wanted to ensure that what we were undertaking was in line with the best health and safety practices from around the world. The *Education outside the Classroom Guidelines* (MoE, 2009) highlighted

the need for teachers to have safety instruction, and competence in their practice. These teachers also gained a sound appreciation of practices in action and developed our Health and Safety policies. Since then we have developed play based nature programmes loosely based on the forest school/kindergarten concept (Forest School Association, What is Forest School, 2019).

As forest school is a social construction, culturally, socially and historically situated (Leather, 2018), we adapted this for Aotearoa//New Zealand and decided we would operate as a nature kindergarten. We began to operate our sessions in natural spaces, one day per week, from our centres. Here, the same ten children and two teachers, spend the day in the same natural outdoor spaces. We also operate two stand-alone nature programmes where the children attend between one and five days per week based on the same principles. I had tried (unsuccessfully) to establish a home-based service which would be operated in outdoor situations; however, the Ministry of Education informed me that under a home-based license, education and care must happen from a home situation, not in outdoor environments.

Over the years I also applied (unsuccessfully) for approximately ten grants to establish innovative outdoor programmes in low socio-economic areas. Several years later I discovered that my applications had not been considered as the panel could not understand how this could possibly work. I also applied (unsuccessfully) for a grant to establish a nature based bilingual ECE centre in conjunction with Ohomairangi Trust (a Māori community based early intervention service). When we enquired why the application did not progress to the short list were told that we did not have enough experience. I have also written to every Minister of Education over the past twelve years asking to meet and be given the chance to present my case, but have been advised each time that this was just another form of ECE or that there was already scope within the system for this to happen. We also submitted proposals, again unsuccessfully, to be a Centre of Innovation and for a Prime Minister's Award. Even though we had been operating our programmes for over twenty years we were told that

the programme was not sustainable. These experiences highlighted to me that officials had no understanding of the possibilities these types of programmes may provide.

We continued to operate our 'Out and About' programmes, the goals of which are for children to explore and make sense of the world, along with our nature programmes. These focus on children learning and understanding themselves, and their capabilities, overcoming challenges and adversity, working together in groups, creativity and problem solving and making connections with the environment and with place.

When the *Competent Children at Five* Report (Wylie, Thompson & Lythe, 1996) was released we noted that good quality educational experiences distinctly benefited all children, however they clearly made more of a difference to children from low socioeconomic areas. We also identified open ended language as an important indicator in quality centres. Language, conversation and open-ended questions then became a priority for us, theorising that many children from low socio-economic areas, as experienced in my P.D days, would not have opportunities to explore the wider environment. We believed that the experiences we were providing would help to give children a broader understanding of how the world works.

My passion for outdoor environments took me to several international conferences where I took advantage of study tours to local centres and programmes. In Hawaii I visited several outdoor programmes which were run for disadvantaged children, noting the enthusiasm of both the whānau and children.

After studying *Rethinking the Brain* (Shore, 1997), I became particularly interested in all the new brain research which suggested that the brain is affected by environmental conditions, underlining that optimal early environments may have continued effects throughout life. Mustard (2006) also identified that experiences in ECE may have lifelong impacts on brain and genetic development deepening connections through activating neural pathways for health, wellbeing and competence. This research

reinforced for me the importance of providing optimal environments and opportunities for children.

My enthusiasm and excitement for outdoor learning led me to undertake further study, and eventually, postgraduate study. I was interested in the multiple ways in which children learn. This knowledge was particularly important and relevant to me as my centres originated in very low socio-economic areas and I believed that it was important to keep up to date with the latest trends and theories in order to provide the best environments for children.

Our teachers had always noticed that not only do our children develop in so many ways, but that the outdoor environment seemed to provoke amazing conversations, interesting questions, enquires about the environment, arguments, discussion and the developing of working theories, described by Lovatt and Hedges(2015) about the world. One teacher discussed with me that in the van travelling back to the centre, after lying on the ground and observing and discussing the enormous trees, a twenty month old child pointed out the enormous truck which was passing them on the motorway. They were then able to spot other enormous vehicles and landmarks. We had a discussion about the new vocabulary children were gaining and transferring into other contexts. I too had noticed the amount of talking and excitement when I visited. Having strong relationships with children, they are always desperate to give me information and to talk about and show what they have seen and done. Some years later when attending differing professional development sessions, I specifically asked if other teachers who take children on these types of programmes have the same language experiences, to which they all enthusiastically agreed that they had noticed this.

These realisations all coincided with concerns expressed in the media and the establishment of a group by COMET called *Talking Matters*. They had reported that approximately one third of Auckland new entrants have insufficient oral language and early literacy to easily learn to read. This group also recognised research (Hart & Risley 1995) highlighting differences in language use between children from low and high

socio-economic backgrounds. Children from low socio-economic (SES) backgrounds in this United States study were beginning school with a vocabulary of three million words, compared with the six million used by children from higher socioeconomic backgrounds (van Hees, 2011). I had also noted research from Hart and Risley (1995; 1997) showing this dramatic difference in vocabulary by the age of three in children from different backgrounds. I was also aware that researchers, practitioners and policy makers should understand that vocabulary is crucial to literacy development (Teale, Piciga & Hoffman, 2013).

I had wanted to research and promote the ways in which outdoor environments provide real opportunities for children's learning. There are now considerable studies showing the benefits for children when playing in nature, for example (Bilton, 2010; Fjørtoft, 2001, 2004; Greenman, 2005; Kelly et al. 2012; Knight, 2009, 2011; Louv, 2005; Sobel, 1996; Warden 2007, 2010). These studies are mostly from overseas, however they tend to focus on connections with nature (Louv, 2005; O'Brien & Murray, 2007), environmentalism (Gruenewald, 2008; Sobel, 1996; Wells & Leckies, 2006), risk (Gill, 2007; Sandseter, 2009), and health and wellbeing (Jelleyman, McPhee, Brussoni, Bundy, & Duncan, 2019; Taylor & Kuo, 2009). We also have anecdotal evidence from past pupils, with several representing Aotearoa/New Zealand in various sporting disciplines, and others excelling in academics and leadership.

There did not seem to be specific research of nature based environments focusing on the benefits of language development. When I realised this, I decided to research the ways in which play in nature based outdoor environments could provide a context for language, learning, and development. This would become the topic of research for my thesis. The term NBOE reflect key features of interest to this research: learning outdoors and learning in nature. In other words, the focus is not simply on being outside, but rather being immersed in a nature-based environment such as a park, forest or beach. For the purposes of this research, the natural environments are considered, as identified by Waters and Maynard (2010) to be natural environments,

largely undeveloped and not necessarily predetermined as a space for children's play. The theoretical and methodological positioning of the research is sociocultural (Vygotsky, 1987). This is where learning unfolds as children play, interact and interpret their world. I would review the existing literature in order to explore current understandings of the topic's language, play and NBOE.

1.3 Approach to the Research

This study is a literature review which draws on a range of theories, theoretical underpinnings and research on what is already known on each topic. This review has been developed over a number of years and also draws on examples from my own experiences in this area over the past forty years. It theorises how play in natural outdoor environments contributes to language acquisition and development.

The literature has been organised into three main sections, play, language and natural outdoor environments, which relate to my research question and affect different aspects of the study. Each chapter examines the relevant literature and includes the theoretical underpinnings and study of relevant topics.

Deciding which literature to include was challenging. The differing studies relate to diverse groups of children, and include differing age ranges, cultural and socio-economic backgrounds. Studies also varied in size and in duration. Papers were selected on the basis of relevance to the topic and the number of citations however no independent checks were made of study quality. Limiting the scope of the research was also challenging, as each topic had extensive literature which could have been explored in more depth, from many different perspectives.

1.4 Overview of the topic

The aim of this thesis is to examine the existing literature on play based natural outdoor environments, the theories of how children acquire and develop language, and historical benefits in order to establish that this is an optimal environment to develop language.

It will include research on the history, benefits and challenges of learning in natural outdoor environments, including health, physical activity, time, space, brain development, place, environment and the significance of Papatūānuku to Māori. I

include aspects of Māori culture impacting on environments for children in Aotearoa/New Zealand. We have a commitment to Te Tiriti o Waitangi which promises to protect Māori culture and to enable Māori to continue living in Aotearoa/New Zealand as Māori, while acknowledging Māori have a deep knowledge of and connection to the environment (Ministry for the Environment, 2017).

There is growing recognition of the inherent value of outdoor learning in ECE (Khan, 2002; Knight, 2009, 2011; Louv, 2005; Warden, 2010), with most offering a holistic approach incorporating emotional, physical, relational, intellectual, creative and spiritual dimensions (Knight, 2009). This is consistent with *Te Whāriki* (MoE, 1996, 2017) aspiring to incorporate the holistic ways children learn, identifying family and community are integral, while emphasising children learn through responsive and reciprocal relationships with people, places and things. In the *Ngahere Project*, Kelly et al. (2013) recognise that connection to place has the potential to build learning and identity through empowerment and holistic development. Research on the importance of place in learning and connection to nature are important, this is particularly important to indigenous cultures where the ability to understand and articulate connection to place is pivotal to personal identity (Penetito, 2009).

Vocabulary has been identified as a critical factor in literacy development (Teale, Piciga, & Hoffman, 2007). Both Piaget and Vygotsky had influential theories of language acquisition. The importance of vocabulary for children's language development has led to research about children's talk when they work together, and interact (Lyle, 2008). *Talking Matters* (2019) highlight early experiences shape children's development and ability to learn. They identify early oral language as a significant indicator of future thinking and educational performance, ascertaining that limited interaction and talk may result in limited vocabulary. *Talking Matters* suggest the consequences of this are that children then struggle with communication, have narrow access to complex thinking, and have difficulties learning to read or write (<https://www.talkingmatters.org.nz>). The size of a child's spoken lexis impacts on the

development of their ability to learn to read. If children have no concept of a subject or idea, have never heard the word or understood its use, it is much more difficult to read, understand or be interested in a topic (Connor, Spiro, Obler & Albert, 2004).

This is also why the context where language is learnt is important. When I took a group of children to Ambury farm, the child who thought that a sheep was a lion was already at school learning to read, with books such as *Baby Lamb's First Drink*. I wondered how we can expect young children, with little understanding of the world around them, to enjoy learning to read and make sense of the words if they have no clues to understand what they are trying to read. Children learn language in the context of everyday settings with people, places, and things (MoE, 1996, 2017).

There are a limited number of NBOE programmes operating in Aotearoa/New Zealand. Some of the factors hindering them are the Education Regulations (MoE, 2009) which requires that all licensed programmes include a building which meets full licensing standards. The few programmes that operate do so as an excursion from a licensed centre. This adds to programme costs as M.O.E. funding (MoE Funding Handbook, n.d.) only meets the minimum funding required to meet centre standards, not the additional cost parents have to contribute towards staffing outdoor programmes. In my experience, since the introduction of 20 hours ECE funding, many parents have become accustomed to paying few, or no fees for children over three years old. I have found that they are therefore reluctant to, or unable to, pay extra for these programmes which require higher staff ratios. Parental anxieties, or perceived anxieties about risk, danger and weather also contribute, with many parents (and teachers) unaware of the unique educational possibilities outdoor programmes may provide. Another contributing factor is a lack of appropriate training and professional development. Some providers come from overseas, but these are mainly skills-based or aimed at older children, and are not embedded in *Te Whāriki*. There are also very few preservice teacher education institutions offering instruction in NBOE programmes. As Leather (2018) identifies, play

is important and fundamental to forest school pedagogy, however, play is often missing in practice.

Play is an important aspect of early childhood programmes. The United Nations Convention on the Rights of the Child (UNCROC) (1989) declares that “the child has a right to leisure, play, and participation in cultural and artistic activities” (UNCROC, 1989). Article 31 identifies “that play is not a luxury but a fundamental human need”, the same as food and shelter. *Te Whāriki* aspires to “uphold and protect children’s rights, interests, and points of view from the earliest ages” (MoE, 2017, p.61). UNCROC was ratified by Aotearoa/New Zealand in 1993 and as a signatory to this convention the importance of the child’s right to play should be valued and upheld in early childhood education (ECE).

Although *Te Whāriki* does not have a specific focus on play, it does allude to the importance of play through a range of statements such as, “equitable opportunities for play” (MoE, 2017, p.18) and “using strategies and skills to play and learn with others” (p.24). Play is fundamental to the ECE curriculum, it is the vehicle through which children’s activities occur, it is integral to learning language, and outdoor settings foster play. A critical component to this thesis is the study and combination of these three elements. Furthermore, it discusses the intersection and importance of play, language and natural outdoor environments.

1.5 Structure of this thesis

The project explores three distinct areas of research in early childhood education, (ECE): comprising research on children’s language acquisition and development, play and nature based outdoor environments (NBOE).

This study has been designed to examine the literature on the benefits and to understand the opportunities for language acquisition when learning in and through play in natural outdoor environments. This will then be critically analysed and the three separate areas of play, language, and natural outdoor environments are combined in

order to discuss their synthesis. Throughout the thesis I will provide personal anecdotes of my observations and informal talks with teachers and children.

Chapter One – Introduction

This is the introduction to the thesis and includes my story, an overview of the topic and my approach to the research as well as the structure of the chapters.

Chapter Two–Play

I examine the nature of play, including the history, the theories and the characteristics of play. I will also examine the literature on environments, place and neuroscience, along with the influence of emotion, physical activity, creativity, health, and play deprivation.

Chapter Three –Language

In this chapter I explore the literature on the foundations of language acquisition, development and talk. I also include the effects of school, learning, and the role of the teacher, culture, environments, play, experience, joint attention and dialogue.

Chapter Four– Natural Outdoor Environments

I examine the current literature on natural outdoor environments as spaces for children to play in an ECE context. I include definitions, learning in and through nature, physical activity, creativity, health, place, environmental attitudes and forest/bush/nature programmes.

Chapter Five – Synthesis

In this chapter I bring together the three separate areas in order to discuss the intersection of play, language, and natural outdoor environments. In this chapter I synthesise the literature on play, language development and natural outdoor environments.

Chapter Six –Summary and Conclusion

I present the learnings from the literature and make conclusions in this chapter. The research question: Do play based natural environments provide a context for language development in young children?, is revisited and the opportunities for future research and actions are considered.

Chapter Two Play

“Now in myth and ritual the great instinctive forces of civilized life have their origin: law and order, commerce and profit, craft and art, poetry, wisdom, and science. All are rooted in the primeval soil of play”. —Huizinga (1955, p.16).

2.1 Introduction

Children are intrinsically motivated to play, and importantly their right to play, is reflected in the highest levels of society. The United Nations Convention on the Rights of the Child (UNCROC) (1989) declares that the child has a right to leisure, play, and participation in cultural and artistic activities. Article 31 states that “play is not a luxury but a fundamental human need, the same as food and shelter” .*Te Whāriki* aspires to “uphold and protect children’s rights, interests, and points of view from the earliest ages” (p.61). Importantly the United Nations General Comment 17 (2013) underscores the “need to create time and space for children to engage in spontaneous play, recreation and creativity, and to promote societal attitudes that support and encourage such activity” (p. 3). UNCROC General Comment 17 also promotes the development of creativity, imagination, self-confidence, self-efficacy and physical, social, cognitive and emotional strength and skills. These contribute to all aspects of learning. These activities should form participation in everyday life as they are of intrinsic value to the child, purely in terms of the enjoyment and pleasure they afford (International Play Association (IPA), 2013).

Many have pondered the definition of play. Grey (1974), an influential author, academic, lecturer, leader and advisor, within the Playcentre movement considers

“Who has ever defined play at all satisfactorily? Who can? It, whatever it is, is uncultured by words” (1974, p. 42). Almost all publications on the topic have a definition of play. The *Online Oxford Dictionary* (n.d.) defines play as “to engage in activity for enjoyment and recreation rather than a serious or practical purpose”. For children, play is an integral aspect of their lives, they cherish the time, the freedom, and quality places to play (Funky Dragon, 2007) while the *Charter for Children’s Play* (Play England, 2008) describes play “as what children do when they follow their own ideas and interests, in their own way, for their own reasons” (p.2).

Play and playful behaviours are important human activities Gray (2015) identifies play as a statement of freedom, of what children want to do as opposed to what they are obligated to do, the joy of play is the ecstatic sense of freedom. Likewise, Pellis and Pellis (2009) agree that play is primarily behaviour for its own sake, for the pleasure and joy of being able to do it. Burghardt (2005) conveys that the focus of play is making and maintaining play, rather than the end product, whereas Brown (2010) views play as a state of mind, as opposed to an action. Similarly, Brownlee (2005) considers that play is the whole point of being human, while Huizinga (1955 as cited in Gordon, 2014) coined the phrase *Homo ludens*, which means that humans are inherently a playful species.

Lester and Russell (2010) view play as an activity, distanced from reality, while still having a relationship to it, as part of, but apart from, the world. Accordingly, there are always rules such as ‘you are the mummy, I am the daddy I have to go to work, this is my motorbike, I have to put my helmet on, you have to take your shoes off inside, this is my *dak* [marijuana]. I have observed these phrases, which mimic children’s everyday known worlds and experiences, when children create their own stories. Being playful is also a desire to be open and to explore opportunities, to act in ways that indicate optimism and agency, or belief in oneself, through challenge and direct experiences.

Sutton-Smith (2003) advises that play is where children can test and try out ideas or concepts with each other, with the world, with ideas and with language. I have

observed children rolling vehicles down guttering, discovering that when they lift the guttering the vehicles go faster, they try balls, they experiment with lifting the guttering up onto a railing - "I did it, I did it, see when you put it up higher it goes faster", they say excitedly, almost yelling to everyone around. Play can be impulsive, haphazard and fantastical. It may comprise physical movements, voices and language, and be loud, exciting or exaggerated. Rules can even be changed, and conventional behaviours turned upside down (Burkhardt, 2005; Pellis & Pellis, 2009). In many games such as the game of chase, children are active and keep the game going by negotiating and agreeing to the rules, however, what they actually value is the thrill of the chase. Rules provide a framework where children know that this is play, providing a safe place where emotions can be experienced without the consequences of the real world (Lester & Russell, 2011). Similarly, Punch (2003) suggests play could be viewed as a style or disposition, as opposed to an activity in itself. Sport New Zealand (2017) identify aspects of play as "intrinsically motivated, spontaneous, will happen anywhere...is personally directed...limited or even no adult involvement...is freely chosen ...self-determined and has no predetermined outcome...fun, accessible, challenging, social and repeatable" (The Importance of Play, Sport.NZ, p. 1).

All humans (and mammals) play. When an adult purchases a new piece of equipment such as a phone, a car or a drill we play with it to see what it can do, we test it, we find its limit, we try it out and we find ways to use it creatively. Play is also serious, as Singer (2013) describes, seriousness soon happens when other children break the rules, or when they are totally engrossed in their play and are disturbed by another child the responses maybe extreme.

Since prehistoric and ancient cultures children have played at hunting animals. The ancient Greek and Roman children played and were inventive; they made balls from pig's bladders (Cohen 2018). Throughout the ages and across diverse cultures and ages we have played. From a Māori perspective, Pere (1991) draws on her own

childhood, recalling from a very early age sliding down slopes on cabbage tree stumps, climbing cliff faces and trees, clambering over rocks, swimming and jumping into swimming holes from trees. She declares it fundamental for Māori children to play and to join in with tasks and games. Recreational and physical exercise was promoted to help develop physical fitness and dexterity, together with attributes such as balance, poise and stamina. Pere describes this as the “pure joy of being human”. Similarly, anthropologist Gray (2015) advises that hunter gatherer children acquired vast knowledge about plants and animals and developed crafting skills and tool use through play and exploration. When I was a child, roaming with other neighbourhood children, they took great pains to point out which plants were poisonous, which was the best place to jump the creek and where to find the guppies. Similar to hunter gatherer children, we took the initiative and were creative, developing games within our local community. Gray (2015) draws on other anthropology studies to show hunter-gatherer groups did not distinguish between work and play, essentially all of life was understood as work and play. In a conversation with a staff member she highlights that in the Pacific Islands children play as they do their work, such as when they learn to make traditional mats from coconut palms alongside their mothers. No one forces them to do it, it is their play.

Pramling Samuelsson and Fleer (2010) suggest a new model for teaching is needed considering current views of the role of the teacher. Additionally, Legget and Newman (2017) argue that the current definitions limit the way play is understood, suggesting a new definition, reflective of sociocultural approaches. They challenge the concept of free play, dismissing the idea that play is never aimless or free, detecting how through a Vygotskian sociocultural lens, throughout play, children are intentional, and continuously learning, therefore, Legget and Newman (2017) suggest a new definition of play:

Play is intentional and involves children acting with a purpose and goal for personal learning as they actively explore, discover, imagine and interact with objects, people and their natural world. Educators have a role in play and can

foster children's holistic development by intentionally sustaining children's thinking and involvement in play-based learning environments. (p.30)

Children find opportunities for play everywhere. From displaced cultures with no obvious tools or equipment, or living in poverty or crisis, to children from privileged countries, strapped into the back seat of a car, children play. Play is innate. The IPA (2016) researching *Children in Crisis*, studied children from villages in Nepal affected by earthquake in 2015. They were playing alongside their parents building houses, replicating what their parents were doing. Others suffering trauma after events such as the tsunami in Japan, living as refugees in Lebanon or the squatter children of Kolkata in India, living and playing between the railway and the River Ganges, all of them played. The report concluded that, no matter what their circumstances, children find opportunities for play everywhere. Bruce (2011) argues that play belongs at the centre of humankind, that it is vital for all people, communities and cultures. Grey (1974) considers that as children live, so they experience a way of life. They are influenced by it, and in part accept, reject, perpetuate or change it.

The IPA is committed to supporting UNCROC (1989). Article 31 declares play to be a fundamental part of life; it is a biological, social, and cognitive necessity for individual children. Furthermore, they identify that play has benefits for society and humankind. The IPA Committee on the Rights of the Child propose that children's "play is any behaviour, activity or process, initiated controlled and structured by children themselves; taking place whenever and wherever opportunities arise" (2013, para 14c). Even under constant stressful circumstances the adverse effects of toxic stress may be lessened, by varying degrees, through play. Roe and Aspinall (2011) would concur with this. Their study of severely traumatised children, spending time playing in nature one day each week, showed that in doing so children developed exploratory and physical skills, along with social cohesion and trust.

Play in our society today is often viewed as meaningless or frivolous. Pramling Samuelsson and Johansson (1996) identify that play and learning has been divided

within the research, and identified as two interconnected occurrences. While Gordon (2014) identifies that it is very easy to miss the value of play as many aspects can be studied separately. These include aspects such as physical activity, health, wellbeing, social interaction and creativity, which are often not seen as play despite being aspects of play.

2.2 Children's Rights

The principles that underpin *Te Whāriki* (MoE, 2017) derive from a holistic viewpoint, envisioning that children grow up as “competent and confident learners, strong in their identity, language and culture” (p. 7). *Te Whāriki* advocates for children to learn in their own ways, discussing the importance of Bronfenbrenner’s ecological model, where the child is central. They highlight this can be identified in the ways kaiako “recognise children as citizens and preserve their dignity while building their mana and supporting them to build the mana of others” (MoE, 2017, p.61). These actions also correspond with the principles of UNCROC, which is also consistent with the three P's, the principles of partnership, participation and protection, which underline Te Tiriti o Waitangi (Ministry of Health, 2014). This is the founding document of Aotearoa/New Zealand, providing a place to stand for both Māori and Pākehā. It is seen as a commitment by Māori and non-Māori to live together in a spirit of partnership. The principles and obligations set out in this Treaty are still current (MoE, 2017). However, despite the Treaty, Ritchie (2012) contends that promises made to protect Māori rights by the British Crown, and the ensuing colonisation, has continuously violated the rights of Māori children through the disregard for te reo Māori and for the rights of tamariki Māori to educational success.

UNCROC stresses that children are people within their own right, and not viewed purely as future citizens. They must be involved in decisions about their own lives and situations. UNCROC Article 31 recognizes the “right of every child to rest, leisure, play, recreational activities and free and full participation in cultural and artistic life” (IPA,

2013, p. 1). Play builds strategies for self-protection, while developing structures for adaptability, pleasure, enjoyment, emotional and stress regulation, attachment, stress response systems, attachments and learning and creativity, while simultaneously supporting health, well-being and resilience (Lester & Russell, 2010).

Adults should regard, and take seriously, the right for children to play when providing ECE programmes for children. Clark and Moss (2005) identify that children are experts in the views of what affects them. When interviewing children, they found the right to play outdoors was the most preferred activity. Clark and Moss consider that play may identify what it is to be a child. Similarly, Lester and Russell (2010) assert that in order to provide for play, adults must identify and pay attention to creating environments which support play. Moss (2007) cautions about the growth in policy initiatives dictated by perspectives which see children, not in terms of their present lives, but in terms of their or their nation's future. Childhood is viewed as preparation for adulthood, with all children moving through the same developmental pathway. Moss identifies that children are increasingly seen as what they can become in the future. However, importantly, May, Gammage, Moss and Laevers (2001) when reporting to the UN, note it is not the place of ECE to specifically prepare children for the future. Literacy, numeracy, science and other academic concepts are developed in ECE settings, as well as physical, mental, emotional and social development. While we do need to prepare children for life, it is imperative that we view the child in the here and now, not as human capital for the future.

