INSIDE OUT: YOUNG CHILDREN LEARNING WITHIN NATURE

by

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ABSTRACT

The purpose of this research was to expand understanding of the potential value of the natural outdoors as a learning environment for young children. Within the frame of The United Nations Rights of the Child and social constructivist learning theory, this qualitative case study explores young children’s perspectives through their self chosen points of interest within the natural outdoors of their early learning setting. The research site was within an urban/rural interface community in Southwestern Coastal British Columbia. Eight child participants between 3-5 years of age assumed the role of participant researchers to create digital photographs of their outdoor interests, which served as the primary data source. These photographs were supported by video recordings of the children’s ordinary moments outdoors and researcher field notes. The data was coded and categorized using the constant comparison method, resulting in 7 categories and 3 subcategories that revealed the children’s primary interests and points of connection outdoors, as being within and between nature, manufactured objects and people. These points of connection were then merged and discussed within the broader theme of Interfaces and Connections. The discussion includes: categories of interest, contrasts and interactions as they relate to the child/nature literature, early learning practice, children’s rights and social constructivist theory. Also noted is the children’s use of multiple perspectives and their self chosen verbal silences. The limitation and strengths of the research are acknowledged and followed by implications for practice and invitations for future research.
PREFACE

The Behavioural Research Ethics Board of the University of British Columbia gave full board approval to this research May 24, 2011 under the UBC BREB Certificate Number H11-00190.
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For young humans
CHAPTER 1: INTRODUCTION

Inspiration

*Be home before dark and don’t slam the screen door behind you!*

As a child, this phrase snapped at my heels every time I left the house, running outside to play while the screen door slammed shut behind me. This happened so frequently that most of my childhood recollections are of being outdoors, playing within nature throughout all the seasons that South Western Ontario offered. The phrase ‘be home before dark’ is a memory echo for me now, but I can still vividly recall the years spent outside. My husband also has fond childhood memories of this sort, albeit his adventures were in a different city and were perhaps more daring than mine. Our children have grown to be adults and they too animatedly recount their many outdoor experiences within the natural wonders of our North Shore community in Vancouver. It is the same for our brothers, sisters, cousins, nieces and nephews. For us, whether in the rolling rural areas or urban metropolis of South Western Ontario, the cottage country of Northern Ontario, the Gatineau hills of Quebec, the foothills of Alberta, the mountains of B.C. or elsewhere, the natural outdoors felt like a place where we and our friends belonged. It was a place where we learned ‘important’ things, things that mattered to us. We wanted to be there and adults encouraged us to be out during all weather conditions. Being outdoors was a large part of growing up and was simply never questioned.

Although this is our lived experience, it is not everyone’s history and what we have not questioned, others will. Such thoughtful inquiry is important as it initiates reflection and is a reminder to clarify and strengthen the rationale behind our actions, sometimes leading to positive change. With this in mind, it is reasonable and responsible to consider questions surrounding the value of children spending regular time outdoors in nature. As an early
childhood educator and instructor of pre service educators in Vancouver, I often hear parents, practising educators, pre service educators, primary teachers, and administrators challenging the value of children’s time outdoors at all, let alone in nature. The questions asked are clear but for me, the response is difficult. Explanations offered within conventional frames of curriculum or developmental domains seem to limit and minimize the outdoor experience. There is more that lies beyond these frames of reference, but the identification and articulation of the unique learning value of the outdoor context in credible terms has remained elusive to me. Yet with my history, I know it exists and it is this search for clarification that has motivated the current research project.

**The Purpose, Significance and Question for Study**

The purpose of this study is to expand our understanding of the unique value of the natural outdoors as a learning environment for young children. Literature on this topic collectively presents a strong argument in support of outdoor child nature connections (Louv, 2007; Trimble & Nabhan, 1994). It also identifies the elements of outdoor design that are beneficial for young children’s healthy growth and learning (Herrington & Lesmeister, 2006). Although the details of this literature will be discussed in more depth later within Chapter Two, it is relevant to note here that this combined body of work is largely written from the perspective of adults. Furthermore it primarily involves school age children in family, school or neighbourhood contexts. The few studies that address the outdoors and young children 3-5 years of age do so from either a methodological or spatial lens and within broad definitions of outdoors that do not focus specifically on both nature and early learning settings (Clark & Moss, 2005; Titman, 1994). The literature contributions from the experts in their respective fields of study are invaluable, yet there remains another expert view that is missing: the perspective of young
children within their outdoor natural early learning environment. It is the intention of this study to fill this gap in the literature.

I have learned over time that in most