2.3 Agency, Efficacy, Empowerment, Control and Resilience

I climbed Mangere Mountain with a group of children. There was some frustration and some fear as they climbed, but once they reached the top there was joy and exhilaration; “wow we did it, I can see the whole world from here”. People face many challenges in life; however, by developing the confidence and belief that challenges can be overcome, they help to develop strategies to deal with adversity. With the rapid

changes in technology, climate change, work insecurities, along with greater ethnic, linguistic and cultural diversity, life is not as predictable as it was for previous generations where, for most people, life was mapped out. Through play children are able to train for the unexpected (Pellis, Pellis & Bell, 2010) therefore, creating uncertainty and unpredictability and using provoking behaviours in comparatively low risk ways.

As a community we must actively advocate for children and support them to share their voices. James and Prout (1997) identify that children must actively be involved and contribute to the construction of their lives, and the societies in which they live. Instead of being viewed as passive objects, children should be viewed as credible in their own right and encouraged to participate and be included in decisions which affect them. A child from our nature kindergarten began attending the local school where he was told children were not permitted to climb trees. He questioned this and was told that children may fall and hurt themselves. He explained that he had been climbing trees for years; it was his favourite thing to do. The school then did some research and looked into their policy; and they now allow children to climb trees. It is important to hear children's voices and empower them. Our children play in a local bush area however there was often fish and chip papers and other litter lying around, particularly after the weekend. The children were upset about this, so, we made placards, and the local paper came and did an article with lots of their voices and pictures, the litter then improved after this.

The first principle of *Te Whāriki* is Whakamana/Empowerment, "children must be respected and valued...their rights recognised" (MoE, 2017, p.18). If we wish to respect children, we must listen to their views and ideas and genuinely consult them. Listening to children means taking them seriously, then responding to, or acting on, their voices. This is more than just listening to what they have to say. Empowerment is about really listening to and understanding what they say. This does not mean we must always act

on these suggestions; however, it is important to know and acknowledge their view. Too often children are viewed as a minority group of passive subjects.

Play can help build resilience, the emotional strength to call on resilience; a dynamic process where positive outcomes can happen even when times are difficult, resilience is also the capacity to manage stress and hardship. Luthar, Cicchetti and Becker (2000) define resilience as a dynamic process where constructive results are reached in adverse situations, perseverance, is viewed as an approach not a personality trait or attribute, however they caution these should not imply long-term invincibility. However, perseverance is related to children's self-belief in their capacity to have influence over their lives. It develops through high autonomy, self-efficacy and self-control, while having confidence and belief that challenges can be overcome. It includes an understanding of emotions, with the ability to seek help when needed, to assert the rights and responsibilities of themselves and others. The Education Hub (2018) emphasises that a feeling of control provides an advantage to children when faced with difficulties.

Deci and Ryan (2000) suggest that intrinsic motivation is based on the psychological needs of competence, ability to control, relatedness or connectedness, and autonomy, (the ability to act independently). When our basic needs are met, our behaviour will be depicted as choice, preference, and autonomy, and will result in greater emotional well-being. I personally draw on pedagogy where children choose what they want to do and how they might do it, there are no external or adult imposed goals apart from respect and safety. Gray (2015) considered research in adults, identifying that when they choose to perform tasks, they do so more positively than when they feel compelled to do it by others. Additionally, Csikszentmihalyi (1997) conveys that adults who have a great deal of autonomy in their work often experience it as play, even when the work is difficult.

Children also need to find ways to work with and overcome adversity. On one occasion I took a group of children to the Botanical Gardens where in the previous week, they

had been rolling and exploring in long grass while playing lions and tigers. However, upon arrival they found that the grass had all been mown. The children were upset at what had happened to their grass. This provided an opportunity to find the park grounds- person and discuss the reasons why the grass had been mown. Similarly, on a walk to the beach, children had planned to continue building a hut they had been working on in the forest. However, when we arrived at the beach, we found that a storm had thrown up lots of seaweed and stranded some fish; therefore, to the lament of some children, we spent the morning studying and playing with various bits of debris the storm had thrown up. Although some children were disgruntled as they had made plans, they soon became involved in the new activity. This practice in unanticipated situations develops emotional flexibility by playing with the emotion of being surprised, perplexed, or dealing with the unforeseen (Lester & Russell, 2008). Because many of our nature kindergarten sessions are held on a weekly basis the children are always disappointed if, when we return a week later, we find that their play places have been changed. Disappointments such as when huts or swings have been taken down, or even a favourite climbing tree (which sometimes has been a focus for several years) has been removed. Children can be very upset as they have built an attachment to these objects and places, however these situations can provide opportunities to discuss feelings and then to work out solutions and to find new opportunities to move on with life.

Authors such as Gray (2015) find that in humans, play is a valuable way children develop physically, emotionally, spiritually, cognitively and socially. Play also helps develop and maintain friendships, complex thinking, instinctive problem solving and many other imaginative activities. Lester and Russell (2008) distinguish that through play children are able to build friendships, attachments and become empowered to support other children in stressful situations.

Many benefits of play are derived from the volatility, impulsiveness, godlessness and individual control, rather than the specific content of play (Lester & Russell 2008).

Children deliberately improvise and play with unpredictability and uncertainty to experience the emotional aspects of surprise and disorientation while fostering emotional capability (Spinka, 2001). On one occasion I observed this improvisation on a trip to the forest. The children decided to climb a bank which was covered in gorse. One child directed 'Don't go that way, there are too many prickles. Go around the other side and climb up and you won't get prickled', to which another child replied, 'I don't worry about prickles, I just run really fast through them'. Providing opportunities where children can work solutions out for themselves is far more satisfying than adult directives.

Parents and educators sometimes struggle with the appropriateness of some types of play which exhibit socially unacceptable behaviours such as play fighting, or where children may be unintentionally hurt, misinterpreting the actions as aggressive rather than socio-dramatic. Lester and Russell (2008) highlight that physical and emotional uncertainty may appear in ways adults may not always view as positive, however play such as rough and tumble, wrestling, gun and superhero play and play fighting and toilet humour are important and can be provided for in negotiated and safe ways. These types of play develop alertness and imaginative responses. Children also learn to be alert and study other children and identify strategies. They understand that play has structure and rules, created by the children themselves. Other authors see play as providing a strong foundation for intellectual, physical and emotional growth, together with creativity and problem solving. Sutton-Smith (1997) draws on anthropologist Victor Turner, describing play as limuloid, meaning that it falls between what is real and what is unreal, as if positioned on the beach between the land and the sea. Similarly, Sutton-Smith is also informed by biologist Bateson (1955) who suggests play is paradoxical; it is not always as it appears to be. More recently Bateson (2014) and Pellegrini, Dupuis and Smith (2007) pinpoint that play is an important way for children to adopt and adapt differing ways to respond to the challenges they may encounter, while adjusting to diverse environments.

This view corresponds with Reggio Emilia, and their philosophy of reimagining childhood. Rinaldi (2013) defines this reimagining as a change in how we view the child, recognising the importance of their competence and capabilities, in contrast with the vulnerable or the cute child. Repositioning requires we change our focus from the needs of the child to the importance of their rights, from viewing children as invisible, to recognition that children are fully capable, as contributing citizens from birth. Many centres in Aotearoa/New Zealand aspire to this pedagogy, and although this philosophy aligns with Māori pedagogy, in my experience, our society does not generally view children as competent and capable from birth.

2.4 Environments for Play

In 2018, over 200,000 children attended ECE services in Aotearoa/New Zealand, including 96.3% of four-year olds (MoE, 2019a). With the significant amount of time children are currently spending in early childhood programmes it is critical that these environments are optimum. In the United States Greenman (2001) identified that “a baby welcomed into a centre today may spend up to twelve thousand hours in childcare, more time than they will spend in all of the rest of her schooling” (p.38).

Providing for children’s development and well-being must include their environment. Lester and Russell (2008) note that the vital role environment plays in relationships with people, places and things, while Kelly and Jurisich (2010, p. 15) identify the emphasis in *Te Whāriki* of “reciprocal and responsive relationships for children with people, places, and things”. Landscapes are emphasised by Hackett (2016) who highlights that when children’s geographies are taken seriously, they are able to express the full range of ideas and interactions. In the same vein Ritchie (2012) identifies that children are “richly responsive to the landscape, the physical, tangible, sensory world in which they are situated” (p.89). While we give agency to both constructing meaning and communicating experiences, however, children are only able to access the narratives, experiences and resources which we afford them access to.

In my experience children will play anywhere. For example in the pot cupboard they will experience the power of making sound (and the reaction of adults). There is the experience of feeling the different textures; the metal, water, wood or mud. It is these affordances, or features, elements and things within the environment that contain meanings for us that invite us to imagine a particular use (Gibson, 1977) which make a difference. Settings afford a variety of actions and behaviours for different children. Children decide for themselves the ways to use these elements within the environment. An element such as a stick can be used for a number of purposes, such as a gun, a doll, to build a hut or draw in the sand. Likewise, Sandseter (2007) stresses features in the environment such as trees, swings, ropes and long grass that afford opportunities for risk and challenge. However, from a differing perspective, Chemero (2010) argues “that affordances are not properties of the environment” (p. 184) Instead he believes they “are relations between particular aspects of animals and particular aspects of situations”(p.184). Chemero identifies that we gather information from meaningful rich environments, however he then posits that if these environments encompass meanings, then they cannot be merely physical. This could correlate with principle of mauri, the life force or ever-present energy, found in people, the cosmos and the natural world, permeating all things. From this perspective “Te Urewera Forest is recognised as a sentient being, a living ancestor” (Paul, 2019, Section 2). Significantly Wattchow and Brown’s (2011) advice for teachers is to become more place responsive. It is important for them to understand the local geographies and structures from both Māori and non-Māori perspectives.

Many ECE centres today look aesthetically beautiful, however if children feel that they are not allowed to play, experiment, get messy, touch or try things out, or are hurried, then the learning experiences and enjoyment will be limited. This includes the importance of allowing for time and space. I observed a group of ECE children on an excursion to the beach, however they were instructed by the teacher that they were not permitted to play, go into, or paddle in the water. Providing an environment where

children feel that they are free to play with the appropriate resources is important if children are to use their own creativity and imagination. Katz and Chard (2000) discuss the importance of a dynamic environment, that when children are engrossed or engaged, they build higher order thinking including analysing, theorising, predicting and problem-solving skills.

Brierley (1994) indicates that it is purpose and autonomy that encourage and provide inspiration for intelligent activity. They suggest children do not learn from passive experiences, rather learning arises from “actions that he or she has initiated” (p. 75).

Waite (2010) notes that historically, people worldwide grew up learning in the outdoors. It is unusual that education has come to mean something that happens in specific buildings. There is also compelling evidence (Chawla, 2007; Davis, Rea & Waite, 2006; Greenfield, 2004, 2007; Kelly et al., 2013; Louv, 2005; Moore, 1997, 2014) note that play in NBOE enriches children’s lives along with substantial positive impacts for health, wellbeing and learning (Gray, 2015; Jelleyman et.al. 2019; McCurdy et.al. 2010; Taylor & Kuo, 2009). Few of these benefits are provided for in open, concrete covered playgrounds (Tovey, 2007). Likewise, Kelly et.al, (2013) found when using NBOE for ECE programmes, the environment itself played a much more significant role, opening up multiple possibilities where children could distinguish and investigate their own priorities, rather than those identified by the teachers. Additionally, Kelly et al. (2013) identify that this is consistent with environmentalist Orr (2005), who recognises that in the outdoors, “the place itself becomes an agent in the curriculum” (p. 15). Adult awareness of the environment is important; people should recognise that children learn through the context of the natural environment, and that this is not simply the focus of the learning. Ecologist Cobb (1977) revealed that her study discovered the one thing all the great geniuses had in common was inspirational experiences in nature during their early years.

Gerber (1998) advocates for the environment to be as natural as possible and not over stimulating, as stimulation changes the way children feel. Artificial lighting, loud noises,

overpowering colour and confusing, noisy toys distract children from their thoughts and discoveries. Gerber identifies that for infant holistic wellbeing a safe outdoor space with opportunities to use the senses and the whole body are ideal, with opportunities to connect to the physical world and to identify their place within it. These experiences will be highlighted in a further chapter. Wattchow and Brown (2011) argue that “outdoor places are much more than mere sites for human activity. They make us and we make them. They are the sources of our identities” (p. ix).

I would theorise that the environment, with its affordances, should be seen as the first teacher. Reggio Emilia programmes drew inspiration from Dewey (1934) and view the environment as the third teacher:

To act as an educator for the child, the environment has to be flexible...be modifiable by the children, teachers should keep up to date and construct their own knowledge. Everything, the objects, the materials and the structures, are not seen as passive elements, can be used, these are elements that condition and are conditioned by the actions of the children and adults who are active in it. (Edwards, Gandini & Foreman, 1998, p. 177)

Almost all authors studying play (Brownlee, 2005; Bruce, 2011; Fjørtoft, 2001, 2004; Greenman, 2005; Lester & Russell, 2008, 2010; Moore, 2014; Stevenson 1998, 2003; Warden, 2010) recognise aspects of environments which enable children’s play and curiosity. They emphasise the importance of the environment providing for autonomy and creativity (Gerber, 1998). Similarly, Lester (2011) argues that environments should be judged on the possibilities afforded to children for play. Play Scotland (2013) contribute to this argument, suggesting that children show a preference for places that offer variety, flexibility, natural elements, risk and challenge (affordances). I have found outdoor environments contain endless affordances or clues that indicate possibilities for young children.

Others comment on the deprived environments some children experience. Katz (1998) identifies that many ECE centres have been compared to “warehouses where children have been held in custody until their parents resume responsibility” (p.42). Katz also draws attention to the fact that these programmes are increasingly referred to as child

care or all-day preschool, however she suggests that these are replicas of pervasive corporate factory models.

2.5 Place

From a Māori perspective, the ability to recognise and express relationship to place is fundamental to personal identity. “What is this place?” and “What is our relationship with it?” (Penetito, 2009, p.9). Penetito explores the concepts, importance, and the significance of place, and place-based education for Aotearoa/New Zealand, through identifying the importance for Māori of pōwhiri and pepeha. It is vital for children to know and understand the significance of the spaces and places where they live and play. NBOE offers multiple opportunities to discuss and theorise about local histories, geographies and points of significance. Ritchie (2012) identifies how traditional knowledge, the stories and local histories are disregarded by western globalised culture, “a monolith, where the felt primacy of place is forgotten, superseded by a new, abstract notion of space” (p. 88).

The significance of place is further highlighted by Indigenous, environmental and post-humanist perspectives (Taylor & Giugni, 2012; Ritchie, 2012; Duhn, 2012) identifying our intrinsic connection to the more than human world and the ethics of children’s relationships with all living things on the earth. This involves moving from the current obsession with child-development and the learning needs of individual children to engaging with the multiple species we share the earth with. This pedagogical focus involves supporting children to take notice, care, and pay attention to and to have an awareness of, the other creatures sharing our world, recognising humans are not the only creatures on earth (Taylor & Giugni, 2012). Importantly, for Māori, humans are intimately connected to all things and to place through the principle of mauri, the life force connects them and is central to culture and draws attention to our connection to all things. Similarly, Grey (1974) determined that all types of ECE programmes must have due regard for the fundamental significance of what it means to be alive:

It is no longer enough for early education to think in terms of working with children...being with children...teaching children...or even learning with children...These are atomised segregated actions which interfere and may even contradict one another, and they will limit the quality and potential of living. (p.10)

A key aspect of learning in the outdoors is the encounter with the natural world, shaped and affected by the landscapes, seasons and the cycles of life, and connecting with it. Māori cultural practices and beliefs include “the need to live as closely as possible with nature, to learn about it, to understand it” (Pere, 1991, p. 9). For Māori, as with many indigenous cultures, nature is a critical source of energy, to stimulate imagination and to develop creativity (Kelly and White, 2012).

The role of the adult and their own pedagogy is critical in selecting and setting the environment. Santer, Griffiths and Goodall (2007) suggest although free play is defined as child-led, adults play the critical role of facilitating children's experiences and providing access to suitable environments.

2.6 Characteristics of Play

Gray (2015) identifies play as a state of freedom, what one chooses to do as opposed to what one is obliged to do. The ecstasy of play is the jubilant feeling of freedom. Gray notes that play is not always all joy and laughter however it is always accompanied by a sense of ‘yes, this is what I want to do right now’.

The common characteristics of play involve impetus and mental attitude, not behaviour (Gray, 2015; Lester & Russell, 2008). Play is based on choice and volition, inspired for its own sake, enjoyable and positively valued. It is also flexible and develops skills in different ways. Additionally, Gray (2015) suggests that when we observe children at play, we get an insight into the way they think and feel, how they relate to other children, their relationships, creativity and persistence. Two people throwing a ball for example, you can observe from their attitude, expressions and actions, if they are playing or not. Sutton-Smith (2003) highlights that play is the space where children can experiment with each other, with the world, with ideas and with language and free play

is often misjudged as a free for all where children can be aggressive and destructive. Play England (2007) describe free play as a choice of what and how children choose to do and when to stop. Although adults are involved providing space and resources, they take their lead from the child. There are no external goals or curriculum, apart from health, safety and respect, imposed by adults. This supports my pedagogical approach. However, Sutton-Smith (2003) argues that the arbitrary conjecture, that play is a tool for acquiring learning and development, is a romanticised view which glosses over the graver or more troubling play such as teasing and bullying.

Play provides many opportunities for social interaction. Diamond (2013) identifies that playing assists language acquisition, cooperation and social learning while offering opportunities to practice self-regulation, learn appropriate responses and further develop executive functioning skills.

2.7 Play and Physical Activity

Physical development lays down the foundations for cognitive and social skill development. Vallotton and Ayoub (2011) discuss that infants and toddlers who are more active explore more, having greater opportunities to discover the world. A number of authors (Alton, Adab & Barrett, 2007; Ekeland, Heian & Hagen. 2005) highlight, as well as supporting children's health and motor skills, physical activity helps to prevent a number of chronic diseases. Sport New Zealand (2017) distinguishes play as the foundation of physical literacy, with opportunities to develop and practice life skills. They promote the importance of play for physical development, while stating that play lets children experience fun, excitement, joy and laughter in ways they enjoy. When children are learning to climb on the monkey bars or ride a bike, they are motivated to practice these skills until they have mastered them. Pellegrini (2008) states that importantly, the benefits of play, as opposed to other approaches, such as direct instruction, is that the behaviours created through play can be imaginative, novel and

fun, providing incentives to rehearse the newly developed behaviours. When a toddler walks across uneven surfaces, which frequently is the case outdoors, Gerber (1998) suggests they are learning to practise and try again while trying to learn and understand balance. These and other similar skills cannot be taught, they must be understood through experience. Regular physical activity and play supports children's health in other ways, including developing motor skills, and increased energy expenditure. Playful adults live longer than their less playful peer group (Alton, et al., 2007; Ekeland, et al., 2005; Gordon, 2014). Without play IPA (2016) found an increased risk of obesity and other health issues due to inactivity.

Physical and mental health are connected and supported through both physical and social environments (Diamond, 2007; Dietz 2001). Additionally, physical activity has been shown to reduce depression and anxiety, provide stress relief and increased self-esteem and self-efficacy. Poulsen and Ziviani (2004) found free play has been shown to be a valuable and effective form of physical activity.

2.8 Risk and Uncertainty

Gill (2007) identifies the importance of moving from a culture of protection to one of resilience, emphasising we need to be cognisant and understand what the actual risks are. Many parents are driven by a desire to protect their children with fears of traffic, predacious adults and harm. However, I have observed that parents continue to put children into the most dangerous activity of all, driving in motor vehicles (sometimes without even a seatbelt). Motor vehicle accidents kill and maim hundreds of children in Aotearoa/New Zealand each year. Some parents often say they'd love their children to have the kind of freedom they had but they can't do it because times have changed. This is borne out by Skenazy (2011) who agrees times have changed and actually children are safer now than when we were growing up.

Children play in many different ways where they put themselves in uncertain situations, from birth. Panksepp (2007) and Pellis and Pellis (2009) recognise that play impacts on development, and building foundational skills, additionally rough play such as rough-and-tumble helps to build social skills in children. Others (Lester & Russell; 2010; Spinka, Newberry & Bekoff, 2001) stress that children seek out uncertainty in order to improvise uncertain situations, improvising responses using predictable and novel ideas to re-establish balance and gain control.

I observed a child climbing a tree. He climbed to where he would feel safe, then climbed down again. A few minutes later he would try again. On each attempt he would try to go a little bit higher, calling to others to share his achievements. When a child learns to be brave and overcome their fears while playing at an activity such as climbing a tree or jumping across rocks, they learn that fears can be overcome. When they get to school and have to read in front of the class this can also take courage to overcome the fear of making mistakes.

Play Wales (2013) identify that risky and unpredictable play offers opportunities to develop physical and emotional flexibility and resilience, contributing to confidence and

self-esteem. Sandseter (2007) adds that surprisingly, it is our anxiety about children being hurt, through what are mainly harmless injuries, which will possibly result in the consequences of creating more anxious children with increasing levels of psychopathology.

2.9 The Role of the Adult

There are many and varied ideas as to the role of the teacher. Providing for play is complex because play is complex. Brownlee and Crispe (2016) discuss that all teachers have their own pedagogical beliefs and ideas about play, suggesting a continuum, with some teachers employing a highly structured approach, while others are committed to totally free unstructured play, allowing the entire day for children to follow their own interests in child-led play-learning. Similarly, Warden, Nugent and MacQuarrie (2015) discuss “practitioners as gatekeepers who shape each child’s nature-based learning in ways understood as being culturally significant and meaningful (p.25). In *An Introduction to Ke tua o Te Pae* (MoE, 2004a) identifies the key role for adults in ECE is to notice, recognise and respond (p. 6), while *Te Whāriki* states that “kaiako should be knowledgeable about play-based curriculum and pedagogy and able to conceptualise, plan and enact curriculum that is motivating, enjoyable and accessible for all children” (MoE, 2017, p.59).

Several authors also discuss how children’s behaviours are governed by natural instincts, Brownlee and Crisp (2016) highlight that teachers’ understanding of child-led play needs to go beyond provocations, inquiry, teachable moments, scaffolding, or intentional teaching. They further recognise that teachers must understand the intrinsic knowledge of human patterns and play behaviours and how these are assumed in each situation. Similarly, Brownlee (2007) suggests that children are born beautifully designed, and motivated, to educate themselves. However, I would propose that this does make for intentional teaching, as it requires intentionality to provide environments which support children in these ways and how these are affected in the human and

physical environment. In conversation with a teacher I observed an example of this intentionality. She related to me how children were jumping the rocks around a waterfall, highlighting how one child very much wanted to be involved, but was afraid. The teacher discussed with her the ways the other children were jumping, where they were putting their feet. The child, cautiously at first, began jumping across the rocks. When she reached the other side, her face beamed with satisfaction and she ran off to catch up with the other children. The teacher's role was to observe, discuss and provide appropriate questions to support the child to find ways of doing this for herself. However, this approach may be disputed by authors such as Gray (2015) who suggests that children need opportunities for unstructured play; they do not need coercion from adults, or assistance to find ways to acquire theories, questions and ways of doing things. Gray further explores the importance of trusting children to lead their own learning and development. Play Wales (2013) ascertain that the concept of choice is central to our understanding of play. Children's choice is not the lack of limits; boundaries are managed with the consideration of the child's need to choose their own play (Santer, et al., 2007). There are some differences of opinion with the teaching profession of about the distinction between interfering and facilitating.

Rinaldi and Moss (2004) identify that the early years are precious, this is the time dispositions and personalities are formed. By the time children get to compulsory schooling, there is a risk of having squandered children's potential, making the rich child poor. Rather than making children fit for school, we need schools that are fit for children. I have observed that in natural outdoor environments teachers offer children more freedom and choice than in a centre environment. They collectively decide their intentions for the day and find ways to do this. There is also much discussion, prioritising and planning. Importantly there are minimal adult directives relating to these activities such as packing up, no running inside, put away your things, don't drop that on the floor, or move away from other children. In nature programmes children understand the rules and the reasons behind them; these are negotiated and usually all

related, respect, themselves, others and the environment, (Papatūānuku) or health and safety. The outdoors offers multiple opportunities for both group and individual play, providing for individual choice with minimal adult intervention.

Lofdahl (2005) identifies that although play is assumed to have some purposeful association with learning, a broader understanding and appreciation of play is not often fully explored. Several authors (Brownlee, 2005; Brownlee and Crisp, 2016; Gray, 2015; Louv, 2005; Santer, et al., 2007; Taylor, 2013; Waller, 2006) pinpoint that narrow teaching approaches fail to identify or understand the value or intrinsic characteristics of play, questioning narrow instructional approaches, and further identifying that teachers must be play literate in order to maximise the value of play.

Stover (2011) identifies how trends in ECE over the past three decades have placed increasing emphasis and responsibility on the role of the teacher, lamenting that it has now become normal for children to attend ECE centres in order to experience play-based learning. She posits that the push for teachers to be recognised as professional has created a new ECE sector, questioning whether, in this neoliberal age, if the emphasis is on just play, how can teachers justify their professional status? Stover stresses that throughout the literature the ability to learn through play is not disputed, however, she contests the importance of promoting play in current educational settings. Pramling Samuelsson (2006) also recognises that although expressions such as learning-centred play and play-based are used, the play experiences are designed to meet clearly defined educational goals. In the same vein, environmentalist Sobel (1996) discusses the academification of early childhood edifying that academic content is being pushed down into earlier grades along with developmental expectations. Play, including nature play, has taken a back seat to the focus on school-readiness and skill development as children are required to sit and listen and take in instruction.

Grey (1974) gives us food for thought when he writes:

The serious question which must be put is has anybody the right to decide for another what his lifestyle ought to be, or where his life should face intervention?

To intervene in the way of life of others is a presumption no one has a brief to undertake, whether he be a trained teacher with other adults, or as a trained teacher, or an adult with a child. (p.43)

While the context of the time when Grey was writing was one where most children did not spend the long hours in ECE without a parent, it is still pertinent to use caution as to how we intervene with children.

Children need opportunities to test their capabilities and to work problems out for themselves. Gerber (1998) suggests giving children opportunities to find their own way out of difficult situations, arguing that when adults provide quick, easy fixes for children they become accustomed to this, robbing them of the satisfaction of discovering a solution for themselves. In Reggio Emilia, learning is relational; this is a process of co-constructing meaning from children's inquiries and research. Teachers question both the style of teaching where the adult is viewed as owning the knowledge, as well as the child-centred model, which they suggest promotes the teacher as passive with an active child approach (Dahlberg, 2012).

2.10 Theories of Play

The study of play has only been taken seriously over the past two centuries. This is despite, as Huizinga (1955) suggests, "play is older than culture, for culture, however inadequately defined, always presupposes human society (p.1).

Sociocultural theories are at the heart of the aspiration statement, principles, strands and learning outcomes of the early childhood curriculum *Te Whāriki* (MoE, 2017). This theory can be traced to Vygotsky (1978) who identified that children developing and maturing through connection and participation with people and places, is at the heart of this approach. Sociocultural approaches require kaiako to pay keen attention to children's interests then, balancing contribution and intervention, determining how to best evolve and support learning (MoE, 2017). The use of critical theory perspectives is reflected in the principles of *Te Whāriki*, which "challenges disparities, injustices, inequalities and perceived norms" *Te Whāriki*, (MoE, 2017, p. 62). *Te Whāriki* also

draws on the theories of Bronfenbrenner (1979) where the child is affected by a series of ecological systems, from their individual environment, to family, community then wider social systems. This is identified in *Kei Tua o te Pae* as “the balance of power shifts from the adult to the child...increasing ability and inclination to steer their own course, set their own goals, assess their own achievements, and take on some of the responsibility for learning” (MoE, 2004b, p. 3)

Jordan (2003) highlights the importance of intersubjectivity, which is developed when adults share their own ideas with children (co-constructing, sharing, and revisiting) in order to extend current interests, valuing and giving voice to children's activities. The teacher's role is not to talk to, but to co-construct ideas and meaning with the child. This is the approach used by the schools of Reggio Emilia in Northern Italy, who for over seventy years have developed a philosophy which values the child as competent. Rinaldi (2013) identifies that in Reggio Emilia, children are viewed as strong, as powerful and as rich in potential and resources, from the moment of birth. Rinaldi also highlights that this philosophy arises from a society which values their children, with the key concept of recognising the child as a citizen. Lindsay (2016) identifies that the forest school approach and the schools of Reggio Emilia are also influenced by Dewey (1934) who promotes an experiential style to learning through participation in the local environment.

Working theories are an important aspect of children's thinking and learning about the world, described in *Te Whāriki* (MoE, 2017) as a tool for children to make sense of the world, enabling them to develop knowledge of the world while forming skills and attitudes that contribute to the development of learning dispositions. Gray (2015) states children are naturally motivated to play intensely at new skills.

2.11 History of Play in Aotearoa/New Zealand

Early childhood education in Aotearoa/New Zealand draws from the European philosophies of Froebel, Piaget, Isaacs, Montessori, Steiner, Grey, Vygotsky, and more

recently theories from Reggio Emilia and Forest Schools. Many of these philosophies have their roots in the outdoors (Kelly et.al. 2013).

Pere (1991) notes that “Māori children from a traditional background were encouraged to participate in challenging tasks, games and exercises as soon as possible” (p. 24).

Similarly, Clayworth (2013a) describes games such as:

... moari, or giant stride swing, was a pole with flax ropes suspended from the top on which people swung. Vines suspended from tree branches made tarere (simple swings). Children played piu (skipping), usually in groups. Other games included wī (tag), tīringaringa (hand games), word games and guessing games. Children learned kauhoe (swimming) and kōkiri (diving) from a very early age. They played by exploring the bush, rivers and coastline, running about, fishing, hunting and gathering.(p. 4)

This observation describes the traditional play and activity of tamariki, which was active, challenging, competent, complex, autonomous, and fun.

Te Ara (2019) also draws on examples from Angas (1847) further describing Māori children at play:

They pass their early years almost without restraint, amusing themselves with various games of the country such as flying kites... formed of leaves, the game of maui (string game), throwing mimic spears made of fern stalks... sailing their tiny flax canoes on the rivers...after the arrival of Europeans many games and pastimes were either suppressed or abandoned. Those that survived were mostly hand games, string games, tops, stilts and knucklebones, all of which had equivalents among European games. (p. 1)

Te Whāriki emphasises that “In Māori tradition children are seen to be inherently competent, capable and rich, complete and gifted no matter what their age or ability” (MoE, 2017, p. 12). This observation supports the concept of roaming unsupervised within the natural environment.

Playcentre and kindergarten became the two mainstream ECE services that were acceptable to the government (Stover 2011). My personal background was Playcentre, a parent cooperative working together to support the development of children and adults. Morton (1993) states Playcentre had its roots in the progressive ideas of the

1930s, enabling parents to be actively involved in ECE with their children. Lex Grey had a major influence on Playcentre in Auckland. As director of training from 1952-63 he forthrightly advocated for parents in local Playcentres to decide what was appropriate for them, emphasising that parents as first educators are capable. Playcentre became known for its philosophy of free play. It advocated for rich and varied environments, adult education and promoting the notion that parents learn alongside their children (Manning & Stover 2014). Pairman (2011) argues that in Aotearoa/New Zealand ECE has a history of being the Cinderella of the education system. There has always been a political struggle for government recognition, improved qualifications, adult/child ratios, and funding and this still continues.

2.12 Play, Emotion and Happiness.

Whatever prospects we may have when we come into the world, “the socioemotional environment of our earliest relationships forms the soil in which this potential either blossoms or withers” (Grey, 1974, p.42). Grey further identifies that predisposition for happiness is important to well-being. Gordon (2014) draws on research to show that happiness is one of the strongest predictors of not only well-being but also has an impact on numerous other conditions. Playfulness does not mean forever playing the clown. It does mean being open to turning situations upside down, accepting of moments of nonsense that arise, and bringing a playful disposition to situations where there may be conflict. It means not taking play too seriously, as it is far too important for that (Russell 2015).

Gray (2015) identifies the importance of joy, suggesting it as necessary if an experience is to be playful. Gray further suggests that the principal emotions of play in humans are interest and joy, this makes play meaningful. Being playful does not mean there are not negative emotions, identifying that frustration is necessary to feel the joy and sense of achievement when a problem is overcome Zosh et al., (2017).

There have been varying research studies investigating motivation such as mindset (Dweck, 2006) however, Zosh et al., (2017) distinguish that playfulness is also associated with motivation along with many other psychological benefits. Gordon (2014) uses examples from literature to emphasise these benefits, including creative and divergent thinking, problem solving, helping with stress and emotional regulation. I have observed that when a child is playing in the centre and they fall and scrape their knees there is usually quite an emotional response where the child needs care and nurturing. When the same child is outdoors running, and a similar episode occurs the child usually requires no attention and is just keen to catch up with the other children and keep on playing. While this may be termed a healthy distraction, it is interesting that the environment appears to change the emotion. Liu et al., (2017) highlight that opportunities for active play are important, that when children are deeply engaged, “involvement increases brain activation related to agency, decision making, and flow” (p.4).

Many authors (Gordon, 2014; Louv, 1995; Sutton-Smith, 2003; Pellis & Pellis, 2007) discuss the emotional effects of play. Burghardt (2005) underlines that play builds emotion and motivation in the reward regions of the brain. Additionally, Lester and Russell (2008) identify that emotions have a key role in play, while playing not only has a major impact in developing emotions and self-regulation, but also provides opportunities to build strong attachments and friendships while promoting positive feelings. Brownlee and Crisp (2016) reminds us that our limbic system is an old mammalian brain, an emotional-relational brain, and that growing this part of our being is where our happiness lies, and increases our ability to get on with our own kind.

When we go for a walk along the beach sticks and stones are thrown and often used as weapons. This seems instinctive. Louv (2005) suggest that this type of play is reliving a past evolutionary state where these types of weapons were used for hunting or defence. However, society increasingly notes this type of play as risky or antisocial. Most learning is through experience. Brownlee and Crisp (2016) suggest that from birth

we play, young babies laugh at expressions or at things in their environment. They roll a ball to see and to understand what it can do. They throw items to gauge reactions or to observe gravity.

Play Scotland (2015) maintains that play builds the architecture of the brain, while providing a positive emotional outlook, which provides for more complex and flexible playful interactions with the environment. Bruce (2011) suggests that play helps children find ways to work out and solve problems, to think, try out and discover what they think and feel. Children recall the past and use abstract thinking to imagine the future and different ways of doing things.

2.13 Pretend Play, Creativity and Games

Pretend, make believe, socio dramatic, fantasy or imaginative play allows children to practice, discover and play with their worlds, while exploring ideas, emotion and different perspectives. NBOE provide an ideal context for pretend play with numerous affordances to create and support these concepts. Pretend play is related to the society where children live (Levin, 2003). As they play, children recreate their worlds to make them either less frightening or more exciting (Sutton-Smith, 2003).

I observed a small group of children setting up house in a bush situation. Each week when they arrived, they would sort out their roles and continue building the house, often in new and different ways. Pretend play provides opportunities to extend vocabulary, acquire social skills and scripts, use language humorously, and negotiate rules and meaning (Smith & Pellegrini, 2008). They also practise comprehension, deciphering what others intend, complex language constructions, and the development of imaginative stories. *Best Start Early Learning for Every Child Today, A Framework for Ontario Early Childhood Settings* (Best Start, 2007) informs that pretend play supports the child's theory of mind, the ability to understand that others have beliefs, desires, and intentions separate from one's own. Similarly, Carlson, White and Davis-Unger (2014) found that children skilled in pretend play perform well on cognitive tasks

such as recall, verbal comprehension, sequencing and the understanding of cause and effect.

In a comparative study between traditional ECE settings and NBOE Cordiano, et al.,(2019) found greater levels of pretend play at the end of the year in the nature programme, positing this was due to the “less structured exploratory nature” (p.32) of the environment. Along with other multiple benefits Cordiano et al. state that NBOE provide:

“Unstructured materials (e.g. sticks, leaves, dirt, rocks) that are completely open-ended without prescribed uses. They are constantly involved in transforming these unstructured materials into new things using their imaginations. Children must activate creativity and problem-solving to play in this type of environment. They must learn to think flexibly and adapt to changing circumstances, as dirt becomes mud and rocks and leaves become slippery and wet in the rain. The open-ended materials are conducive to teamwork that incorporates the ideas of the group. In the outdoor setting, children will transform a stick shelter into a rocket ship one day and a grocery store the next.” (p.32)

Parents and educators sometimes struggle with the appropriateness of some types of play, which may exhibit socially unacceptable behaviours such as play fighting, or where children are unintentionally hurt, misinterpreting the actions as aggressive rather than socio-dramatic. Lester and Russell (2008) highlight that physical and emotional uncertainty may appear in ways adults may not always view as positive. Play is also creative non-literal, needing an active mind; it is removed in some way from real or serious life (Gray, 2015). Rules and creativity are reflected in games such as chase, children are active and keep the game going by negotiating and agreeing to the rules; however, what is actually important is the thrill of the chase. Rules provide structure where children know that they are playing, providing a safe place to experience emotion without the ramifications of the real world (Lester & Russell, 2011).

Most play is pleasurable and enjoyable. Play can continue for many hours or even days and weeks with ever changing roles and developing storylines. In our centre, the story of Hatupatu continued and developed over several years (Cowley, Melser & Kahukiwa, 1982). Sutton-Smith (2003) suggests that play creates a sense that, while playing, life

is worth living. This inspires children to play more, creating further opportunities for these benefits to accrue. When we go to the bush or the beach, children often complain at home time. They want to continue their play. Once children have mastered the skills, they have a feeling of success and satisfaction. Positive feedback is a pleasurable experience which provides positive feedback, this then encourages further exploration, novelty and creativity.

When left to their own free will children instinctively come up with ideas and games. I observed them playing in the creek, when the tide was coming in and trying to dam the water. The banks were collapsing, and they were all coming up with theories of why and how to stop this from happening. They were theorising, negotiating, testing, laughing, getting frustrated, all while collaborating together. When children play, their behaviour, and the ways they act are beyond their years. “In play it is as though he were a head taller than himself” (Vygotsky, 1978, p. 102).

Play may be erratic, impulsive, imaginative and creative, children are able to rearrange their worlds in ways that suit them (Lester & Russell, 2008). I have noticed that when taking children on regular walks along the beach they immediately find ways to transform into different characters, and then play in unpredictable ways. What was meant to be a walk will transform into a jungle, a prison, a lion hunt or an aeroplane ride. Gray (2015) also defines play as freely chosen and autonomous, where the activity is respected more than the results.

2.14 Health – Mental and Physical

We face enormous health and wellbeing challenges in our communities and across the globe. Moore (2014) discusses that while many health outcomes are improving, others such as asthma, allergies, anxiety and depression, autism-spectrum disorders, obesity and diabetes continue to rise, and for the first time in history many parents may outlive their children. While there is much emphasis on play as important for children’s health and development, Gordon (2014) identifies that within the dialogue of health and

wellbeing, the value of play has remained widely unappreciated and under prioritised. The words of Grey (1974) are still profound and still have meaning today. Grey identifies that for any programme to be effective it has to grow and move with the meaning life holds for people. For ECE programs to have meaning they must initiate and promote a programme with the attitudes, aims and achievement of growing, learning and playing that strengthen children's way of life.

The importance of the environment for mental health and wellbeing should not be underestimated. Liu et al. (2017) highlight the importance of social relations and interaction which activates brain neurons, recognising the mental states of others. Bronfenbrenner's proposal, published in 1977 (cited by Liu et al., 2017, p.18), identifies that "the well-being of individuals is sensitive to the dynamic interactions within social networks", highlighting the role of environments which include positive and supportive social interaction.

Play is also particularly important in times of crisis. Louv (2005) reports that natural environments are said to have restorative qualities that help in relaxing and coping with everyday stress. The IPA (2016) report on *Play in Crisis Situations*, identifies that children use play to work through their understanding of an experience:

Tsunami play was seen often at Asobi-ba. With a handmade equipment slide, a child gliding from the top plays the part of the tsunami. A child standing below is drenched, and may die or not, and beside the slide another child is positioned for announcing a major tsunami warning. They all survived on this occasion.(Chatterjee 2018)

This play is referred to as post-traumatic play (PTP) and may include play about the trauma or violence children have been exposed to (Levin, 2007). These types of play can be associated with obsessive, serious, and dark qualities (Gil, 1998) and may be characterised by repeated unresolved issues along with increased aggressiveness and/or withdrawal. Play topics may also be focused on themes such as rescue or revenge (Cohen & Fredrickson 2009, 2010). In my early childhood centres I have observed children show these characteristics and use play to work through issues including smacking dolls or using phrases such as "you will get a hiding for this".

Health and wellbeing benefit from a holistic approach. From a Māori perspective, Te Whare Tapa Whā model (Durie 2004) compares hauora (health) to the four walls of a whare (house), with each wall representative of different dimensions. Physical health/taha tinana is not distinct from spiritual health/taha wairua, or from family health/taha whānau, and mental health/taha hinengaro. These are all important aspects of health, and all are needed for holistic well-being. When one of the walls is missing, then the person will not be balanced. Although the principle of Holistic Development/ Kotahitanga (MoE, 2017) states children develop holistically and “need a broad and rich curriculum that enables them to grow their capabilities across all dimensions” (MoE, 2017, p.19), much of this literature puts an emphasis on the physical aspects of safety. The value of adventurous and risky play is under-theorised and undervalued in *Te Whāriki*, the value of which does not seem to be recognised in our culture of risk aversion and mitigation. I would theorise that this drive to keep children safe, is to the detriment of the mental health aspects of holistic development.

When I visited Denmark in 2003, teachers in ECE centres were sleeping their very young babies outside in prams with baby monitors on each pram. The temperature was 1 degree and there was no adult supervising outdoors. When I mentioned that this would not be permitted in Aotearoa/New Zealand as children slept indoors only, the staff were horrified and thought that our practice was very unhealthy. Similarly, in the early 20th century London during the 1918 influenza pandemic, the McMillan sisters established open air camps and outdoor nursery schools with wilderness areas and gardens. They advocated for the health benefits of fresh air and no children attending this school contracted influenza during the pandemic (Bilton, 2010).

2.15 Play Deprivation and a Child’s Right to Play

Despite my observation that play can happen anywhere, Sutton-Smith (1997) uses the term play deprivation to comment on the absence of play opportunities. This may include many forms, from chronic neglect, abuse, or abandonment and war-torn

countries, to children in modern societies unable to play outdoors because of what Gill (2007) terms their 'risk averse society'. Despite the literature supporting the benefits of play, the amount of time children spend playing, particularly in the outdoors, has decreased markedly (Gill 2007; Jelleyman et al., 2019; Louv 1995; Maynard 2007) over the past two generations. Hanscom (2016) laments the inactivity in young children, emphasising this is behind many health and cognitive difficulties, such as ADHD, emotion regulation, sensory processing disorders and increased aggressiveness.

Many authors (Brownlee & Crisp 2016; Gill 2005; Lester & Maudsley 2006; Louv 2005; Panksepp, 2007; Warden, 2010) comment on the risks of depriving children of play, suggesting that depriving children of opportunities for play will have harmful effects on their lives. Similarly, Bateson (2014) highlights the association between playfulness, well-being and adaptive behaviour, suggesting this denotes that an absence of play can be assumed to be harmful. Lester and Russell (2010) suggest that rather than being seen as an optional extra, play is essential to our health, well-being, development and even survival. Without play, children's health and development may be inhibited. According to IPA (2016) if play is absent or restricted children are more likely to become violent, antisocial, aggressive and lacking in social skills. Pellis and Pellis (2007) add that this will in turn reduce children's physical, social and cognitive competence.

2.16 Neuroscience

In *Te Whāriki* there is discussion around the emerging theories from neuroscience research "providing evidence for how children's biological foundations interact with specific aspects of the environment during development" (MoE, 2017, p. 62). This research highlights the importance of the environments we provide for children in their early years.

The importance of play is such that Donnelly, Hillman and Castelli (2016) believe that neuroscience has shown connections from physical activity to brain structure and

cognitive development. IPA underscore that without play, children's brains do not grow as they should. The study of epigenetics identifies that the effect of deprivation for one generation can be passed on to successive generations. Lester and Russell (2008) suggest that we are now starting to appreciate the relationship between genes, brain and behaviour, and how these interact with the physical and social environment. This aids our understanding of the importance of play and how this links to physical and emotional well-being. Brain imaging reveals that genetic possibilities are not developed in a void, they develop through experience. The brain's neuroplasticity suggests that qualities we had formerly believed to be inborn character traits can change according to environments (Gordon, 2014).

In recent years, magnetic resonance imaging (MRI) scans have been more widely available and we can now begin to understand the neural systems responsible for the development of particular systems and skills. This has led to increased study of brain development, particularly the prefrontal cortex, responsible for executive function, emotional regulation, and problem solving and planning. A number of researchers (Eldeman 2006; Mustard 2006; Pellis & Pellis, 2007) highlight the importance of rough-and-tumble play for developing the social brain. Pellis and Pellis (2007) studied the effects of play and how it changes the architecture of the brain, suggesting that this can have lifelong effects on learning and development. Similarly, Zosh et al., (2017) identify that joyfulness is associated with increased dopamine levels and they highlight that these are "linked to enhanced memory, attention, mental shifting, creativity, and motivation" (p.19).

Increasing play is beginning to be viewed as a mechanism humans use to develop efficient brains. Several authors (ERO 2016; Lester & Russell 2008; Panksepp, 2007; Pellis & Pellis, 2007; Sutton-Smith, 1997) discuss that when humans play this triggers the nerve signals which create neural pathways, creating connections and brain plasticity. This results in the development of brain structures supporting learning, and

adaptation as well as influencing the systems effecting our capability to change, survive and thrive and shape the environment.

Conclusion – Play

Whatever the definition, most authors seem to agree that play must be the child's choice, have no intrinsic goals, be pleasurable and enjoyable, spontaneous and voluntary. A key theme I have found emerging from this study is that play is an emotional exercise. It induces emotions such as joy, happiness, frustration, sadness, fear, ecstasy, surprise and anticipation in social and physical environments. The research shows that play supports language development, well-being, learning, creativity and imagination; however, it should not be overlooked that play is an activity in itself and for its own sake. It appears to be designed for us to experience, practice, ponder and enjoy life in our world. Play is also a paradox; we accept its triviality in order to comprehend its profundity.

Chapter Three Language

“Without language, one cannot talk to people and understand them; one cannot share their hopes and aspirations, grasp their history, appreciate their poetry or savour their songs” (Mandela, 1994).

3.1 Introduction

Many authors (Hoff, 2013; Ibbotson & Tomasello, 2016; Smith & Ellery, 1997; Whitehead, 2007) emphasise that language is elemental to human learning and is important for life while Halliday (1993) notes that language is the most distinctive characteristic of human learning, the defining form of human communication. Smith and Elley (1997) suggest that we need an understanding of the fundamentals of how we acquire language before we can fully know how to use it. Both the Ministry of Education, who resource and develop strategic policy, and the Education Review Office who are mandated to review and monitor ECE services in New Zealand, define the importance of language acquisition and competence (MoE, 2017; ERO, 2017).

Te Whāriki identifies language as an important cultural task for children to develop, as “confident and competent communicators” (MoE, 2017, p. 9) intending that over time and with guidance children will “develop verbal communication skills for a range of purposes...an understanding for all language, and using it for a range of purposes” (MoE, 2017, p. 25).

Additionally, ERO (2017) considers oral language may be the most important skill a child will ever develop. Nonetheless, over the past few years there have been several reports (Chisolm, 2017; Jones, 2014; Van Hees, 2011) highlighting that increasingly children are starting school with poor language skills. Teachers report that there are children, particularly in low socio economic areas, beginning school unable to speak in sentences and who have limited vocabulary (Chisolm, 2017; Jones, 2018). This corresponds with the seminal work by Hart and Risley (1995), who coined the term ‘30-Million-Word Gap’, after finding dramatic differences in vocabulary used by children

from different backgrounds by the age of three. However, when Boereboom and Tymms, (2018) analysed literature from Aotearoa/New Zealand on school readiness, they found that social and emotional development was as important a concern for children beginning school as the ability to count and recognise letters and shapes, and as a predictor of future achievement. This finding does not seem to have been taken into consideration in the existing literature on school readiness, particularly language and literacy readiness.

Despite the emphasis on literacy and numeracy within education, many parents (and some teachers) fail to understand the important link between deep and meaningful oral language skills and success at school and in life. Children with poor language skills will often struggle with reading and writing (Van Hees, 2011).

In this chapter I will identify why oral language is important, how it develops and the implications for later learning. I will also explore the literature on environments which support the development of oral language. Language is increasingly recognised as a vehicle for learning, thinking, literacy and life. Children are born communicating, interacting and responding to opportunities, when they have supportive environments. Interaction and talk grows our brains, particularly in the early years.

3.2 Foundation of Language

Significant amounts of literature emphasise oral language as a foundation for learning. In their report (ERO 2017) *Extending their Language - Expanding their World: Children's Oral Language (Birth-8 Years)*, ERO offer advice suggesting that oral language is the foundation for learning and development, underlying most social interaction in life. However there appears to be limited research in the report to support these claims. ERO (2017) also ascertains that oral language leads to the development of mutual understanding and the expression of ideas and identity and how we identify with particular social groups. Language has also been identified as allowing children to extend and co-construct their understanding and achieve collective intentionality

(Tomasello & Rakoczy, 2003), while language capability in ECE is seen as the greatest predictor of school readiness and future success at school (Hoff, 2013). Similarly, ERO (2017) also ascertain that enquiry and investigation makes learning more effective, along with language skills to converse, problem solve, overcome challenges and use abstract symbols.

3.3 Why do we talk?

Across the world and throughout history humans have used talk as our major way of communicating. A number of authors (Gray 2015; Hoff, 2006; Kuhl, 2004; Vygotsky, 1978) clarify that we may have developed language to help us understand and make meaning of the world and the community around us. Vygotsky (1978) suggests that language initially arose as a means of communication, while Kuhl (2004) draws attention to current research suggesting language evolved to provide typically developing humans with a species-specific communication system which could be attained by all. Others, (Morgan, Fracas, Hillemeier, Hammer & Maczuga, 2015; Tomasello & Rakocsy 2003) discuss how language allows us to extend and co-construct understanding, develop meaning and achieve collective intentionality. Rogoff (1990) adds that with language come the possibilities for shared meanings of events, objects and entities that are not present.

Ibbotson and Tomasello (2016) discuss the unique ways humans use language, including analogy, classifying and categorising. This, together with the capability of understanding what others intend to communicate, allows for language to happen. Grammatical understanding and rules are built from the language children hear around them. They then develop the understanding that grammatical structure can contribute to the meaning, as well as the words.

ERO (2017) identifies that communication through oral language assists children to learn more effectively, problem solve and develop intellectual capability including the

use of abstract symbols, analysis and synthesis. They further identify that language skills are a central competency for 21st century life and learning.

3.4 Language acquisition/ development theories

Theories of language development have evolved and changed throughout history. However, despite variations which include cognitive mechanisms (Chomsky, 1965) there appears to be a consensus that language develops with use and in social contexts. Language is an intellectual process which taking clues from the environment then uses these as the ability to produce and understand language (Hoff, 2006). Understanding language means attaining a complex system of patterns, beginning with babbling, then moving to one-word utterances, then early word combinations, grammatical structure and clause combinations and then to more abstract constructions (Tomasello, 2009; Goldberg, 2006; Sag, 2013).

We often take language for granted despite this being the most complex skill a human can master (MacWhinney, 2001). Throughout the world, all normally developing children in typical environments learn to talk (Hoff, 2006). Language, its structure, meaning, use, setting and expression have all been studied resolutely by linguists (McDonald, 2015). Similarly, Bateman, Carr, Gunn and Reese (2014) highlight that oral language is more than words; it includes competencies, such as awareness of the sounds of words, expression and understanding.

Major theorists such as Piaget (1962) and Vygotsky (1978) emphasised the social aspects of language acquisition. Vygotsky (1978) highlights the importance of social interaction as a context for learning language, determining that the development of intellectual functions are dependent on cooperation and interaction. Vygotsky claims that the only good learning is learning which is ahead of development, that language acquisition is an example of the relationship between learning and development.

Hart and Risley (1995) coined the term 'The 30 Million Word Gap' after researching words heard by children in the first three years of life. The results revealed children from lower decile homes hear 30 million fewer words than those in higher decile areas. Much of the research since has often centred on how many words children know and on ways to expand vocabulary.

Conversely, other authors such as Hackett (2011) suggest a more holistic approach to understanding communication. Other scholars (for example Avineri, Johnson, Brice-Heath, McCarthy, Ochs, Kremer-Sadlik, Blum, Zentella, Rosa, Flores, Alim, & Paris, 2015), admonish programmes with a narrow focus on increasing indirect talk to children, accentuating that the problem is part of a much broader issue and any remedial programmes must work alongside other inequities such as economic and healthcare changes. Averini et.al., (2015) identify research by Ochs and Kremer-Sadlik (2013) which found that the ways employment and economic circumstances impacted affected families, was through decreasing joint family time in creative interactional pursuits. They also found that talk and joint engagement and play disappeared from many families, and when any spare time was available this was spent in passive bystander activities such as watching sports, films, or concerts. Averini et al., also indicate that children from higher socioeconomic areas usually have the benefit of rich, contextualised language which privileges their linguistic, cognitive and cultural capital. Importantly, if we appreciate children's environments, we can understand the approaches they use to construct meaning and express ideas and then act in response to this.

A further study of three-year-old children from low-income households by Hirsh-Pasek et.al. (2015) explored factors which influence language success or delay. They also dispute primarily focusing on word count as this fails to consider the integration of words into early interactions, detecting that both hearing and experiencing words are indisputably important to language success. Hirsh-Pasek et.al., also discuss research by Bruner, Jolly and Sylva (1975) who indicate that it is communication which guides

toddlers toward language, through scaffolding, engagement and the sharing of communicative routines, along with mutual negotiation of ongoing interactions. Averini et al., also indicate that word-rich talk about objects is not only about communication, but also stimulates reflexive capacity. Other authors (Blum, 2014; Sperry, Sperry, & Miller, 2019) question the validity of addressing only the number of words low income children hear, revealing there is a considerable variation in vocabulary environments within each socioeconomic group. They suggest current definitions of oral environments unduly underestimate the numbers of words children are exposed to if multiple caregivers and bystander talk is excluded. Language processing is affected by the relevance of linguistic elements in the environment. The sentence sizes, levels of abstraction and the speaker, are proposed to be as susceptible to multi-word sequences (I don't care) as they are to those of single words (Arnon & Cohen, 2013).

Becker and Varelas (2001) discuss that Piaget believed that children construct their understanding through action and lived experience and these cognitive structures lead language development. However, Vygotsky (1978) saw language development as a social process, integrating and understanding new words and rules through interaction with the social world, identifying that language leads cognition. Vygotsky (1978) maintained that social talk with more capable peers provides a context for development and language, highlighting the importance of giving young children many opportunities to practice talk including interaction through questions and narratives. Arnon and Cohen (2013) discuss that Vygotsky believed language emerges through the repeated processing of sentences heard in the environment. He determined that cognition is defined by social interaction within individual cultures where thoughts, actions and experiences are socially and culturally mediated. Similarly, MacWhinney (2001) discusses that Piaget emphasises the connection between social interaction, language and intellectual development, and he suggests that language is socially formed and an aspect of knowledge creation and an element of cognitive functioning. Ellis (2015) stresses the importance of learning, memory and perception, which are all influenced

by experience and usage; the more often more words are repeated and the stronger the memory of them, the easier retrieval. Additionally, Taylor (2003) mentions that perception and categorisation draw on features of conjunction use. The greater the usage, the more they become entrenched.

Ellis (2015) discusses Bronfenbrenner's (1995) bioecological model of language development which identifies that the focus is on the shaping role of the social contexts in which children live, rather than the internal processes underlying development. This model offers a useful structure to consider how differing environmental effects influence language development (Hoff, 2015). Languages change over time (Labov, 1972) and children learn from other children, and therefore do not always speak in exactly the same ways as their parents. Children learn some language from peers, often to the bewilderment of parents. I have experienced that when children use peer shared words at home such as 'bum bum' parents are often dismayed and mystified.

There is an increasing interest in emergent models of language, highlighting that language organisation is fundamentally tied to usage. MacWhinney (2001) suggests social forces and conversation implant language into a context, allowing for successful communication. MacWhinney traces this to Piaget, however Arnon and Cohen (2013) dispute this understanding, suggesting a general acknowledgment that Piaget's work on language was flawed, as it did not define the character of the learning mechanisms, also it does not include complex characteristics fundamental to modern linguistic theory.

Appropriately, grammatically correct language in real context was first defined by Hymes (1972) who stated that first the speaker constructs a vision about the speech context, and then decides on the options to understand the communication. Moore (2008) defines this as the learner being socialised into the linguistic and the socio-cultural activities of the specific language community. On the other hand, Ellis (2009) identifies that language is made up of a controlled range of paired meanings used for language purposes. Practice of these leads to understanding as linguistic knowledge in

the learner's mind. Other authors (Bybee, 2006; Ellis, 2002; Langacker, 2000; Tomasello & Ratsky, 2003) indicate that the depth of learning depends on the type and frequency of use. Similarly, more authors (Arnon & Cohen (2013; Ellis, 2015; Ferreiro, 2012 & MacWhinney, 2001) point out that the importance of social interaction, repetition, frequency and usage of words is important to implanting language into memory and for understanding meaning. Cognitive theorists argue that language acquisition has its origins in the processes of turn-taking in language use. Interaction is a mechanism for generating input which activates various cognitive operations involved in information processing which appear to be socially orientated (Batstone, 2010).

Conversely, exponents of generative theory such as Chomsky (1965) argue that humans must be hard-wired with principles of language (universal grammar) and that the intricacies of basic language cannot be learned in general intellectual ways. Goldberg (2006) disagrees and suggests that both constructivist and generative approaches do consider language development as a cognitive system. Both concede there must be ways of combining structures to create new utterances, and both recognise that a new theory of language development is needed. More recently Ibbotson and Tomasello (2016) identify that Chomsky's theory has now been abandoned as new research highlights that children combine a range of strategies including the classification of the world into categories (people or objects), in order to understand the relationship between things and what others are intending to communicate, thus allowing language to develop.

These theories and conclusions all show that the environment contributes to language acquisition, however other cues such as gestures and eye gaze may also assist children to decode linguistic structures. This theory would be supported by Chomsky (1965) as he suggests specific actions may be needed to set the language-acquisition mechanisms into action. However, this view is also disputed by others such as Hoff (2006) who disagrees and suggests that if this were so, significant aspects of language such as word length and language richness would be of no value.

Language development is dependent on the process of culling patterns from primary linguistic information (Tomasello, 2003). Additionally, Ellis (2006a) states that language learning is intuitive and statistical, requiring learning representations to highlight the probability of occurrence.

Nelson and Kučera (1982) describe Zipf's Law (1935). This identifies that the most frequently occurring words account for the most linguistic utterances. The word that occurs with the highest frequency will happen around twice as often as the second most frequent word, then three times as often and so on. The incidence of a word occurring is inversely proportional to its place in the frequency table. The word *the*, is the most frequent word, followed by the word *for*, then the word *and*. Ellis (2015) explains these figures as the learning of categories, which are learnable when they are; (1) Zipfian in type, (2) selective in verb form use, (3) logical in semantics and have (4) high incidence between form and function.

The construction grammar approach refers to linguistic occurrences, understood as learned combinations (from morphemes, words and idioms, to full phrasal patterns), along with their understanding and function (Ellis, 2015). These theories emphasise the importance of data-driven evolving accounts of logical linguistic units, in child language acquisition (Ellis, 2011; Cameron-Faulkner, Lieven & Tomasello, 2003). Additionally, Ellis (2015) accentuates that elements of language are constructions, which shape meaning maps. These are used in the speech community and then embedded as language understanding in the mind. Boyum (2006) suggests that learning a language is to grasp these connections as they occur.

Creative linguistic ability comes from the accrual of memories from language use, together with the ideas and probabilities within it (Ellis, 2006a). The development of structure is dependent on the experience of form-function understanding. These develop in similar ways to the cognitive principles in schema and other prototypes (Cohen & Lefebvre, 2005; Murphy, 2003). Cultures vary in language learning opportunities and models, however Hoff (2015) advises that cross-cultural evidence

suggests differences in how language is acquired are consistent with the theory that language acquisition is dependent on contextual support, opportunities for communication and interaction, and an analysable language model.

This supports the argument by Larsen-Freeman and Cameron (2008) who suggest that the system changes every time a structure is used, and over time language events may contribute to language change. Cognitive linguistics, corpus linguistics, and psycholinguistics are alike in their realisations that we cannot separate grammar from the total word bank, form from function, meaning from context, nor structure from usage (Ellis & Larsen-Freeman, 2006).

Several studies (Bencini & Goldberg, 2000; Tomasello, 2003) suggest the verb is a sound predictor of meaning, describing that this then plays a fundamental role in deciding the structure of the sentence. They also notice a close association among the types of verbs that usually emerge from within constructions (for example put, move and push), and meaning taken from these. Additionally, the more frequently these verbs are used the easier they are learnt, as learners are receptive to frequency and patterns (Ellis, 2006b).

The research indicates that the greater the language use the greater the language development, however, Hart and Risley (1997) identify that innovative and complex or extra or unusual speech is what makes the difference. This is supported by Hoff (2015) agreeing that contrary to the simpler-is-better view, the verbs that children hear in the greatest assortment of sentence contexts are learnt earlier than verbs heard just as frequently but in fewer different sentence contexts. Understanding comes from hearing words and their use, while the meaning is understood by the rule of use. Boyum (2006) explains that when we learn a new word, we hear examples from which we identify the underlying rule. This supports the learner to move from selected uses they have been exposed to, to being able to use the word in a variety of contexts.

Hoff (2019) explains some of the terminology and history of cognitive psychology and cognitive science:

Psycholinguistics studies the psychological and neurobiological factors that enable humans to acquire, use, comprehend, and produce language...Connectionism is the recognition that many mental phenomena can be seen to emerge from the conspiracy of experiences, and that these processes can be computationally modelled in distributed neural nets that simulate the actions of interconnected neurons in the brain...Emergentist, connectionist, and statistical learning approaches have become a mainstay of cognitive and psycholinguistic thinking. (p.39)

Hoff (2019) posits that theories are situated within the time, and place, of the thinker while the patterns are evolving.

3.5 Language and Play

Play offers the opportunity to incorporate and practice many of the skills which enhance language development. The benefits of play, as opposed to other strategies, are that the behaviours developed when playing can be inventive, with opportunities to practice the newly developed language skills (Moore, 2014).

In a review of the literature Weisberg, Zosh, Hirsh-Pasek, and Golinkoff (2013) suggest that play exposes children to socially interactive and conceptual fundamentals known to enhance language skills. Bøyum (2007) explains that when children learn the meaning of basic words such as apple, daddy, and cat they begin to understand these words. Children also begin to understand the meaning of word groups such as foods, animals, parents, and humans. When they understand the meaning of words such as yesterday, they begin to comprehend what time and memory are. Gjems (2013) adds that knowledge occurs whenever children participate in language activities.

Young children use ventriloquism and make believe characters to create impromptu story-telling, pretend play, paralinguistic communication, or symbolic representation (a block can be a truck). These all require meaning-making, which can be linked to emerging literacy (Bateson, 2014).

Smith and Pellegrini (2008) highlight there are many opportunities to extend vocabulary from pretend play. Johnson et al., (2014) suggest a connection between engagement, memory growth and information recovery, signifying the environment may enhance word knowledge and meaning. In pretend play children also acquire social skills and scripts, use humour, and negotiate rules and meaning. This includes understanding what others intend, complex language constructions, and the development of innovative and elaborate story lines.

Conversely, Lillard, Pinkham and Smith (2011) argue that pervasive claims for the educational benefits of imaginary play are mainly exaggerated and unsupported, suggesting a persistent pro-play bias. They suggest that this has doggedly led researchers, practitioners, and policy makers to exaggerate claims that go beyond the current evidence. In response to these claims Nicolopoulou and Ilgaz, (2013) disagree and argue that the Lillard, Pinkham and Smith's (2011) research which was based on one small study, is incomplete and misleading, and the criticisms misplaced.

3.6 School and Learning

A number of authors emphasise that language is important for learning, identifying language as the basis for communication and achievement. Hirsh-Pasek and Golinkoff (2011) suggest it is unsurprising that thousands of papers have been dedicated to identifying and encouraging ways to ascertain the most beneficial methods of language acquisition in children. Other authors highlight the importance of language to understanding and reading comprehension. Morgan, Farkas, Hillemeier, Hammer and Maczuga (2015) stress the importance of building understanding of the meaning of words. This suggests that children who begin school with less language knowledge may lag behind in most school subjects and face great challenges.

Researchers, practitioners, and policy makers agree that vocabulary is a critical factor in literacy development (Teale, Piciga & Hoffman, 2007). The Ministry of Education (2019b) concurs, emphasising the significance of oral language as the foundation of

early literacy and a precursor to developing reading and writing, negotiating social situations and creating meaning of the world. Other studies (Hart & Risley, 1995; Hirsh-Pasek & Golinkoff, 2011; Morgan et al. 2015) comment on the impact of language in school readiness and predicting future academic performance. Similarly, Wells (2000) states that when responding to what is said, children extend and refine their own thinking, while developing common understanding.

Blank (2002) suggests that when teachers improve their own dialogue through reasoning, questioning and talking with children, children's language will be enhanced. They suggest that these strategies will improve language and reasoning, as when children's knowledge of words expands so does the ability to use them in more complex situations. I have observed teachers on an excursion in discussion with children about discoveries where they were able to introduce new words such as speckled, shiny, bumpy, spongy, thorny, jagged, and scaly. They also included spatial language and relationships into directions such as above, below, between, inside, straight, curved, tiny, huge, thin, thick, edge, and side, and described movements such as twist, sprinkle, rustle, melt, float, sink, current, and flow. This kind of interaction enriches and enhances children's vocabulary and language understanding. *Te Whāriki* (MoE, 2017) identifies "kaiako are crucial to children's learning and development, and should be knowledgeable and integrate domain knowledge" (p.59). It is imperative that those working in ECE know and understand the importance and theories of early language development.

There is much emphasis on preparing children for school, or school readiness however there is some debate about the effects of school starting ages around the world. Internationally the most common age for starting school is six (Boereboom & Tymms, 2018). In Aotearoa/New Zealand, school is compulsory from age six, however most children begin school on their fifth birthday. Boereboom and Tymms (2018) further suggest there is no academic evidence for any proposed nationwide mandated set age for beginning school in Aotearoa/New Zealand. A Danish study by Dee and Sievertsen

(2018) where children typically begin school in the calendar year they turn six, found children who delayed beginning school by one year, were associated with higher student achievement and significant improvements in mental health. They also found a reduction in overall difficulties. These outcomes still persisted when children were aged eleven. Dee and Sievertsen further suggest that when children postpone their school starting age they may have extended opportunities for experiences in playful environments, including opportunities for pretend play, which may develop emotional and intellectual self-regulation.

3.7 Culture and Language

Ferreiro (2012) identifies that oral language plays an important part in identity, while community language is important to building group, national, and human identities, and is connected to the social and cultural contexts in which they are used. *Te Whāriki* (MoE, 2017) identifies “For Māori an inclusive curriculum is founded on Māori values and principles and is strengths based [and it is important] to work with whānau to realise high expectations” (p. 13). Each language has its own significance and expressions which hold meaning and inherent value for its users (MoE, 2019b). This is particularly relevant in Aotearoa/New Zealand, *Te Whāriki* further identifies “children more readily become bi- or multi literate when language learning in the education setting builds on their home languages” (MoE, 2017, p.12). Despite this aspiration *Whāriki* is a non-prescriptive curriculum, where each centre weaves their own curriculum and as such te reo Māori is not compulsory in ECE settings.

Language is influenced by environmental factors and several authors discuss how human language has evolved and shaped society (Halliday, 1993; Rogoff 1990). Whatever our culture, we are learning a form that has been evolving for over ten thousand generations. A common language and shared history allow us to be in tune with and understand the meanings, relationships, collective rituals and routines of society, as language use is socialised to match community beliefs.

In a similar vein, Paavola, Lipponen, and Hakkarainen (2004) discuss language as an ingredient in cultural production. Similarly, Kress and van Leuven (2001) point out that these discourses require production, interpretation, and consumption and are situated and socially assembled knowledge about the real world. Hill (2011) claims that language and literacy identify culture and status, suggesting that how people talk and communicate are of considerable significance. Progress occurs with interaction within the cultural community (Anning et al., 2009), adding an emphasis on the relationship between the child and the social and cultural context. NBOE are an ideal context to use te reo Māori in meaningful ways. *Te Whāriki* identifies the importance, significance and value of te reo in the context of ECE settings, specifically using correct pronunciation, traditional storytelling, arts, legends, humour, proverbs and metaphoric language (MOE, 2017).

There are different teaching pedagogies from different cultural contexts. Wells and Arauz (2006) observed there is widespread use of closed questions to which the teachers already know the answer; children are then judged as right or wrong. This is known as Initiative Response, Evaluation (IRE), this is often preceded by suggestions planned to help guess-what-the-teacher-is-thinking. Wells and Arauz discuss that in cultures where this interface is uncommon children are at a disadvantage, adding there are also only restricted occasions to use children's own voices and ideas. In contrast, Rogoff (2003) argues that in a number of cultural contexts, it is usual for very young children to learn through observing and listening, as well as actively participating. She describes cultural communities where young children observe and listen attentively, which she describes as intent participation, where before they have a go themselves "toddlers learn to sit very still and listen to adults" (p. 325).

3.8 Language and Learning

The Aotearoa/New Zealand early childhood curriculum, *Te Whāriki* (MoE, 1996, 2017) interprets curriculum broadly, promoting broad sociocultural perspectives. Curriculum

includes all experiences, activities and events, intended to identify early literacy practices, highlighting that language is how we think and communicate. *Te Whāriki* does not explicitly advise ECE how to encourage early literacy; rather it includes a framework of principles, strands, goals and learning outcomes. It promotes the protection of the child's mana while stressing the importance of respectful, reciprocal and responsive relationships (MoE, 2017, p. 7). However, many of these statements intended to inform are very open-ended and left up to the interpretation of individual teachers or ECE providers.

Strand 4, Communication/Mana Reo (MoE, 2017), includes statements such as “children should experience the stories and symbols of their own and other cultures[and that]language develops in meaningful contexts when children need to know they have a reason to communicate” (p.40).

Specific goals from *Te Whāriki* (MoE, 2017) related to language include statements which use language such as, “developing and using verbal (and nonverbal) communication skills for a range of purposes...oral language for a range of purposes...experience stories and symbols of their own and other cultures” (p. 42). On the other hand, there is no specific guidance on what these might be or how they should be taught. ERO (2017) identifies a “lack of specific guidance supporting these frameworks to help teachers implement a responsive and well-articulated curriculum that promotes oral language learning and development for children from birth to eight years” (p.44).

In *Te Whāriki* the evidence of learning also includes statements such as “ability to express feelings...familiarity and enjoyment of literature...numbers and the recognition that these should be enjoyable, amuse and delight” (MoE, 2017, p.42). While this is important, there are no clear statements, (apart from using words such as big, small, and using spatial number concepts as part of everyday language) about the importance of the constant use of mathematical language which can be imbued into everyday conversations.

Te Whāriki (MoE, 2017) also suggests examples of practice that promote learning outcomes “opportunities to have sustained conversations...Kaiako encourage recognition of letters and writing” (p.44). Although opportunities are identified, there is no specific information identifying the importance of engaging in sustained conversations, or the significance of contexts which excite, promote and encourage talk or sustained child conversation with more capable peers, all of which are important for language development. Despite the research from authors (Hart & Risley, 1995; Hirsh-Pasek & Golinkoff, 2011; Morgan et al., 2015) there is no emphasis on the importance of conversation or using and extending vocabulary. While a language rich environment is referred to, this is open to interpretation. Is it printed matter on the walls or rich language and conversation? Once again this is left up to the interpretation of the teachers. Significantly there is no mention of the relationship between play and language development, of how this provides an excellent context to learn and to practise language. Although imaginative play and drama and meaningful contexts are mentioned these are not specific to language development. Importantly, *Te Whāriki* does not emphasise the importance of freely chosen play, as an important context for language development.

Although *Te Whāriki* (MoE 2017) recognises Māori as tangata whenua and emphasises the importance of Te Tiriti o Waitangi ensuring “te reo Māori thrives and survives” (p.1) it does not emphasise that this should underpin all happenings in ECE. This has implications for how programmes ensure te reo and tikānga are used respectfully. Additionally, there is no mention that te reo Māori as a joyous, expressive language and should be treated as such. In my experience many teachers use te reo Māori as a language of commands and this is what is conveyed to children.

The Ministry of Education (n.d.) provides advice to parents and teachers through online sites and publications. These promote communication as the foundation for learning and development, they emphasise that the ability to communicate is directly related to

literacy development, vocabulary and conversational skills and the easier it is to understand what is read.

ERO publish a number of reports, including *Extending their language – expanding their world: Children's oral language (birth-8 years)* (ERO, 2017). This document advises and affirms that oral language supports learning through communication, problem solving, and intellect challenge and that it is a vital part of communication. In order to succeed at school children, need to be proficient thinkers. They also discuss the importance of developing competence in symbolic, abstract, imaginative and creative thinking and that children need language to communicate and interpret in many ways to become proficient thinkers and communicators; “using language, symbols and text is a central competency in 21st century life” (p.23). These documents make many statements highlighting the importance of language and literacy, however there is little significant empirical evidence cited in the documents to support this.

A number of authors (ERO, 2017; Reese et al., 2010; Van Hees, 2011) note the importance of language and the mastery of speaking skills, recognising that these affect children's long term educational success. Social discourse helps to convey the meaning and provides opportunities to use the words in situations that involve more interpretation. Hoff (2006) notes the amount of one-to-one interaction is a key indicator of language acquisition for children ECE and in group care. Recent research from Miller, Vlach and Simmering (2017) highlights the importance of children's early language awareness, discussing studies which demonstrate links between spatial language and spatial cognition. This then predicts success in maths, science, technology, and engineering skills. They highlight new links between language and spatial cognition identifying the importance of the quality, not only the amount of language use.

3.9 Role of the teacher

Many authors (Blank, 2002; Fielding –Barnsley & Hay, 2012; Rogoff, 2003; Siraj Blatchford & Manni, 2007; Tomasello, 2009; Van Hees 2011; Wells & Arauz, 2011) identify the significance of the role of the teacher in language acquisition. Frère (1973) accentuated that language is critical to consciousness, empowerment, achieving an in-depth understanding of the world, liberating people to achieve a sense of history, community, achievement, meaning-making, and communication. However, this can only be achieved if adults provide the context to support this. Many adults use directives with children along with statements such as ‘use your words’, which often can be meaningless, however such statements do not support empowerment and critical consciousness or meaning-making. Learning language is a complex process and should be understood and treated as such.

ERO (2017) advise that effective teaching practice recognises the sophistication and complexity of oral language and its relationship to literacy development. When highlighting the challenges teachers face, ERO discuss Van Hees (2011) who notes that increasingly in Aotearoa/New Zealand, five and six-year children have problems expressing ideas fluently and articulately in oral English. Conversely ERO (2016) identified that children with special abilities in literacy were supported, and extended their learning through appropriate actions and resources. Blank (2002) suggests that teachers enhance their own dialogue when conversing with children. This will improve children’s language and reasoning, as when the understanding of words grows so does the ability to use them in more complex situations.

Other authors (for example: Nelson, 2004; Snow & Kim 2007; Wells & Arauz, 2006) stress the importance of asking prefaced questions and inviting children to think and share ideas, and justify and formulate answers. If children are not actively participating in language interaction, they are less likely to participate (Siraj-Blatchford & Manni, 2007). In Aotearoa/ New Zealand, Van Hees (2011) found that children were more engaged and involved, collaboratively creating greater language learning opportunities, when given some control and space in constructing oral text, rather than when the topic

was dominated and controlled solely by the teacher. From a neurological perspective Kalis, Kaiser and Mojzisch (2013) stress a sense of agency may be stronger when acting on self-generated options, rather than choosing between externally provided options.

The importance of creating learning environments and teacher education is highlighted by Gjems (2013) who questions how teacher education prepares ECE students to learn about language development. Although the teachers in her study were committed to developing knowledge and awareness of language learning, they were astounded when the study results revealed that they mostly asked children closed questions. Hoff (2006) identifies that there is distinct language use in different environments; however, environments will only provide support to those with the capacity to make use of them. Another important element emphasises what teachers communicate to young children about how they view themselves as learners. Hoff (2006) identifies positive relationships as important for language development and verbal responsiveness.

Language features such as question asking increase linguistic intricacy, however the total amount of speech, engagement, volume, and nature of data provided are positive predictors of vocabulary development (Hoff, 2003). In a study of Norwegian kindergartens, Wells (2007) found teachers who invited children to develop a topic and to work together were skilled in deepening and extending dialogue through the use of follow-up questions and incentives.

While it is beyond the scope of this study to identify specific strategies for Māori students, MoE (2017) emphasises that teaching and learning for Māori is influenced by the relationships between teachers, and active engagement with children).

3.10 Environment

Te Whāriki stresses that languages develop in meaningful contexts, where children have reasons to communicate (MoE, 2017). They also suggest that natural environments are dynamic settings which provide clues and meanings for new words to

be learnt in context. According to Carr and Claxton (2002) pinpoint that learning and functioning are far more context specific than has been presumed, therefore context affects the capacity to learn. This view is supported by Hoff (2006) who writes that different environments offer different opportunities and influences for language development. Similarly, Neuman (2006) explores the concept of meaning-making as a system for gathering data suggested by a message, emphasising the importance of context when building knowledge about the meaning of words. Moore (2014) suggests natural settings offer complex multi-sensory experiences and affordances which support children to increase their concepts, provoking imaginings and affording the perfect environment for imagination and inventiveness.

A number of authors comment on how outdoor environments support word learning (ERO, 2017; Hoff, 2006; Maynard, 2007; Waters, 2011; Wells, 2007) highlighting that children are more likely to ask questions about the world when in the outdoors rather than an inside learning setting. Hoff (2006) also adds that the environment where words are introduced may indicate clues to meaning, suggesting common nouns may be named to assist children. Similarly, Warden, et al., (2015) recognise that children in the outdoors are often more deeply engaged for longer periods of time. Hoff (2006) also suggests that the context may suggest clues to meaning when new words are presented. Active engagement demands both attention and response, attributes that can be related to agency or to inducing flow (Csikszentmihalyi, 1975).

Ke tua o te Pae (MoE, 2004b) notes that when children select their own assessments “their own goals are rich sites for learning (p. 3). Such contributions “also help teachers to learn about children’s working theories about learning” (p. 3).

Similarly, Hoff (2006) found that children who engaged in more extensive first hand exploration learnt more words, particularly words for actions, forces, and physical objects, suggesting relationships between physical activity and exploration and language development.

I observed a group of children lying on the forest floor looking up watching birds and discussing the enormous trees. Returning home, we were passed by a long truck, to which a twenty month old very excitedly called outlook, an enormous truck'. Research by Erk et al., (2003) highlighted that words stored in positive emotional contexts were recalled more than those in dispassionate or negative contexts. Similarly, Tomasello (2009) emphasises the importance of environmental conditions for learning language and ways the expansive use of words and utterances contribute to the construction of structure in language development.

From a Māori perspective, Pere (1991) discusses the importance of the outdoors as an appropriate place to learn and use language. There are numerous opportunities to introduce and discuss atua (gods) or to tell stories such as the Māori creation cycle. Where better to discuss and tell the stories of Tane, Tawhirimatea, Te Ao Marama, or Tangaroa than when you can feel their power and observe their wonders. Tikānga, and the reasons for this can be discussed and observed in relevant contexts. Similarly, Kaitiakitanga is introduced through respect and caring, nurturing, connecting and protecting the environment and everything in it, including the people. NBOE provide many opportunities to explore and discuss these stories, principles, theories and concepts, and NBOE offers the time and space to do this.

Learning includes involvement and interaction in cultural practices with mutual learning activities. Paavola, Lipponen, and Hakkarainen (2004) suggest that knowledge and knowing cannot be detached from places they are undertaken. Cognition and knowing are dispersed between people and environment with learning situated in the relationships and networks, identifying the focus must be on the activity rather than outcomes or products.

Hoff (2019) identifies language as the essence of dispersed cognition, explaining that language usage affects learning, and learning affects languages. Hoff posits that languages, usage, culture, and social experience are all environmental phenomenon evolving so that they are basically indivisible from their environments.

The Harvard Centre for the Developing Child (2009) stresses that early environments and experiences play a remarkably important role in brain structure, this influence is particularly strong as the neural circuits are developing.

3.11 Experience and Dialogue

Human language acquisition requires environments to provide opportunities to experience and listen to speech. Hoff (2006) identifies that although communication with people influences the nature of the talk, her study found few differences in early language acquisition between child care settings and home care. However, there was differing variability between each of the individual settings. Increased language opportunities and talk strengthens processing skills, emergent lexical processing and vocabulary knowledge, these were what made the difference. Similarly, Weisleder and Fernald (2013) found that caregiver talk influences lexical development, including experience with child-directed speech, which models examples for word learning and vocabulary.

A number of author's report on the importance of social situations for language learning. Simply put by Larsen-Freeman (2010), language develops when people use it. Coles (1995) explains that motivating groups to think together scaffolds the cognitive processes. Interconnectedness unites different language phenomena including language development and social interactions which result from social enquiry. Larsen-Freeman (2008) elaborates that collaborative groups are linked through ideas, situated understanding, scaffolding, and the zone of proximal development.

In addition, the inherent properties in society along with language acquisition are affected by environments, while vocabulary is affected by context (Hoff, 2006). Communication and vocabulary develop at a faster rate through social experiences which provide rich opportunities for talk. This provides meaning and opportunities to use words in situations that require more reasoning.

It is talking that offers opportunities in social situations to share knowledge (Bateman, 2011). This view is supported by Hay and Fielding Barnsley (2012) suggesting children's learning is collaborative and complex, developed socially through encouraging and respectful conversation and talk, underlining the strong connections evolved between language development and cognitive reasoning.

Reggio Emilia views small group work as a cultural context containing an infinite network of possibilities:

In schools of young children, work in small groups encourages processes of change and development and is much desired by children...Interaction among children is a fundamental experience during the first years of life. Interaction is a need, a desire, a vital necessity that each child carries within. (Edwards, Gandini, & Forman, 1998, pp.11-12)

The importance of conversation is highlighted by several authors including Hasan (2002) identifying everyday conversations are of great significance to language learning. Everyday conversations happen often, providing important contexts to develop language in addition to learning about the environment (Bruner, 1975; Nelson, 2004; Wells 2007). Conversations trigger children's attention, interests, and awareness, which occur from birth into a specific culture. Hasan (2002) emphasises the significance of studying the patterns of ordinary conversations; they may appear ordinary, however, they are very proficient ways of learning.

3.12 Joint attention/ sustained shared thinking

In te ao Māori, the idea of ako means to teach and also to learn, noting both teachers and children bring knowledge and ideas, and that understanding, and knowledge grow from collective experience (Alton-Lee, 2003). This parallels the concept of sustained shared thinking expounded by Siraj-Blatchford and Manni (2007). They highlight the importance of and define this as where two or more practitioners and children work jointly, intellectually to problem solve, clarify, evaluate, or extend a narrative,

contributing to the thinking, developing and extending discourse, co-constructing knowledge with the group.

The outdoors is identified as an ideal environment for conversation and sustained shared thinking (Sylva et al., 2010). The time and space afforded in large outside spaces (Waller 2006; Waller et.al. 2017) provides better opportunities for periods of sustained shared thinking than inside a traditional classroom. While Waters (2011) and Waters and Bateman (2013) accentuate the sustained and shared thinking and language opportunities offered when children's interest in the natural world is directly related to enquiry and interests. Similarly, Clark & Moss (2005) identify that in the outdoors, a role reversal has taken place: where the teacher becomes the learner and the learner becomes the teacher (ako). Carr (2011) identifies the importance of valuing children's questions giving them authorship over the conversation. This importance of sharing children's enquiry is also recognised as important in providing interaction through a shared interest (Waters & Bateman, 2013).

In the *Ngahere project*, Kelly et al., (2013) found that in nature teachers were less distracted and children's multimodal knowledges were supported through nature-based experiences. "Teachers also recognised more about children and their awareness of children's unique dispositions, skills, traits and qualities was heightened" (p. 69).

NBOE are ideal environments for joint attention and sustained shared thinking. Sylva et al. (2010) identified that in outdoor spaces there were increased moments of joint attention, with significant indications suggesting language is clearly learned when children and adults were in a joint attentional state. Nelson (2009) notes that adults should support conversations about topics which the child knows about, using questions and different language experiences. By age three children are capable of discussing abstract topics and formulating ideas (Carpenter, Nagell & Tomasello 1998; Mundy 2018).

Hännikäinen and Van Oers (2002) suggest that common language and verbal strategies where children use narratives, are a way of building a sense of togetherness and belonging which are associated with forming and maintaining groups. This contributes to collaborative learning in communities of practice (Wenger, 1998).

Although considered an important practice, a number of studies observe minimal practice of sustained shared thinking. Wells and Arauz (2006) found that while some teachers communicated warmly, acknowledging interactions, for others there was little indication of knowledge in showing how to use language, developing ideas or collaboration to develop better understanding. Learning environments are often dominated by closed questions with children seldom involved in discussing events, sharing beliefs or developing knowledge collaboratively (Hasan, 2002; Siraj-Blatchford & Manni, 2007). In a study of conversations in the classroom, Wells (2007) found the principal use of the IRE question answer format, while Siraj-Blatchford and Manni (2007) found that although there were many questions asked, only 5.5% of these were open ended questions inviting children to contribute with ideas, problem solving, or narratives.

Once children are old enough to respond verbally, directives do not encourage conversation. Additionally, a number of studies (Della Corte Benedict & Klein, 1983; Hoff-Ginsberg, 1991; Masur, Flynn & Eichorst, 2005) found that high use of directives is often negatively associated with language development. Directives are unhelpful for language learning as they do not contribute to joint attention. Importantly, directives which redirect children's attention are negatively associated with language development (Akhtar & Tomasello 1998; Dunham et al., 1993; Tomasello & Farrar, 1986). Conversely, directives following and encouraging the child's lead do support language development. Previous evidence (Barnes, Gutfreund, Satterly & Wells, 1983) suggested that speech used to direct behaviour, possibly due to structural and lexical properties of directives, tend to be abrupt without useful new information,

identifying negative outcomes for children's development of both grammar and vocabulary.

With reciprocal engagement in dialogue and a degree of independence from adult control, children sometimes develop their own private languages which are beyond an adult's awareness and understanding. These create a sense of togetherness and are appropriate cooperative learning opportunities (Hännikäinen & van Oers, 2002). I personally observed children inventing and playing with words, creating their own "language". This progressed over many weeks and when asked which language they were speaking they replied that they were speaking "Hindieese" (These were not Indian children).

3.13 Intervention

The importance of early intervention to reduce language gaps is identified by Hirsh-Pasek, et al., (2015) suggesting that confidence and connectedness are particularly strong indicators of later language ability. They highlight that in order to develop strong communication foundations which support word learning any intervention must not solely focus on word input, but on the encouragement of dyads through conversation. Morgan et al., (2015) also highlight that oral vocabulary is repeatedly posited to influence increased academic and behavioural functioning; they underscore the importance of early interventions in order to reduce later achievement gaps and increase post-secondary education, employment, productivity, and long-term opportunities.

Waller (2006) stresses that we need to reconsider spaces for childhood in terms of how children exercise agency and contribute to their own decision-making, actions and meaning-making. Waller suggests language development opportunities result from the mental courses signalled when children meet the social and linguistic world.

3.14 Conclusion Language

There is convincing evidence for usage-based language acquisition models emphasising the importance of input, particularly through talk and conversation. The environment is also critical to developing language in young children, and should provide opportunities for talk, enquiry and play. I would theorise that NBOE's are optimum spaces for language acquisition. Hay and Fielding-Barnsley (2012) advocate the most authentic place to begin to building vocabulary, concepts, and understanding is an environment where talk is respected, and encouraged. Hay and Fielding-Barnsley (2012) also found links between language development and cognitive reasoning. NBOE's provide many opportunities for inquiry, theorising, questioning and conversation; adults appear to slow down in this space which allows for time for language opportunities. There is also space for children to develop private talk or

create their own language. Hoff (2006) found that children are more likely to question the world around them when in outdoor spaces rather than inside a learning setting. ERO (2016) note that Hedges and Cullen (2006) consider *Te Whāriki* has been criticised for its lack of attention to subject content knowledge, suggesting this limits inquiry. I would add to this that *Te Whāriki* should be more intentional and offer advice, including specific examples of the importance of conversation and talk. The following chapter will focus on the outdoor environment as an optimum site for language acquisition and development.

Chapter Four Natural Outdoor Environments

My childhood was rich in smells, noises, warmth and frissons of terror – mostly of my own making; I climbed trees with daring but was hugely frightened. I lifted stones wherever I went in order to inhale the smell of the moist earth. My thrills were slow worms and toads...Often I took off my shoes and loved the tickly feeling of cut grass, the swishy feeling of long grass, the irresistible roughness of hard sand and the exotic caress of dry sand: but most of all there was mud. How glorious to let it squidgy between your toes! And peeling it off when it was dry was another sensation altogether.

Tim Smit, Chief executive of the Eden Project (cited in Tovey, 2007)

4.1 Introduction

Over the past 40 years I have noticed a marked increase in ECE centres operating from minimum spaces, in conjunction with a noticeable decrease in the time children spend playing in natural outdoor spaces. There are numerous studies which highlight the benefits of natural outdoor environments, most of which are beyond the limits of this study. The purpose of this chapter is to focus on some of the research on NBOE (nature/forest/bush kindergarten/schools) which influence children's language and learning. It will include some of the important roles played by; physical activity, health, place, play creativity, and health. I will review the current literature on the topic in order to understand the ways in which natural outdoor spaces enhance play, language and learning, in ways that the indoors cannot.

We have a responsibility to create environments in which children can develop holistically. Greenfield, (2007) believes the best way is providing optimal outdoor environments and rich nature experiences for all children.

4.2 Natural Outdoor Environments

Natural outdoor settings are gaining increasing recognition as important learning environments around the world. There is increasing literature, mainly from Scandinavia, the United Kingdom (U.K.) and the United States on the importance of and the benefits

for children learning in the outdoors (Bilton, 2010; Greenman, 2005; Grunwald, 2008; Kelly et.al., 2013; Knight, 2009, 2011; Louv, 2005; Sobel, 1996; Warden 2007, 2010). Outdoor environments include dynamic landscapes which challenge children, containing numerous natural affordances and challenges which children have to overcome, such as slopes, rocks, vegetation, trees for climbing and fields for running and rolling (Fjørtoft, 2001, 2004). Natural outdoor environments provide optimum time and space for play, learning and development. The curriculum is nature herself, offering opportunities for dispositions such playfulness, curiosity, creativity, exploration, imagination, persistence and play. There are items which can be manipulated, moved, thrown and tied out, just to try it and see what will happen. These are places of ecstatic joy with opportunities to run, roll, hide, jump, shout out loud and squeal with delight.

Priest (1986) defines outdoor learning as an experiential method of learning which uses all of the learner's senses; emphasising learning is through natural environments, natural resources and relationships with people. For the purposes of this research the natural environments are considered, as identified by Waters and Maynard (2010) as “largely undeveloped and not necessarily predetermined as a space for children’s play” (p. 475).

Te Whāriki (MoE, 2017) emphasises knowledge, skills, attitudes and dispositions which support holistic development. “Children need to be adaptive, creative and resilient and engage with new contexts, opportunities and challenges with optimism and resourcefulness” (p. 7). Health, wellbeing, equity and agency, or mana are also promoted. Considering this, I believe that natural outdoor environments are likely to be optimal settings for ECE.

A major study in the United Kingdom by O’Brien and Murray (2007) identifies programmes participating in NBOE (forest kindergartens) empower children to gain improved language skills together with increased self confidence and self-esteem, motivation and concentration. From Aotearoa/ New Zealand, researchers and writers also contribute to this growing body of evidence, promoting children’s active

engagement with the natural world (Cullen, 1999; Greenfield 2004, 2011; Kelly et al., 2013; Stephenson, 1998; 2003) however there has been very little research into ECE pedagogy in the outdoors. Wattchow and Brown (2011) state:

Natural environments contain huge potential for learning, including multiple possibilities and opportunities for exploration and play. Notions of affective learning are evident in this tradition which draws heavily on responsiveness to place as a source of identity, security and a way of understanding how humans live, experience and relate to particular locations on the earth's surface. (p. 51)

I have been involved in ECE for over 40 years, much of these involving groups of children on excursions into natural outdoor settings. I have noticed a marked decrease in the time children are spending playing in outdoor natural spaces. This supports Gill (2005), suggesting children are disappearing from the outdoors faster than any register of threatened species. Louv (2005), coined the term Nature Deficit Disorder in order to shed light on the growing divide between children and the outdoors. In *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder* (Louv, 1995, 2005), Louv examines the research and uses anecdotes to emphasise, how over the last 50 years humans have become more and more disconnected from nature, lamenting the negative impacts on humans. Louv posits that sedentary lifestyles, urbanisation, work pressures, over parenting, lack of free play, advancing technologies, legislation and parental fears of harm or the bogeyman syndrome all combine to create the conditions for this disorder. Louv observes that children are more likely to be able to converse about the Amazon rainforest, than to recognise the creatures in their own backyard. He quotes a child who states "I like to play indoors *cause* (sic) this is where all the electrical outlets are"(Louv, 2005, p. v). Although viewed by some (Schalit, 2006) as sensationalism, contending that an awareness of nature can be found by studying subjects including more than human worlds or religion, the vast majority of critics support this work. Louv went on to establish the Children and Nature Network as a resource and information repository to reconnect children to nature.

While many adults lament that children today do not have the outdoor childhoods they themselves experienced, this review is not about romanticizing views of bygone childhoods. A number of authors (Kelly et al., 2013; Brownlee & Crisp, 2016; Greenfield, 2007) comment that play in outdoor settings is integral to Aotearoa/New Zealand's heritage, identity and culture. This concept is also explored by Brownlee (2007) who suggests that young children need to grow their sense of belonging, as a resident on our planet with opportunities to discover Mother Earth and her riches.

Traditionally, early childhood in Aotearoa/New Zealand has drawn inspiration from a number of European philosophies including Vygotsky, Piaget, Steiner, Montessori, Dewey and more recently Reggio Emilia and Forest Schools (May, 2013). Māori traditions and culture are important considerations. *Te Whāriki* (MoE, 1996, 2017) supports Māori cultural practices, beliefs and stories about the earth. Most of these philosophies have their roots in the outdoors.

Outdoor learning programmes are quickly expanding and becoming mainstream across the world. Children learn to connect with and in nature, learn about themselves and each other through uninterrupted time, discovery and challenges in meaningful democratic ways. These programmes fit well with the aspirations of *Te Whāriki*. From the U.K., Knight (2009) suggests the Aotearoa/New Zealand curriculum *Te Whāriki*, (MoE, 1996, 2017) was developed in parallel to Forest School, arguing that the principles of *Te Whāriki* are reflected in the aims of Forest Schools suggesting "Forest School is one way, *Te Whāriki* another" (Knight, 2009, p. 65). Similarly, Quale (2017) observed that teachers are able to slow down and connect in the natural outdoor environment, with less challenging behaviour from children, and therefore less need for teacher intervention. This lets teachers focus on observation and sensitive interactions with minimal disruption to children's play, exploration, and creativity. They relate this to time, space, and abundance of natural resources.

Forest kindergartens (sometimes school, nature or bush programmes) are based on a Scandinavian concept, where children spend the entire day in the outdoors. This

concept fits well with Māori pedagogy, and other indigenous cultures where nature is a central, a significant life force (mauri) which needs to be respected. NBOE also ignites imaginations and inspire creativity (Kelly & White, 2013). In a conversation with a grandparent she informed me that this is where her mokopuna learns his Māori side, he goes home and tells his koro stories all about his time in the bush. From a Māori perspective, Pere (1991) also identifies “the need to live as closely as possible with nature, to learn about it, to understand it” (p.9). NBOE’s are an optimal to live closely, learn and understand the importance of and about Atua and Papatūānuku.

4.3 History of Outdoor Play

It is important to reflect on the ways humans learn and develop. Gray (2015) discusses that for hundreds of thousands of years, children have taught themselves in natural outdoor environments, through play and exploration. Hunter gatherers needed extensive knowledge on plant identification, animal behaviours, and ways of finding food, warmth and shelter. From Aotearoa/New Zealand *Te Whāriki* (MoE, 2017) identifies that children come with the strengths of family, tribe and ancestors (p.12)

Early documented European examples of the importance of outdoor play in Aotearoa/New Zealand come from the Ministry for Culture and Heritage, (2018) where Dalrymple, supporting the kindergarten movement and education for girls, published a pamphlet on the Froebel (naturalist, philosopher and researcher) method of early childhood. Later the 1958 Department of Education guidelines stated that kindergartens were required to have “a quarter acre site, with sufficient proportion of flat or nearly flat land... with maximum sun and shelter from wind” (Hughes, 1989) as cited in Pairman, 2011) along with “only specially designed permanent buildings” (p. 15).

Chisolm (2014), reports that more than 98 percent of children in Aotearoa/New Zealand children attend ECE, with our enrolment rates in the top third of OECD countries. New Zealand ECE centres must comply with regulatory standards and criteria set out in the

Education (Early Childhood Services) Regulations 2008 and Licensing Criteria for Early Childhood Education and Care Services 2008 (Ministry of Education, 2009). These have a requirement for 2.5sqm indoor space and 5sqm of outdoor space. Pairman (2011) identifies how our minimum physical space requirements compare unfavourably with other OECD countries. She suggests a lack of Aotearoa/New Zealand research arguing that the relationship between physical environments and learning is a 'blind spot' in NZ ECE discourse.

Foucault (1984) articulates that what appears to be normal in society is actually developed through the normalising of practice. In Aotearoa/New Zealand, ECE has become normalised into centres with safe, clean, controlled spaces, many have plastic playgrounds, immovable equipment, with direct instruction, rules and routines and no connection to the natural world. Increasingly these are places where children go to learn, always fenced and often indoors. My observation is that many have little space and freedom for boisterous activity or exploration of the wider and natural worlds. Adventure, exhilaration, joy or loud uncontrolled voices are not to be seen, heard or tolerated; indeed, most provide very similar environments and experiences. Waller (2006) suggests that the classroom is clearly an established place for learning, and as such a relationship between indoors and outdoors becomes more problematic. In a personal conversation with Sue Waite in 2013, I asked her what she felt was the most important finding from her major study of over 1,000 children, learning in the outdoors. She identified that it was *habitus* (Bourdieu, 1977) ascertaining that children felt different when they were in the outdoors, that it didn't feel as if it were learning, as in a classroom. Many had uncomfortable feelings about going to school but enjoyed the outdoors.

Much of the current research on ECE in natural environments focuses on health and wellbeing or physical and social aspects, including risk, (Jelleyman et.al., 2019; Stephenson, 2003; Warden, 2010), challenge, physical (Fjørtoft, 2001) and social

competence (O'Brien & Murray, 2007; Waite 2011) place, or the environmental benefits (Wells & Lekies, 2006).

4.4 Learning through Nature

Play in diverse natural elements advances and enriches all areas relevant to the development, health, and well-being of young children. In Aotearoa/New Zealand we have an ideal environment to learn through nature. We have access to outstanding natural spaces, few dangerous wild or poisonous animals and minimal extreme weather. Other countries such as Scandinavia, U.K., Europe, U.S., Canada, and Australia, where these programmes flourish have to contend with these barriers and other physical barriers. Colleagues from overseas are stunned when they hear that these programmes are not mainstream here (personal observations). In Aotearoa/New Zealand we have always been seen as having a progressive education system (Kelly et al., 2013). However due to restrictive licensing criteria which requires a fully licensed premises, we currently lag behind the rest of the world in the trend towards learning in the outdoors. Kelly et al., (2013) further identify that in Aotearoa/New Zealand ECE, we are distinctively positioned to add to the international perspectives on the pedagogical implications for education in the outdoors. Learning through nature aligns with the Mana Aotūroa Exploration strand of *Te Whāriki* (MoE, 2017). This identifies the importance of environments “where play is valued as meaningful...spontaneous play is recognised...learning strategies for active exploration, thinking...working theories for making sense of the natural, social, physical and material worlds” (p. 25). Duhn (2012) identifies that for Māori, the concept of mauri, the spiritual life force, is imbued in all things and beings while Kaitiakitanga or guardianship, is caring for life in all its forms and interconnections including humans as part of the natural world.

One of my teachers identified that from a Pacific perspective, being able to be creative in the outdoors is a vital skill to survive. Knowing how to protect yourself from danger is what most Pacific Island children must learn and do. You have to look after one another without your adult. You have to keep yourself and others safe. This was an unwritten rule for Pacific children and even now in Aotearoa/New Zealand there are no written rules for children to follow, when you are part of Aiga/Family you just know in

your heart that it's everyone's responsibility to look after one another. The MoE (2017) advocate for this in *Te Whāriki*, noting that "Pasifika view children as treasures and hope for the future. The responsibility for their care is shared by all members of the 'aiga" (p. 62).

Several studies demonstrate a correlation between the experiences in the natural environment and child directed learning and engagement. Waite (2010) identifies how NBOE provide many varied and flexible elements, offering time for teachers to respond to children's interests and interactions then build on these interests. It is also important that we look at these environments from an Aotearoa/New Zealand perspective. *The Ngahere project* (Kelly et al., 2013) highlights that in NBOE teachers were less distracted and recognised more about children, there was "more awareness of the unique, with deeper understanding of dispositions, skills, and traits, and qualities...children's multimodal literacies or languages of communication were encouraged" (p.69). Learning-through-nature naturally supports intrinsic motivation (Moore & Wong, 1997). Children learn best when they interested, or fascinated. Pramling Samuelsson (2006) suggests that when children are involved to such a degree that the rest of the world ceases to exist, their attention is focused on the questions, or ideas they would like to know more about, and play turns out to be a source of learning.

Children's connection to nature influences how they take part in nature-based and environmental activities. A study by Cheng and Monroe (2012) found four dimensions which influence children's play: connections to, and enjoyment of nature, empathy for creatures, and a sense of oneness and responsibility. Their findings show that nature near the home influences connection with nature and suggest, particularly in neighbourhoods where nature is not easily accessible, providing more opportunities for participating in nature-based activities.

Studies have shown that increased time in nature/green outdoor environments reduced the symptoms of Attention Deficit Hyperactivity Disorder (ADHD) while supporting increased attention functioning, appreciably more than activities conducted in other settings. According to Faber and Taylor (2009); Faber and Kuo(2006)and Taylor, Kuo and Sullivan (2001) as little as 20 minutes per day spent in green areas, can make a real difference, suggesting this has the potential for all children to maximise learning and achievement. Faber and Taylor (2009) found that children with ADHD pay attention and concentrate after walking in natural spaces, compared to downtown or residential areas, showing increased attentional ability. In both their studies Maynard and Chicken (2010) and Maynard, Waters, and Clement (2013) found that teachers observed underachieving children in classrooms became calmer and more focused and showed success through child-initiated learning in NBOE accentuating that this has the potential for all children to maximise learning and achievement.

4.5 Physical Activity

Multiple studies show the relationship between physical and aerobic fitness to children's healthy development and for academic achievement. Children need to move in order to develop a strong vestibular system, this has been identified as crucial for attention, coordination, eye control, body awareness, balance and postural strength, all of which contribute to healthy development (Hanscom 2016). NBOE provide multiple opportunities for balancing, spinning, building muscle strength hanging, climbing and digging which are all needed to develop this system. Several studies demonstrate a correlation between the experience of nature and the improvement of the cognitive capacity. Chaddock et al. (2010) discuss that neurocognitive benefits of an active childhood has significant ramifications for health and for education. They discovered that children who are fitter develop larger hippocampi, perform better on relational memory tasks and have better relational memory performance. Similarly, de Bruijn et al. (2018) identified that the greatest academic achievement gains resulted from children using both aerobic fitness and gross motor skills. McMorris (2015) concludes

that “enduring physical exercise assists the speed of cognition and has positive effects for everyone, especially the elderly, children, and those with clinical impairments” (p. 459).

Children’s physical and aerobic fitness are related to cognitive and health development. Several authors (Collins 2015; Duncan, Schofield, & Duncan, 2007; Rasmussen, 2005) identify how a worldwide increase in childhood obesity have had serious public health consequences. In Aotearoa/New Zealand one in eight children is obese (Ministry of Health, 2018) with twice as many in low socioeconomic areas. Increased physical activity and fitness is seen as a key to reducing the risk of childhood obesity, along with other health benefits including increased stamina, bone health and lung function as young adults. Physical activity also lessens the possibility of developing cardiovascular diseases linked to diabetes.

4.6 Risky Play

A number of authors discuss risk and risky play. Sandseter (2009) highlights that instead of restricting opportunities for risky play, that this should be encouraged. She identifies multiple benefits which include decreased mental illness and learning difficulties, together with improved physical activity, independence, cognitive and social development. Brussoni, et al. (2015) also consider how risky play assists children to develop skills for managing their own risk and avoid injuries by developing risk identification and management skills. Additionally, children can develop strategies to manage anxieties such as heights, through the gradual mastery of challenges with realistic risk perception. Similarly, Stevenson (2003) identifies that keeping children safe includes involving them in identifying and managing risk, she notes that children, even very young children, seek out and enjoy physical challenges and are naturally drawn to risky play. Sandseter (2007) emphasises that ironically, our fear of physical harm, mostly from harmless injuries, may develop more fearful children with increased levels of anxiety. In an Aotearoa/New Zealand study of parental perceptions of risky

play, Jelleyman et al., (2019) found that although parents understood their children would benefit from exposure to risk and challenge they did not allow them to engage in risky play, responding that 73% of five to twelve-year old children hardly ever or never participated in four or more risky activities.

Collins (2015) discusses studies (Oliver, Schofield & Gregory 2006) indicating children in the ECE environment demonstrate low levels of energetic activity along with high levels of inactivity. Her own measurement study showed that children attending an outdoor programme one day per week from an ECE centre demonstrated the children walked twice the number of steps when in the outdoors, as opposed to being active in an ECE centre based programme. Brussoni et al., (2015) identified that children who were involved in physical activity developed ways of learning about risk. They also learnt about their own limits and displayed both greater physical and social health. Adding to this Biddle and Asare (2011) note that physical activity is important for both healthy physical and psychological growth.

Natural environments are dynamic, there is always much to do and explore, and each day is different. The environment includes affordances such as slopes and rocks, afford challenges that test children in varying ways (Fjørtoft 2001). She further identifies children who play in NBOE develop greater fitness, balance and coordination than children who play on conventional playgrounds (Fjørtoft, 2004). Others (Hewes & McEwan, 2005) identify that while it may be noticeable how outdoor play contributes to physical improvement, less apparent is the learning occurring as children develop strength, both mental and physical as they experience opportunities to try out how high can I climb or am I brave enough to leap from here? In discussion always with a teacher at one of my centres, she informed me that from a Pacific perspective, children were treated as competent. The adults would say that if you know the outdoors well, you will never be hungry -if you know how to make a fire you will be able to cook yourself something to eat, if you know your environment, you will be able to grow your own food, fish for food.

4.7 Creativity

The importance of time and opportunities for children to find time just to daydream in nature is often forgotten, we are time poor and moments such as these have greatly diminished in our busy world. Kellert (2005) highlights that children who spend uninterrupted time in nature spend considerable time daydreaming and contemplating. When learning in open free spaces there is more time, and imaginations are stimulated (Moore, 1997). A similar study by Dowdell, Gray, and Malone (2011) found NBOE sustain important opportunities for imaginative play. During this play children develop positive relationships which support the environment to become a place of learning.

In another conversation with a Pacific teacher she underlined that writing and drawing was always in the sand. This was best because if you were just learning about something and you wrote and you realised you were doing it wrong, it was easy to quickly get rid of it before the others saw you were wrong (these were fun memories I'm sure Pacific Island children have).

Kellert (2005) also argues that play in nature is particularly significant for the development of creativity, and an environment designed for intellectual development and problem solving. Similarly, Moore (1997) identifies that children who spend uninterrupted time in nature spend considerable time daydreaming and contemplating. Moore further suggests that natural spaces provide affordances that stimulate imagination, inventiveness and creativity, noting "multi-sensory experiences in natural settings help children to develop the cognitive constructs necessary for sustained intellectual development" (Moore, 1997, p. 207).

Play in NBOE become responsive to the place, including to what the environment affords. Kelly et al., (2013) observed "children, teachers, and place are partners in place responsive relationships, and agents in a curriculum that responds to the daily provocations of nature itself" (p.4) This is supported by a study by Elliott and Chancellor (2014) where teachers identified outdoor settings increased depth and

interpretation of children's play. The outdoor situation supported many different ways of playing including the development of physical and observational skills, along with contributing to group dynamics and relationships. Children played in differing ways to their home kindergarten with Elliott and Chancellor (2014) theorising that this is possibly due to having no prior expectations.

4.8 Health

Cultural differences need to be considered when taking children outdoors as different cultures have different values and attitudes towards health wellbeing. From a Māori perspective, there are important aspects such as the Te Whare Tapa Whā model (Durie, 2004), and all are needed to be considered for holistic health and well-being. Attitudes also change; it used to be considered healthy around the world to sleep babies outdoors (Beatson & Stover, 2014). This is still the case in some parts of Scandinavia where babies (well protected) are put outside to sleep in prams, even in extreme and cold conditions – up to -50degrees (Tourula, Polkki, & Isola, 2013).

Children need to be healthy if they are to learn well (Warren 2015). Children who are fit and healthy have better opportunities to learn and develop. In my experience outdoor learning programmes are an optimal place to develop health and wellbeing. Children are physically active; learn to manage their own physical needs such as food, warmth and shelter. They learn to analyse and manage risk, have time in solitude and opportunities to work in small groups interacting with adults and other children.

Increasingly, studies identify that contact with nature is as important to children as good nutrition and adequate sleep (Louv, 2005), while highlighting the importance of outdoor play in nature as a practical method for preventative health care. Nature programmes reflect the Wellbeing/Mana Atua strand of *Te Whāriki*, which includes statements reflecting that children's health is promoted, emotional wellbeing is nurtured, and children develop the ability to keep themselves safe from harm, including managing themselves and expressing their feelings and needs (MoE, 2017).

Increasingly, studies identify the importance of contact with nature to children's health and wellbeing. McCurdy, Winterbottom Suri, Mehta and Roberts (2010) highlight that over the past three decades there are worldwide shifts to sedentary lifestyles, leading to a decline in health and fitness. It is now generally accepted that the negative health impacts range from obesity to mental illness, through to myopia and lack of general fitness. McCurdy, Winterbottom, Suri, Mehta and Roberts, also discuss concerns that this will lead to long term pulmonary, cardiovascular, and mental health problems. Conversely, they emphasise that physical activity has been identified as reducing the risks of premature mortality. Additionally, physical activity in ECE has been identified as a likely predictor of physical activity later in life (Jelleyman et al., 2019). Other studies (Collins 2015; Duncan, Schofield & Duncan, 2007; Moore 2014; Taylor & Kuo, 2009) also propose that time spent outdoors is a practical solution for these health issues. McCurdy et al. also assert that outdoor play in nature is a useful means of promoting paediatric health to providers to help prevent chronic conditions. They cite the American Academy of Paediatrics (AAP) who recommend paediatricians promote free, unstructured play as a preventative solution. Building on research by Taylor, Kuo and Sullivan(2001) recent research identifies that growing up in greener neighbourhoods may have added benefits for brain development and cognitive functioning (Dadvand et al., 2018). I have observed on a number of occasions children with ADHD slow down and are less distracted in NEOB environments, providing opportunities for discussion, talk and following instructions with adults and playing with groups of children in ways they would not do in a centre environment.

Spending time in nature makes us feel good. This is supported by the Mental Health Foundation of New Zealand (2018) who report that spending time in nature lifts people's moods, lessening feelings of depression and anxiety, improves concentration, guarding against stress, making lives meaningful, speeds recovery from tough times and reduces health inequalities related to poverty. Their survey following Mental Health Awareness Week 2018 found that 95% of respondents felt that time spent in nature

made them feel good and 75% also replied that they intended to spend more regular time in nature (Mental Health Foundation of New Zealand, 2018).

Internationally, the World Health Organization (WHO) recognises the interconnection of human health and ecosystem health. Nature's products and services are crucial to the fundamentals of life and health, even if this fundamental dependency is indirect (WHO, 2010).

From a much younger age children are suffering from mental health anxiety and stress problems (Cohen, Edmondson & Kronish, 2015), and obesity (NZ Health Statistics, 2016/17), along with oral language and developmental issues (Jones, 2018).

The instinctive connection between human health and well-being with the natural world is supported by ecological health science (Moore 2014). In a study which included brain imaging Dadvand et al., (2018) found children from urban Barcelona raised in greener neighbourhoods identified as having enhanced operational recall along with lesser inattention, than those in built-up environments, suggesting positive effects on the developing brain and cognitive functioning. Similarly, Taylor et al., (2001) also considering green and built outdoor environments have a positive impact on learning.

There is also a growing interest in people receiving 'eco-therapy', or as the Japanese term it, forest bathing. Spending time in nature improves our wellbeing, says Mental Health Foundation (MHF) chief executive Judi Clements, highlighting it is not just something that's nice to do; it is actually good for you. Moore (2014) cites biologist and environmentalist, E.O. Wilson who coined the phrase 'Biophilia', suggesting an inherent evolutionary connection between human beings and nature, this positive, instinctive connection between well-being and time spent in nature is now supported by the health sciences (Wells & Lekies, 2006). Louv (2005) also examined a body of research supporting direct experience in nature as fundamental for children's healthy development while attention restoration theory (Kaplan & Kaplan, 1989) adds that

experiences in natural environments are not only pleasurable but also improves our focus and concentration.

Another aspect of wellbeing is supported by the 'hygiene hypothesis', which identifies that auto-immune diseases such as allergies and asthma are more common in the developed world and maybe connected to the use of hygiene products. Further to this Olszak et al., (2012) identifies that the pervasiveness of antibiotics and antibacterial cleaning products reduce exposure to microbes, these are important for strengthening the immune system and offer protection, they suggest contact with germs, eating dirt and playing in the mud which are thought to be beneficial.

Sobel (1996) cites several research studies from Scandinavia showing the health benefits of forest programmes, including a study in Sweden which shows that children participating in Outdoors in all Weathers programmes have 80% fewer infectious diseases such as colds, ear infections, and sore throats. Sobel identifies another long term study from Denmark and Sweden compared children from the same communities, attending Forest/Nature Kindergarten while others attended mainstream kindergarten. They revealed that children who had attended Forest/Nature Kindergarten had 25% less time away with sickness once they attended primary school. Other studies underscore that greater time spent outdoors is linked to reduced rates of myopia (near-sightedness) in children and adolescents (Rose et al., 2008). A further systematic review of the literature (Xiong et al., 2017), found that all studies were in agreement and showed that outdoor time provides protection from myopia.

Questions have been identified by Jenkin, Frampton, White and Pahl (2018) about the extent of the restorative benefits of nature, after their study confirmed children's moods and delayed gratification ability were better after short exposures to virtual natural environments, however, they posit that this may more likely be because of considerable harmful effects of urban environments as opposed to the restorative benefits of nature. Ohly, White, Wheeler, Bethel, Ukoumunne, Nikolaou, and Garside

(2016) also dispute these findings, highlighting differences in the evidence from further studies.

4.9 Place

Te Whāriki principle four, Ngā hononga Relationships, acknowledges that “Children learn through responsive and reciprocal relationships with people, places and things” (MoE, 2017, p.21) suggesting that Kaiako pay attention to both material and psychological cultural tools. Natural outdoor spaces are ideal places for stories, connection and meaningful discussion about Papatūānuku, maunga, awa, moana, and whenua. Children from my centre were intrigued with the story of Hatupatu (Cowley, Melser & Kahukiwa, 1982). When they discovered that Hatupatu’s rock was a physical place they wanted to go and visit. Teachers took them on an excursion to see the rock and then across to Rotorua to understand the distance and to see the boiling mud. Teachers reported that this had a significant impact on their stories and drawings. NBOE settings are also ideal contexts for other stories and books, particularly those set in natural environments such as *Going on a Bear Hunt* (Rosen, 1989) or *The Gruffalo* (Donaldson, 1999)

A number of authors comment on the importance of place. Wattchow and Brown (2011) suggest that place is always a definite physical setting, which combined with our bodily presence and our cultural backgrounds alter and develop the experience. From a Māori perspective, understanding and voicing your relationship to place is fundamental to identity (Penetito, 2009). Similarly, Paul-Burke and Rameka (2019) state that

notions of identity and connectivity to nature, are essential to Māori epistemologies...being and interacting with the world...in the process, strengthen our sense of place and connectivity to our ancestors and our histories, ensuring a cultural and environmental future for our grandchildren. (p.3)

Indigenous, environmental and post-humanist perspectives also discuss similar elements (Taylor & Giugni, 2012, Ritchie, 2012, Duhn, 2012) and identify intrinsic connections to the more than human world and the ethics of children’s relationships with living on the earth.

In addition, Ritchie, Duhn, Rau and Craw (2010), note the importance of caring in the here and now:

A sense of place starts with paying attention to the “here” and “now” and has a “ripple effect”. “Place-based pedagogies” radiate out from the centre...in the context of caring for self, other and the environment, “self” stands for...caring for those who are part of the immediate, community, fostering reciprocal and responsive relationships with people, places, and things (p.2).

Learning through nature also aligns with the Mana whenua/Belonging strand of *Te Whāriki*, which advocates experience in an environment where “Connecting links with the family and the wider world are affirmed and extended. They know that they have a place. They know the limits and boundaries of acceptable behaviour”. (MoE, 2017, p.31).

Engagement with places creates possibilities to construct identity and agency through empowerment and holistic development which is central to *Te Whāriki*. Brown (2012) suggests that a place-responsive approach moves the focus from viewing outdoor education as a set of activities to outdoor education as a way to view relationships, both with people and place(s).

From a Pacific perspective, being in the outdoors as a place is important. In a conversation with a teacher from my centre we discussed that the outdoors was an important part of communication and learning about what is happening around the community. Children move from group to group to share stories and news. That was how communication was done. It was also a way of learning new things such as songs, tales, games, and of discovering the best athletes in the community. Nothing was done by rules from adults, all was done by the children and final decisions on who was best at certain things was evaluated by children.

Several studies comment on the effects of place on NBOE. An Elliott and Chancellor (2014) study concluded that “The power of natural places to embrace humans and carry them towards new understandings and relationships must be recognised, especially for children” (p.52). While Edgington (2002) stresses how the absolute

magnitude of the outdoors essentially alters learning experiences. The appeal of NBOE may be the context of the space which differs from the usual classroom as a traditional place for learning (Rea, 2008). When discussing Forest School, Waller (2006) notes that recurring visits support an intimate relationship with place, providing a context for ongoing developing place based inspired stories and sensitive observation skills connected with the dynamic ever-changing environments.

Brown (2012) identifies that there is no universal prescription of learning in the outdoors and place responsive pedagogies respond to the children and to what the environment offers. "Outdoor places are much more than mere sites for human activity. They make us and we make them. They are the sources of our identities"(Wattchow & Brown, 2011, p. ix).

4.10 Environmental Attitudes

The impact of humans on the Earth's systems has been so immense that the current era is now acknowledged as the Anthropocene (Taylor & Giugni, 2012). We face enormous challenges if we want to try to reverse these trends and ECE provides an opportunity to re-integrate nature into childhood. Children are fascinated with the outdoors and become careful observers of the world around them and establish emotional bonds.

How a child treats flora and fauna, insect, bird or plant may seem insignificant, but this hands-on experience is where they begin to interact and understand and respect the natural world and its systems. Māori consider the importance of deep affinity between humans and the natural world, which is expressed through kaitiakitanga, or guardianship of the environment. *Te Whāriki* states that "children may express their respect for the natural world in terms of respect for Papatūānuku...and Ranginui...Kaitiakitanga is integral to this" (MoE, 2017, p.46). Children can become kaitiaki or guardians, as Kelly et al., (2013) identify, NBOE programmes are more often committed to sustainability, supporting outcomes that are consistent with the ECE

curriculum, children's rights, and kaupapa Māori accepted wisdoms of the living earth. ERO (2016) ascertain that in order to instigate a curriculum providing all children with equitable opportunities to achieve success "curriculum has to be responsive to, and promote, children's cultural identity and strengthen partnerships with parents and whānau" (p.18).

Cowie, Greaves, Milfont, Houkamau and Sibley (2016) found variations in environmental awareness between different ethnic groups in Aotearoa/New Zealand. They note common perceptions that indigenous peoples share unique connections with the land; however, the study reflected that Māori did express significantly higher levels of environmental awareness. Interestingly, the study suggests socio-political awareness is behind these attitudes, and Māori spirituality was not allied with overall levels of environmental awareness. Cowie et al., (2016) conclude that while Māori do articulate higher environmental awareness, this correlates with socio-political concerns around Māori sovereignty that supports valuing natural environments.

The United Nations Convention on the Rights of the Child (UNCROC) includes a right to an education that involves respect for the natural environment (United Nations, 1989). Similarly, the International Play Association (2016) in promoting Article 21 (the Children's right to play) includes "space to play outdoors in diverse and challenging physical environments, with access to supportive adults, when necessary...opportunities to experience, interact with and play in natural environments and the animal world" (p.3).

Several studies and as well as many environmentalists (Louv 2005; Maynard, Waters, & Clement 2013; Moore 2014, Sobel 1996; Taylor & Giugni 2012; Wells & Lekies 2006) discuss the importance of early connections of play and natural settings. Respected environmentalist Louise Chawla highlights that pleasurable experience in nature, assist children to develop an appreciation of our interconnectedness with the earth and its living things, and we need to understand that, as humans, we are accountable for safeguarding the earth for future generations (Chawla, 2007). The importance of the

appropriateness of an environmental curriculum, with empathy and free time in nature as a priority, is identified by environmentalist David Sobel (1996). He highlights that we must permit children to be in love with the earth before we can ask them to save it, if we want them to truly be empowered. Supporting this is a major study by Wells and Lekies (2006) which found that free play in natural spaces in young children has a direct impact on the ecological attitude and behaviour in adults.

More recently, a five-year research study from Goralnik and Nelson (2017) showed how experiential environmental learning, focusing on empathy, develops meaningful attitudes to environmental and sustainability learning. It incorporates knowledge, citizenship and values with consequential impacts for sustainability practice and action. Similarly, Moore (2014) identifies that children gain a sense of pride, accountability and respect when they are given opportunities to experience agency and control and then they will understand our sense of accountability to the environment. Rivkin (2014) also identifies that hands-on opportunities and involvement in nature play experiences are recalled as lifelong reminiscences, often laying the foundations for formal learning and provide the motivation to study living systems. A review of the literature from Charles et al., (2018), underscore that the two factors which contributed the most to adults taking action and adopting positive environmental attitudes, were supportive role models and positive, direct experiences in nature during childhood. While Ritchie et al., (2010) question “how do children create meaning of an ethic of care for self and other, including the planet?” (p. 3).

Nature provides numerous opportunities for people with all disabilities. Stothers (2012) identifies that nature can be an important context for children with disabilities, as senses are heightened with multiple opportunities to listen, smell, feel, and touch. I observed a child from my centre with ADHD on a nature programme. In the centre he always had an education support worker; however out on the nature programme this was not necessary. Additionally, photos of each day are posted on Facebook of both in centre and nature programmes. His mother discussed with me that he was always very

excited and eager to show her what he had been doing at nature kindergarten, examining that this was the only occasion he would talk to her about what he had been doing.

4.11 Risk, Safety and Competence

Sandseter (2007) defines risky play as exhilarating and stimulating with a risk of physical injury. She classifies this as play which may include elements such as height, speed, tools, or with uncertain aspects and places children may get lost. Over the past few decades a number of authors (Brussoni et al. 2012; Gray 2015; Kelly, et.al.,2013; Louv 2005; Sandseter, 2007) comment on the decline in risky play amid concerns about safety, suggesting parental concerns about risk has had a significant role in preventing children's play opportunities. Wattchow and Brown (2011) suggest that learning in the outdoors is subjective and influenced by personal and cultural ideas about risk, safety and challenge, while Gill (2007) adds that experiences which earlier generations enjoyed without a moment of thought are now considered disturbing or unsafe. Children need opportunities for them to practise ways of assessing and minimising risk (Bundy et al., 2009).

Several studies identify benefits from risky play experiences. Children's healthy development has been correlated with outdoor risky play experiences, limits on this type of play may essentially be impeding children's health and wellbeing (Brussoni, Olsen, Pike & Sleet, 2012). The ability to assess and take risks is an essential life skill as well as an important part of learning (Greenfield, 2004). Others note the importance of risky play for growth and development. Similarly, Brussoni et al., (2017) identify that with reasonable limitations, children need to play freely, including risk taking. They suggest that injury prevention is often motivated by concern and anxiety, rather than research and children's agency and decision making. The greatest risk is not providing opportunities for children to practise risk management (Bundy et al., 2009). Physical

activity is essential for both physiological and psychological healthy development in children.

Oltman (2002) suggests that when children experience risk and challenge, they test limits, agency and self-efficacy and their perceptions and the effects of how the world works. Therefore, learning how the world works. Jelleyman et al. (2019) highlight links with limiting risky play opportunities and increased behavioural and emotional issues in children, discussing that autonomy and risk management skills are essential for children's healthy development.

Adults view children in differing ways. Gill (2007) suggests that adults' fears focus on children's vulnerabilities, while Gerber (1998) underscores how trust and respect are important for everyone. Trust is the foundation of independence, ensuring they will rise to challenges rather than being afraid of them. Respect involves trusting children to be competent and play uninterrupted, and from observing and appreciating what they are able to do. Growing concerns about safety have focused on minimising risk, unintentionally resulting in limiting play and enjoyment and the opportunity for healthy development. Kelly et al., (2013) found that teachers were confronted with the complexities of viewing the competent and capable child and the defenceless child facing risks on their adventures into nature. The Play Safety Forum promotes the value of allowing children to be as safe as needed, not as safe as is obtainable, risks which could be life-threatening or causing permanent harm (Play England, 2008). When children take risks, they also develop competence in risk management and risk perception. Additionally, there are language and social interactions with older peers, as children collectively decide and learn how to manage risk. (Bundy et al., 2009).

Resilience is the capacity to keep functioning, in spite of substantial adversity. McArdle, Harrison and Harrison (2013) study describes how the natural environment and a nurturing attitude enabled opportunities for challenges and safe risk-taking along with calm and relaxation. Children felt safe, secure, had increased self-esteem, persistence

and concentration and established positive emotional qualities such as self-confidence when facing challenge, self-discipline, compassion, inspiration, focus, and persistence.

4.12 Nature Play

Kelly et al., (2013) found that teachers celebrated the uniqueness of Aotearoa/New Zealand. They identified features such as easy access to large natural spaces and features such as streams and bush. My own childhood was spent roaming for miles over paddocks and playing in bush and streams with the company of large groups of neighbourhood children. This was not uncommon growing up in Aotearoa/New Zealand in the 1950's and 1960's. Play in natural environments allows for freedom, expression and creativity, allowing children to work together using natural materials to create new things and build understanding (Moore, 2014). He also observes that these provide a sense of independence and investigation helping children develop navigation and special skills, and also providing a sense of autonomy. Szalavitz and Perry (2010) identify that unstructured and outdoor play is crucial to healthy brain and socio-emotional development, identifying that play in the early years is far more valuable than direct instruction.

In nature there are multiple opportunities to explore, experiment and discover with flexible and tactile open ended resources and affordances. There are multiple opportunities to be physically active as children play games such as chase or hide and seek. Waite (2011) identified that pedagogies providing child-directed and experiential learning incorporate ethics such as freedom and fun, ownership and autonomy and authenticity while developing an appreciation for rich sensory environments as well as physicality. Nature also supports creativity and problem solving. In green natural environments children play together in groups and participate in more imaginative ways. (Dyment & Bell, 2007). Other authors (Moore 2014; Play Wales, n.d.) highlight the value of the sensory and scientific learning which occurs when damming streams, overturning rocks, observing sunlight, watching swaying leaves, following scurrying

ants, stroking a mossy surface, smelling the air following a rainstorm, and numerous other ways. Playing with natural elements supports knowledge and appreciation of the joy, danger, strength and fragility of natural environments.

Some of the literature on the outdoors uses nostalgia to emphasise the reduction in natural play spaces. Gill (2005) suggests remembering a much-loved place to play as a child. Where was it, what did it look like, how did it smell? Authors such as Plowman, McPake and Stephen (2010) suggest that when writers use nostalgia to support children's play in nature, they are using Rousseau's theory that children develop naturally without constraints imposed on them by society; this portrays young children as innocent and particularly vulnerable. I would disagree with this point of view as the literature I have reviewed suggests that learning in nature is related to developing confident capable children. Additionally, Moore and Wong (1997) found freedom, fun, authenticity and autonomy were found in NBOE child-led, real-life pedagogies.

4.13 Forest School/Nature Programmes

Forest/Nature schools are expanding quickly across the world, with much interest from Aotearoa/New Zealand. The principle aims of these programmes are to support and develop self-confidence, self-esteem, wellbeing, health and develop awareness, respect for and understanding of the natural environment (Waite, Bolling & Bentson, 2016). Primarily located in natural environments such as bush, beach forest or farm, children attend the same destination on a regular basis. This model was originally developed in Scandinavia, where it is now part of mainstream ECE. Knight (2009) emphasises the significance of personal and independent learning with child directed, spontaneous play and exploration. My observation of Danish forest schools was that children are viewed as capable competent, confident children, happy, active and creative.

Williams-Siegfriedsen (2012) identifies Danish forest school principles as including child centred values. Children learn through social relationships, holistic approaches, and

environments which provide opportunities for time to investigate and develop autonomous thinking. These are the same values I observe in our NBOE, ECE programmes. They are not about taking the inside curriculum outdoors, or one-off trips or about Nature Study (although this happens). It is not about creating activities for children to do, (although this sometimes happens too), rather they are long term programmes of regular visits with the same children and teachers to the same natural outdoor environment. In our ECE programmes, children plan the day and make choices, consider and discuss ideas and plans. There are multiple opportunities for discussion and debate as children voice their opinions, and then in their reflections at the end of the day.

The environment (Papatūānuku) is seen as the first teacher together with the notion of ako where teachers and children learn with and through each other and the environment. Davis and Waite (2005) found the fire or other elements afforded opportunities for interesting conversation while contribution and recalling experiences, with most discourse happening during free play. Similarly, O'Brien and Murray (2007) observed the use of sophisticated language while conversation was prompted by visual and other sensory experiences and inspiring children who were usually reluctant to converse with peers or adults.

In a significant study (Roe & Aspinall, 2011) boys with extreme behavioural problems, trauma and psychological disorders, confined in a specialist residential school, attended a forest school for one three-hour day per week over a six month period. Findings showed increased positive emotional effects, increased trust, development of exploratory activity and social cohesion, showing the restorative health benefits and rehabilitation effects forest settings can offer over time. Davis Rea and Waite (2006) query whether it is simply being outdoors that changes the pedagogy used in that context to one that is more relaxed and allows for greater choice and enjoyment for learners.

In the U. K. forest schools have become popular and sought-after programmes, however this is not without some controversy from the education community. Leather (2018) argues that the rapid expansion has become commercialised and commodified, resulting in the idea being used as a marketing tool. The term 'forest school' is now widely used to depict general outdoor activities or one-off environmental sessions. Leather suggests that this commercialisation and institutionalisation practice, results in parents being misled. Sackville-Ford and Davenport (2019) also share Leather's concerns, agreeing the standardising of forest school practices has led to the commodifying and commercialisation of nature play. They note that the programmes should only be provided by competent teachers with a grounding in play-based pedagogy. Sackville-Ford and Davenport also emphasise the expansion of nature programmes in Australia where services have developed as autonomous programs in comparison to, rather than introduced models from the UK or Scandinavia. Knight (2018) responds to these critiques agreeing that social constructivist theory is central to forest school, highlighting that play is a significant component of practice, however there is not one specific way to operate forest school, informing that "skilled practitioners shape and support the environment for learning" (p.20).

4.14 Conclusion of Natural Outdoor Environments

Natural settings are beginning to gain increasing recognition as important learning environments in Aotearoa/New Zealand. Nature/forest programmes are leading the way, both as one day per week programmes operating as an excursion from a centre, or as standalone programmes. My observation is that a number of programmes are already operating, however many are focused on bush craft or have set objectives and unreasonable safety requirements. For example, children are not permitted to paddle in the water or throw sticks when taken to the beach.

The findings from this review of the literature show that NBOE programmes have significant impacts for all children, however in my experience this is more particularly

so for children living in poverty. These benefits would contribute significantly to health and wellbeing as well as language and cognitive development. Green outdoor settings are also shown to support reduced ADHD and autism symptoms with increased intentional functioning.

Chapter Five, Synthesis

Since children interact on equal conditions while the situations and the participants often change, there is no absolute right or wrong in children's play worlds. Instead rules must constantly be defined and redefined. This makes play a perfect arena for children, in which they will develop communicative ability, an ability...fundamental for children's learning and creativity. In play, children learn to know others' perspectives and gradually learn to understand them. (Pramling, Samuelsson & Johansson 2006, as cited in Lester and Russell, 2008)

The title of this thesis is *Play Based Natural Environments and Language Development in Young Children*. I began by identifying what the literature informs us about language in order to establish how play and NBOE affect and support this.

The three topics of play, language, and natural outdoor environments are inextricably linked, and all have similar themes running through them. This synthesis identifies that in order to gain optimum benefits, all are supported through their envelopment with each other. In order to obtain optimal benefits all have been shown to depend on two vital elements, the specific context of the setting, and the crucial role of the adult. This synthesis begins with an analysis of eight identified priorities from the literature, including language development, which supports language acquisition.

1. Language development
2. The role of play
3. Natural outdoor environments,
4. Affordance and elements
5. Kaitiakitanga and environmental attitudes
6. Health, wellbeing and benefits
- 7 Significance to Māori
- 8 Role of the adult.

Play in natural outdoor environments is similar to a whāriki. Language, play, and NBOE are all interwoven to provide an opportunity and resource for oral language acquisition and development. *Te Whāriki* in terms of weaving and weavers identifies:

expert weavers will examine the foundations for planning and technique, representing the understanding of how children learn language While the upper side of a whāriki displays the weaver's artistry it is the underside that

reveals their mastery, which I suggest is confident, competent children. If these are sound, the quality will be seen on the face-upside - children will have a good understanding of language. A weaver weaves in new strands of harakeke or pandanus as their whāriki expands, representing the adults who will provide the context and environments for language development. (MoE, 2017, inside cover)

Te Whāriki represents a woven mat (MoE, 2017). This study has found that language, play and natural outdoor environments are similar to the whāriki, they are all interwoven to provide an optimal context for language development. I have created the Whāriki below to represent how language play and nature based outdoor environments are woven together to support each other. Natural outdoor environments provide many opportunities to play, develop language, and extend vocabulary while immersed in an important cultural context. The significance of the environment to Māori together with emotions such as happiness and joy, and attributes such as agency, imagination, creativity, motivation and wellbeing are dependent on the expertise of the weaver.

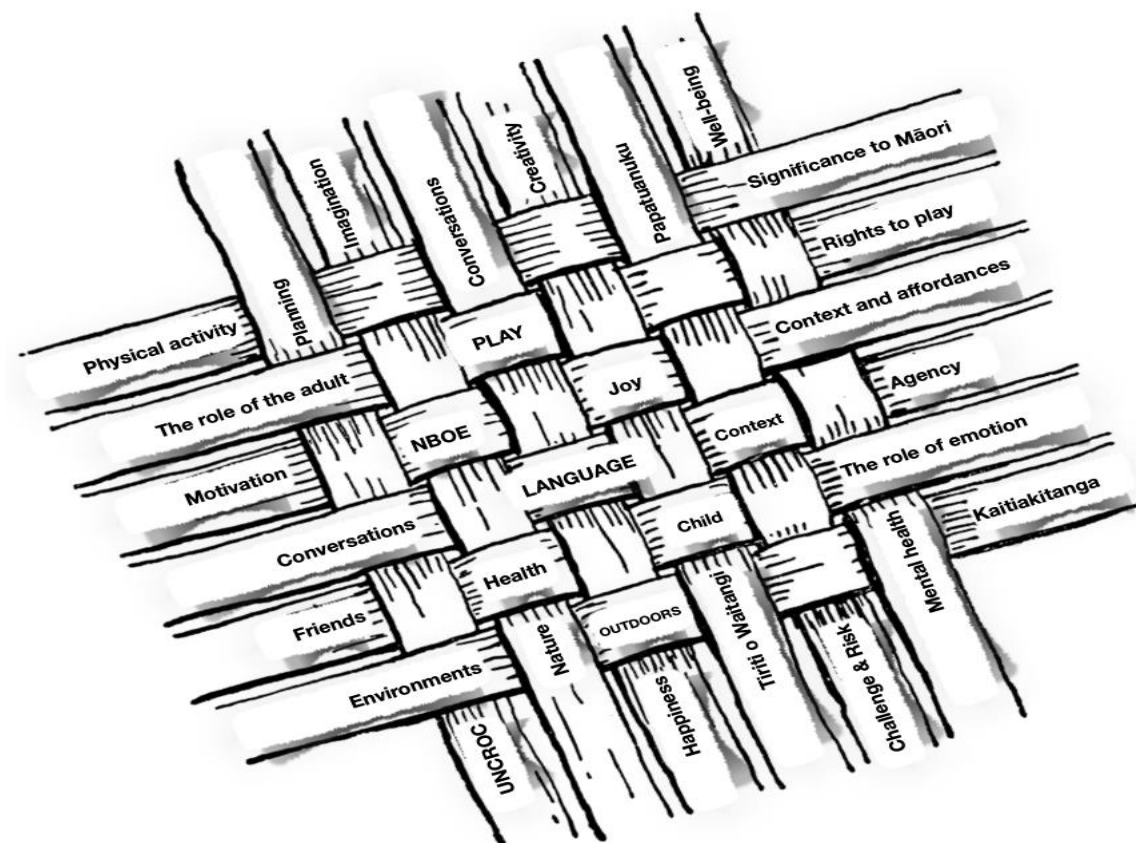


Figure 5.1: Intersection of Language, Play and the Outdoors (Beatson, 2019)

5.1 Language Development

The importance of language has been well established in the literature. Language is fundamental to human learning and is important for life, learning and interaction (Hoff, 2013; Ibbotson & Tomasello, 2016; Smith & Ellery, 1997; Whitehead, 2007). Similarly, *Te Whāriki* (MoE, 2017) identifies that language is one of the important cultural tasks young children will develop in their early years. Despite it being the most complex skill, a human can master, MacWhinney (2001) notes the process of language acquisition and development is often taken for granted.

Research identifies that greater access to language use, and practice, the more rapid the language development. The literature identifies that both play and NBOE are

optimal contexts for language use through dialogue and conversation. Hoff (2006) determines that human language acquisition requires environments that provide opportunities to experience communicative language and to hear speech, while communication with people, influences the nature of the talk. NBOE have been identified within this study as providing unlimited potential for significant language use. The elements and affordances inspire the use of language and the time and space to discover, ponder, wonder and reason are prompts to begin conversations. Additionally, these environments stimulate pretend and make-believe play which include diverse language and ideas.

It is important to have an understanding of the fundamentals of language acquisition before we can fully know how to use it (Smith & Elley, 1997). Language development is a rational process, where children gather and make sense of the information from the environment. They then replicate this as the ability to construct and comprehend language (Hoff, 2006). This process once again identifies the importance in the environment for language learning. The effects provoked by the properties, affordances and elements in the environment provide the impetus for further talk, providing provocations, cues and opportunities to practice language, in context. This is supported by Ellis (2009, 2015), who identifies that language is comprised of a structured range of paired meanings, or constructions. These are shaped into meaning maps and used for language purposes. Repetition leads to entrenchment as grammatical knowledge in the speaker's thoughts. NBOE provide the time and inspiration for continuous, constant opportunities to practice and imbed language and meaning through conversation and inquiry. Ellis further identifies depth of learning depends on both the type and the regularity of use, highlighting the greater the usage, the more words become entrenched, indicating the importance of language practise use, such as conversation. Batstone (2010) focuses on the importance of social talk noting that various cognitive operations are involved in information processing and these appear to be socially orientated. NBOE environments are ideal for small groups, providing the social context

for talk, questioning and theorising, Conversations are important to language acquisition and a number of studies from the literature (Bybee, 2006, Ellis, 2002, 2009, 2015; Hassan, 2002; Langacker, 2000; Tomasello & Ratsky, 2003) identify the significance of everyday conversation to language development.

Batstone (2010) accentuates the importance of social talk in that various cognitive operations are involved in information processing. These appear to be socially orientated. Conversation also helps to transmit the meaning to the child. It provides the opportunity to apply the words in situations that require more reasoning. NBOE offers numerous affordances for discussion and meaning making. The environment constantly provokes and inspires exciting and inspiring ways of providing the motivation for language acquisition. Children are always questioning the phenomena in the environment. This importance of building understanding of the meaning of words is highlighted by Morgan, Farkas, Hillemeier, Hammer and Maczuga, (2015) identifying that communication and interaction are influential for activating and actively generating language acquisition systems. Similarly, the importance of conversation is also identified by Wells (2000) who notes that when children respond to what is said, they extend and refine their own thinking while developing common understanding.

The significance of experience is added to by Hirsh-Pasek et.al. (2015) who found that both hearing and experiencing words are indisputably important to language success. Vygotsky (1978) also maintained that social talk with more capable peers provided a context for development and language and considering the importance of providing many opportunities to practice talk, including interaction through questions and narratives.

Understanding comes from hearing words and their use so it is important to include varying language with children. Boyum (2006) explains that when we learn a new word, we hear examples from which we recognise the underlying rule. This supports the move from a limited number of uses for words to applying the word in different situations. Different and uncommon words such as dappled, blooming, roaring,

gushing, or speckled are able to be used in context in the outdoors. Hart and Risley (1997) explain it is innovative and complex, or extra or unusual speech that makes the difference. NBOE are ideal opportunities to use mathematical and spatial words in context, words such as high, tall, enormous, gigantic, tiny, below, further, uncommon words such as fluttering, rushing, roaming, gurgling, nesting, soaring, scurrying, diving, skyline, horizon and canopy are all ongoing discussion topics. Many of the words commonly used in NBOE are verbs. Several studies (Bencini & Goldberg, 2000; Hoff 2015; Tomasello, 2003) propose that the verb is a good indicator of meaning, playing a fundamental role in defining the construction of a sentence. There is a close relationship between the types of verb that usually appear within constructions such as put, move and push, and the implication taken from these. Contradicting the simple-is-better view, Hoff (2015) identifies that the verbs heard in a larger variation of sentences are assimilated earlier than verbs heard as often, however in fewer diverse sentence structures.

Each language has its own ways of communicating meanings, with value and connotations for its users. In Aotearoa/New Zealand we must understand and appreciation that te reo should be valued and used for example in stories, symbols, arts and crafts (MoE, 2017). NBOE are an ideal context to introduce atua, tikānga, and kaitiakitanga or to tell stories such as the Māori creation cycle. Where better to discuss Tane, Tawhirimatea or Tangaroa than when you can feel their power. Play in NBOE settings also offers multiple opportunities for children to use their home languages as well as English. *Te Whāriki* also identifies “children more readily become bi- or multi literate when language learning in the education setting builds on their home languages” (MoE, 2017, p.11).

In NBOE situations children work in small groups and there are always extensive topics to discuss. The importance of social enquiry is identified by Larsen-Freeman (2008), elaborating that collaborative groups are linked through ideas, situated understanding, thereby scaffolding, and the zone of proximal development. The interconnectedness

within groups unites how they use different language phenomena and social interactions. These then develop into social enquiry.

Miller, Vlach and Simmering (2017) identify the importance of children's early language knowledge. They discuss studies, demonstrating links between spatial linguistic terms and spatial understanding. This then predicts success in maths, science, technology, and engineering skills.

. 5.2 The role of play in language development

The impact of play is an important addition to the literature about the context in which children learn language. Play offers the opportunity to incorporate and practice many of the skills which enhance language development. During play, children can take charge, and express themselves, while making choices and decisions about what they do and the ways they do it. Additionally, Gordon (2014) identifies that the value of play is generally unacknowledged and under prioritised. From a language perspective, Moore (2014) considers the benefit of play, comparative to other strategies, is that play is dynamic, providing more opportunities for ongoing dialogue and to practice new words and language (Moore, 2014).

It is easy to underestimate the value of play. Gordon (2014) highlights that many of the different aspects of play are not always identified as play and are studied individually, such as physical activity, health, mental health, wellbeing, social interaction, language and creativity (Gordon, 2014). Importantly, Sutton-Smith (2003) identifies that during play children develop a sense that life is worthwhile, thus instigating more play, and generating further possibilities for language benefits to accrue, all as children practice talk, recall and discuss.

The literature reveals that whatever definition, play must be the child's choice, have no intrinsic goals, be pleasurable, enjoyable, spontaneous and voluntary. Gray (2015) stresses that the principal emotions of play are interest and joy, and suggests this is

what makes play significant. A key theme emerging from this study is that play induces emotions, such as joy, happiness, frustration, sadness, fear, ecstasy, surprise and anticipation. Waite (2011) notes that emotional content reinforces memory and has important social uses. Both social and physical environments appear to be intended for us to experience, practice, ponder and enjoy life in our world. NBOE offer multiple opportunities to discover, express and enjoy emotions. There are many static moments as children discover, overcome challenges or climb to new heights. Gray (2015) believes the principal emotions of play are interest and joy, which make play meaningful. When children enjoy what they are doing there are many opportunities for talk and discussion, often with great excitement. Importantly Erk et al., (2003) consider words stored in a positive emotional context are recalled more easily than those in neutral or adverse contexts. Additionally, Liu et al., (2017) stress that opportunities for active play are also important, when children are deeply engaged, “involvement increases brain activation related to agency, decision making, and flow” (p.4). In NBOE children are constantly moving with so many places to explore or visit. I still vividly recall the names of plants, places, spaces and important decisions we made when roaming, even though this was 60 years ago.

Children are intrinsically motivated to play, and importantly, the right to play is reflected in Article 31 of the United Nations Convention on the Rights of the Child declaring that “the child has a right to leisure, play, and participation in cultural and artistic activities” (, UNCROC, 1989). We should give children a voice by listening to their views and ideas, by genuinely consulting them. We should let them play in the ways that interest them. Sutton-Smith (2003) states that play is the place where children can experiment with each other, with the world, with ideas and importantly, with language.

Play may be unpredictable, haphazard and fantastical, emotional or exaggerated, or it could include physical activity with different voices and language, or it could be emotional or exaggerated. In play children often practice playing with language, using and mimicking voices and role playing. A study by Dowdell, Gray, and Malone (2011)

found NBOE sustain children's imaginative play and developed positive relationships (Malone, 2011; Moore, 1997). Further, Elliott and Chancellor (2014) highlighted teachers found outdoor settings increased the depth and understandings of children's play. Children played differently to their home kindergarten with the outdoors supporting a variety of differing types of play including observation, developing physical skills, enhanced group dynamics and relationships. Elliott and Chancellor theorised that this is possibly due to teachers having no prior expectations.

Pretend play is important to language development. Children practice conversations that occur throughout the day when they are empowered to play. Smith and Pellegrini (2008) highlight there are many opportunities to extend vocabulary from pretend play. Johnson et al., (2014) suggest a connection between dynamic engagement, memory development and information retrieval, and that the context may enhance word knowledge and meaning. In pretend play children also acquire social skills and scripts, use language comically, and negotiate rules and meaning, involving sophisticated language constructions and understanding of what others intend (Bateson, 2014). I have particularly noticed that when taking children outdoors they immediately find ways to transform into different characters, then play as these characters throughout the day.

Young children often play in groups. Liu et al., (2017) identify social interaction as important as it triggers neural networks related to perceiving the mental positions of others. These all require meaning-making and language which can be linked to emerging literacy. Due to safety and supervision NBOE usually work in small groups of between 10 and 20, with the children usually dividing into smaller groups.

Smith and Pellegrini (2008) discovered that when children are empowered to play, significant opportunities arise to extend vocabulary through pretend play, and conversation. These occur constantly throughout the day, with children acquiring social skills and scripts, as they use language humorously and negotiate rules and meaning. Other important skills are developed such as understanding what others intend, while simultaneously developing intricate language structures and developing creative and

imaginative stories. Play is ideal for developing sophisticated reasoning, intuition, problem solving, along with other creative endeavours (Gray, 2015).

Playfulness means being open to turning situations upside down, accepting of moments of nonsense that arise, and bringing humour and a playful disposition to situations where there may be conflict. It means not taking play too seriously (Russell 2015). Children play with language through silly jokes and imaginative languages of their own. When reviewing the literature on play, Weisberg, Zosh, Hirsh-Pasek and Golinkoff (2013) conclude play exposes children to the socially interactive and cognitive features known to enhance language skills.

Play helps children resolve and find creative ways to overcome problems and challenges (Bateson, 2014; Pellegrini, Dupuis & Smith 2007) and that play can be a way of moving ahead when children are confronted with complex physical and social situations. Sutton-Smith (2003) notes that once children have mastered a skill, they experience success and satisfaction. Positive feedback is a pleasurable experience, this then stimulates more positive effects, continuing to provide for more play and for more talk. The importance of play is the opportunity for joy. Gray (2015) suggests that there is a requirement for an experience to be playful. Zosh et al., (2017) discovered playfulness is also associated with many psychological benefits, supporting this, Erk et.al. (2003) identify that words stored in positive emotional contexts were remembered better than those in neutral or negative contexts. NBOE are dynamic settings providing many opportunities for language in emotional contexts, including excitement, wonder and awe. Gordon (2014) uses examples from literature to emphasise these benefits, including creative and divergent thinking, problem solving, helping with stress, and emotional regulation, which contribute to language and talk. These all provide contexts for dialogue, chatter and conversation.

5.3 Natural Outdoor Environments

Natural environments are vibrant settings, always changing, providing hints and meanings for new words to be learnt in context. Ritchie (2012) identifies that children are “richly responsive to the landscape, the physical, tangible, sensory world in which they are situated” (p.89). These landscapes contain multiple opportunities for children to verbally respond. NBOE contain huge potential for learning, including numerous possibilities for exploration and play (Wattchow & Brown, 2011). Outdoor environments provide endless possibilities for children to explore using their specific interests, developing concepts, sparking imagination and providing an optimal environment for resourcefulness and creativity (Kelly et al., 2013). All of these concepts suggest multiple opportunities for conversation and talk.

NBOE’s provide many opportunities for constant inquiry, theorising, questioning and conversation. During NBOE programmes children identify, discuss and monitor risk and discuss safety issues for them. They also participate in the plans for the day; these are considered and taken seriously. Rinaldi (2013) identifies that children should always be accepted as fully participating citizens. Adults appear to slow down in this space which allows for time for language opportunities, conversation and sustained shared thinking. There is also space for children to develop private talk or create their own language. Many authors (Hoff 2006; Maynard, 2007; Waters, 2011; Wells, 2007) found that children are more likely to raise enquiries about the world around them when outdoors than when inside a specific learning setting. Similarly, Hoff (2006) identifies that children who engage in more extensive first hand exploration, learnt more words, and in particular words for actions, forces, and physical objects suggesting relationships between physical exploration and language development. NBOE can empower children to gain increased self-confidence and communication (O’Brien & Murray, 2007). Vocabulary develops at a faster rate when social experiences provide rich opportunities for talk, providing meaning and opportunities to use words in situations that require more reasoning (Hoff, 2006). I wonder, is an expression often used in NBOE situations, as this provides imaginative dialogue and creativity.

5.4 Affordances and Elements

Gibson (1977) terms affordances as the features, elements and things, in the environment that contain meaning to us and invite us to assume a particular use. NBOE's offer diverse options for children to decide how to use different elements within the environment, and dynamic landscapes. These elements are constant cues for language and for sustained shared thinking (Siraj-Blatchford & Manni, 2007). Outdoor environments offer numerous opportunities for whole body sensory experiences. Activities such as hut building, stream damming, and fire making have been identified as important settings for whole group activities (Waite 2011). In my experience these activities provide much excitement and debate as children negotiate their roles and ideas. There are multiple opportunities for play and language development as children discover, theorise, question, wonder, discuss, explain, count, challenge and describe. Waite (2010) underlines how natural outdoor spaces provide many varied and flexible elements, offering opportunities for teachers to respond to child-initiated interactions and build on interests. Fjørtoft (2001, 2004) studied varied physical affordances such as hills, trees, and rocks, which support social use and language through group play and imaginative play, role play and fantasy play. Sensory language and scientific learning occur when damming streams, overturning rocks, observing natural phenomena such as sunlight and leaves, watching ants and smelling the air (Moore, 2014). There are numerous other opportunities to practice and deepen language in meaningful ways. Empathy and free time in nature are a priority, notes environmentalist Sobel (1996). Playing with natural elements supports conversation about the joys and the dangers, forces and of the creatures the birds and the animals (Moore, 2014).

5.5 Kaitiakitanga and Environment

Kaitiakitanga is concerned with relationships with the environment, the people and the world, and how we nurture and support these (Paul-Burk & Rameka, 2019). ECE programmes provide opportunities to incorporate Papatūānuku into childhood. Once

again NBOE provide numerous opportunities for important discussion and conversation about connections, kaitiakitanga, or guardianship and Papatūānuku. Kaitiakitanga is also reflected in the diverse elements, such as the sun, the sky, the mountains or the moon, these afford endless opportunities for discussion, identification, and ongoing projects. Paul (2019) cites Royal (2002) to explain Māori connection to nature “the natural world from a Māori perspective, forms a cosmic family, the weather, birds, fish and trees are related to each other, and to the people of the land” (para 6).

NBOE are powerful contexts to begin to know and understand the importance of caring for the environment. Moore (2007) identifies how children are fascinated with the outdoors and as such become careful observers and custodians of the earth. Similarly, important observations from teachers in *the Ngahere Project* discuss “Children’s right to access the living world, and to learn to care for it,” (Kelly et al., 2013,p.40). Children have a right to know and understand the importance of kaitiakitanga. These are similar comments expressed in conversations with colleagues, both in Aotearoa/New Zealand and from around the world.

5.6 Health and Wellbeing

Health and wellbeing are important to language development and wellbeing, children who are fit, healthy and happy are more likely to play more, be alert and to socialise. Nonetheless Gordon (2014) identified, despite having impressive credentials, play remains on the margins of the wider professional discourse about health and well-being. Whereas Faber and Taylor (2009) identified that green outdoor settings keep children healthy and active, reducing ADHD symptoms, improving attentional functioning, and with better concentration than activities occurring in other settings. A number of authors, (Faber & Taylor 2009; Faber& Kuo 2006; Taylor, Kuo & Sullivan, 2001) discuss that children with attention deficits concentrate better after walking in natural spaces, with increased attentional ability, additionally a predisposition for happiness is important to well-being. Children are then more likely to participate in activities which provide social interaction, providing opportunities, requiring talk and conversation. Significantly, Zosh et al., (2017) identify that joyfulness is associated with increased dopamine levels, they highlight that these are “linked to enhanced memory, attention, mental shifting, creativity, and motivation” (p.19).

Children develop a strong vestibular system when they move. A number of authors (Chaddock et al., 2010; Erickson et al., 2009; Hanscom, 201; Louv, 1995) discussed the neurocognitive benefits of active childhoods, identifying important health and educational implications Similarly, de Bruijn et al. (2018) discussed that the greatest academic achievement gains resulted from children using both aerobic fitness and gross motor skills, while Della McMorris (2016) concludes that enduring physical exercise assists the speed of cognition. These are all associated with language development. Similarly, Dadvand et al. (2018) found children raised in greener neighbourhoods showed better working memory and reduced inattentiveness which all help to embed language.

Several authors (Brussoni et al. 2012; Gray 2015; Hanscom, 2016; Kelly, et.al. 2013; Louv 2005; Sandseter, 2007) reveal the importance of risk and challenge to healthy

development. Rather than limiting children's opportunities risk should be encouraged, as it can lead to increased physical activity, independence, cognitive and social development, and reducing mental illness and learning difficulties (Sandseter, 2009). Conversations and the co construction of ideas are important when detecting risk, discussing ideas with children rather than just informing them. An important part of NBOE programmes are that children get the opportunity to identify and discuss ways to minimise the risks in their environment. Bundy et al. (2009) found enhanced opportunities for collaboration with older peers, as children collectively decide and learn how to manage risk. NBOE programmes involve discussion with children about risks, mitigations strategies and benefits. Children learn to identify to keep themselves safe and look after themselves and others in the environment.

5.7 Significance to Māori

For traditional Māori there is a deep connection and kinship between humans and the natural world, and they are able to trace their ancestors, through whakapapa, back to Papatūānuku. *Te Whāriki* (MoE, 2017) states:

Māori tradition children are seen to be inherently competent, capable and rich, complete and gifted no matter what their age or ability. Descended from lines that stretch back to the beginning of time, they are important living links between past, present and future, and a reflection of their ancestors. These ideas are fundamental to how Māori understand teaching and learning. (p.12).

Ritchie (2012) identifies that traditional knowledge and histories have been marginalised by western culture. Identifying and using these within our ECE programmes is one way we can begin to demonstrate genuine ways to rectify this. Natural outdoor spaces are ideal contexts for stories, connection and meaningful discussion on the importance of concepts such as Papatūānuku, maunga, awa, moana and whenua ancestral land, cosmology, wairua and rāhui. The importance of the outdoors as an appropriate place to learn and use language is also identified by Pere (1991):

The mountains, hills, valleys, plains, rivers, lakes, creeks, beaches, the sea provide a source of energy for the child to explore and experiment with sound patterns...the landscapes, the seasons and the cycles of life, to connect with it...the need to live as closely as possible with nature, to learn about it, to understand it. (p.9).

The *2013-2017 Māori Education Strategy, Ka Hikitia* (2013) identifies that in order for tamariki to succeed, the principles of Te Tiriti o Waitangi should be recognised, and Maori knowledge and concepts replicated within their experiences. NBOE's are an ideal context for understanding Māori stories and history in context. Not only are there important concepts for children to draw on but there is the opportunity to create or repeat stories builds understanding of language in context as well as understanding the structure of stories. There are also opportunities to understand atua, te reo and tikānga Māori and to show and develop respect for Papatūānuku. NBOE offers a safe place to connect with and to understand the beliefs and connections to the natural world for Māori.

5.8 The role of the adult

The role of the adult is a key determining factor in setting the context for language learning. The effects and influences of an adult presence (or absence), depends on their view of the child, as being competent or vulnerable. Adults appear to slow down in this space which allows for time for language opportunities while dynamic contexts to develop both language and vocabulary (Hay & Fielding-Barnsley, 2012).

For adults, taking groups of children outdoors can be a daunting task. Kelly et al. (2013) highlight that teachers grappled with the dualism they faced in considering the competent and capable child of *Te Whāriki*, and the vulnerable child who face dangers in their encounters with nature. Adults often wanted to keep children close, limiting opportunities for play and exploration. When adults ask children questions, these should be genuine, and require active listening and responses in order for children to feel they are valued, that their ideas are listened to, and that they have a voice. This is

important for language acquisition, as words stored in positive emotional contexts are remembered better (Hoff, 2006). Play in NBOE, is usually a pleasurable experience.

However, as Hoff (2006) identifies, there are novel language opportunities in different environments, but these will only provide support to those with the capacity to make use of them. Blank (2002) suggests teachers can improve young children's language reasoning by enhancing their own dialogue, questioning and talking with children. I observed teachers on an excursion in discussion with children about discoveries where they were able to introduce new words such as speckled, shiny, and bumpy.

Another important element is what teachers communicate to young children about how they view them as learners. Hoff (2006) identifies positive relationships as significant for language development and verbal response. Van Hees (2011) found children were more engaged and involved, when working collaboratively, creating greater language, and constructing oral text, rather than when the topic was dominated and controlled solely by the teacher. Similarly, Wells (2007) also found teachers who invited children to elaborate on a topic or collaborate with each other were skilled in deepening and extending conversations using follow-up questions and invitation.

When taking children into NBOE's it is important to build relationships and to know children well. In the *Ngahere project*, Kelly and White et al., (2013) found that in nature teachers were less distracted and recognised more about children, and that their awareness of children's uniqueness was heightened. Knowing children well provides further opportunities for discussion and conversation. NBOE are ideal contexts for conversation and dialogue however, only if the adult appreciates and understands the importance of, and support this. Importantly, adults should understand the value of play, Szalavitz and Perry (2010) identify that play, particularly if free, unstructured and outdoors, is essential for healthy brain and socio-emotional development, considering that play in the early years is far more valuable than direct instruction.

Hoff (2006) identifies that when adults provide greater language opportunities and talk, this strengthens processing skills, along with emergent lexical processing and vocabulary knowledge. Similarly, Weisleder and Fernald (2013) also found that caregiver language provides models for learning words, while Miller, Vlach and Simmering (2017) further discovered that to recognise new associations between language and spatial understanding, it is crucial for adults to understand the significance of the quality, not just amount of words in children's language. This research identifies that the role of the adult is pivotal to providing optimal language and learning experiences for children. They must understand the value of play, and the significant role this plays in language development. They should also recognise the critical role of talk and conversation and the part words play in language acquisition and then ensure they provide the opportunities for this.

Adults must consider the inherent properties and affordances in their settings which affect language acquisition, recognising that vocabulary is affected by context (Hoff, 2006). Hay and Fielding-Barnsley (2012) emphasise the most authentic place to begin to build vocabulary, concepts, and understanding is environments where talk is encouraged and respected, while Hoff (2006) notes that human language acquisition requires environments to provide opportunities to experience communicative language and to hear speech. The importance of social context is identified by a number of authors. Ellis (2015), writes of the importance of shaping the social contexts, rather than the internal processes underlying language development, supporting the ways different contexts are used to influence language development. Interactions influence the nature of the talk, and NBOE settings offer many opportunities for talk, conversation and sustained and shared thinking. Waters (2011) and Waters and Bateman (2013) highlight that language opportunities were present when children's interest in the natural world was directly related to enquiry and interests. NBOE experiences provide many openings for conversation, discussion and enquiry for developing a connection with and understanding of the environment and natural world.

Chapter Six Conclusion

The rights in the Convention of the Rights of the Child (1989) are indivisible, and interdependent. The right to play, expressed within article 31, is central to the promotion of resilience and to realisation of other rights including rights to life, survival and development, participation, health and education. Equally, other rights must be respected in order to guarantee the realisation of article 31 (IPA, 2016).

6.1 Introduction

The findings from this review of the literature identified that play and natural outdoor environments are an opportunity and an optimal resource for oral language acquisition and development, however, this topic is vastly undervalued and under researched. The research also highlights that programmes providing ideal ECE environments for children can have lifelong effects. Three topics, play, language and natural outdoor environments have similar key themes running through them. In order to gain optimum benefits, all are dependent on the specific context and the role of the adult. This chapter offers some answers to the research question: Do play based natural environments provide a context for language development in young children? Consideration is given to future research that is important in the area of play the outdoors and language development.

6.2 Summary

Children adapt and shape their environments through play; which then influences the nature of their talk. Additionally, there are many rich opportunities in the outdoor context, to investigate, theorise and problem solve. Unhurried conversations and thinking become deeper, richer and more complex. ERO (2016) accentuate links between physical exploration and language development. Children who engaged in more extensive hands-on exploration are the ones who learn more words, particularly words for actions, forces, and physical objects. As children's understandings of words grow, their use improves, and so does their ability to reason.

Children who are fit and healthy learn better and attend school more regularly which has implications for language and other learning. A number of authors, including Sport New Zealand (2017), highlight the physical benefits of play. These include fundamental physical skills, stamina, physical fitness, risk, and challenge, along with health benefits such as better lung, bone and eyesight function, as well as lessening the chances of obesity, and its associated diseases.

Over the past few decades, concerns about safety, traffic, strangers, weather, regulations and overprotective parenting have played a role in limiting children's health and play opportunities. The removal of these opportunities to engage in natural outdoor settings may also have had negative effects on language development. Natural settings are gaining increasing recognition as important learning environments, in addition to the more traditional benefits such as health, fitness and environmentalism, as well as offering a strong foundation for lifelong learning.

This thesis study was an examination of the literature relating to play, nature based natural environments, and language development in young children, drawing from a range of theories and research on what is already known about this topic. This review also draws some examples from my own experiences in this area over the past forty years. The study theorises how play in natural outdoor environments may provide an optimal space for language acquisition and development.

This study is important as there have been increasing reports (Jones 2014, 2018; Van Hees 2011) highlighting that many children in Aotearoa /New Zealand are beginning school with poor language skills. In this study I systematically research how language is acquired, the effects, and possible benefits for language when children play in the outdoors. This literature identifies that play in diverse natural elements offers many opportunities for learning beyond the classroom, including advanced opportunities to learn and practice language, including te reo Māori. The variety of affordances to support inquiry, wonder and conversation is unparalleled.

In Aotearoa/New Zealand we have an ideal environment to learn through nature. We have access to outstanding natural spaces, few dangerous wild or poisonous animals and minimal extreme weather. It is important that we provide optimal environments for children. Despite the literature supporting the benefits of play, the amount of time children spend playing, particularly in the outdoors, has decreased markedly (Gill 2007; Jelleyman et al., 2019; Louv 1995; Maynard 2007) over the past two generations.

The research identifies that humans learn language if, and when, they have a reason to use it. This is important when we incorporate te reo and tikānga Māori into our practice. NEOB offer unlimited rich opportunities to use and to practice language. The importance of talk and conversation for language development cannot be underestimated and neither should the role of the adults. They either support or hinder language development through the ways they use language themselves and with children.

The study also identified the crucial role of the adult: their philosophy, pedagogy, values and motivation; opportunities taken that reflect their values and their capacities as teachers (Beatson & Stover, 2014; Stephenson, 1998; Tovey, 2007). It is important to reflect on our values, our images of the child, on what is important for young children to experience and how they experience it (Greenfield, 2004) in order to provide optimum environments for language development. The importance of NBOE to Māori language, used to support and understand atua, kaitiakitanga and tikānga, can be developed in context and used appropriately to understand and inform children about conservation and sustainability.

This research supports that play is an important medium through which language can develop. It offers a social context to explore and play with language. Children learn to discuss, express themselves, converse, listen, debate, argue, describe, imagine, have their own and consider others' points of view. When children experience agency and joy, their language experiences are further enhanced. Words developed in positive emotional contexts are more often embedded into memory.

A key theme I have found emerging from this study is that play includes emotions such as joy, happiness, frustration, sadness, fear, ecstasy, surprise and anticipation, in both physical and social and physical environments. Play appears to be designed for us (humans and mammals) to experience, practice, ponder and enjoy life in our world.

This study identifies that play based natural outdoor environments have largely untapped potential for language development. These environments are multisensory, diverse, and provide numerous affordances and reasons for children to want use language. There is time, to question, develop theories, imagination and ideas, along with numerous opportunities for investigation and problem solving.

6.3 Revisiting the Research Question

The research question was: Do play based natural environments provide a context for language development in young children? The answer to the research questions is: Yes, the studies above outline that natural outdoor environments do provide a context for language development along with experiences that promote children's healthy development, well-being and positive environmental attitudes and values.

The study has confirmed for me that NBOE's are not only an optimal environment to support language development and acquisition, but also align with the overarching statement of *Te Whāriki* (MoE 1996; 2017) that children are "Competent and confident learners and communicators, healthy in mind, body and spirit, secure in their sense of belonging and in the knowledge that they make a valued contribution to society" (p.5).

Play in NBOE offers an ideal context to support language development in emotionally supportive ways. ERO (2017) identifies that "the early years are a critical time for language development" (p. 2) while also determining improvements for schools, "requiring support for oral language development through interventions and better teacher support"(p. 4). This thesis identifies that NBOE may be the solution through providing opportunities, inspiration, affordances, and context for language acquisition.

Further research into this topic should be a priority if we are to support all of our children to confidently communicate in many ways.

We also need to respect the rights of all children to the freedom, time and space to play, to build relationships, and oral language and to spend time to understand and to connect with natural outdoor environments; this is part of heritage and identity. Play in NBOE is also a valuable and precious resource, to understand and respect Te Tiriti o Waitangi. This also an ideal context in which to implement the new Ministry of Education strategy of Healthy Active Learning promoting child Hauora/health and wellbeing (MoE, 2019).

6.4 Future research

This study has revealed the need for further systematic comparative studies, from an Aotearoa/New Zealand perspective, using NBOE as a context not only for children's language development but also as a context for implementing Te Tiriti o Waitangi, health, wellbeing sustainability and experiences in different environments.

Many topics were only briefly explored, as although they supported language development, play and NBOE, they were not directly related to language development. For example, there was literature which underlined NBOE as an important and meaningful context to develop learning through Te Tiriti o Waitangi, tikānga and te reo, children's rights, agency, creativity, emotion, happiness and place as well as curriculum areas such as science, maths, art and technology. Future research could identify if meaningful NBOE imbue these aspects into everyday practice.

Having meaningful data is very important. The study was an examination of literature on three individual topics: play, language and natural outdoor environments. Each has been researched in different ways by other researchers with different theoretical approaches. There were no independent checks as to the quality of the research, however, most were previously well cited.

In order to add to the literature identifying the ways NEOBs make a real difference for children in Aotearoa/New Zealand future research could include intervention studies which compare groups of children, controlling for such factors as language in a centre context, or home context, and in natural outdoor environments. Studies could investigate the affordances in the environment and how they influence, benefit, and effect language development. A study should also be conducted on the adult presence, the language they use in the differing environments; and different pedagogical approaches and how these support language development. There is also a need to investigate the effect of time spent in natural settings and how patterns of use over time influence language development. There is a novelty factor in infrequent visits that contributes to language acquisition, policy and future action. There are enormous opportunities for wondering, questioning, enquiry, discussion, debate, theorising along with group and one to one interaction. However, although Kelly et al., (2013) highlight that Aotearoa/New Zealand is uniquely placed to contribute to the worldwide understanding of education in outdoor environments this topic is currently under examined with a paucity of information about how regular experiences in NBOE can enhance children's acquisition of language.

6.5 The way forward - Final thoughts

In 2013 *the Ngahere Project* identified major benefits to sustainability and for learning in NBOE and concludes "A national commitment is needed for such ideals to be realised in all ECE sites...such commitment should take the form of professional development programmes, targeted funding, mentoring, and increased recognition of the additional support" (Kelly et al., 2013, p. 71). Since this major work there appears to have been no recognition, or support for NBOE programmes. The current study adds to the previous literature concluding there will be many benefits for children if the value of NBOE and play are taken seriously as learning environments. Kelly et al., (2013) also identified that Aotearoa/New Zealand is seen as an international curriculum leader. It is now time to contribute to the worldwide educational understanding that NBOE is an

ideal environment for early oral language development, which is fundamental to literacy and lifelong learning.

The study could provide insight to politicians, education providers, parents, teachers and policy makers of the importance of understanding the relationship between language development and play in natural outdoor spaces together with knowledgeable and supportive adults. It is important to review existing policies as well as creating new policies, in order to provide the means of making these programmes mainstream. It is vital that these programmes are accessible, and able to provide benefits, to all children, not only those with the means to afford them. Natural outdoor environments provide many opportunities to play, develop language, and extend vocabulary while immersed in an important cultural context as they are all interwoven to provide an optimal context for language development.

Together, these studies have identified that language, play and natural outdoor environments are similar to the whāriki (see figure, p. 111

Kua takoto te manuka

The leaves of the Manuka tree have been laid down (Woodward Māori, n. d).

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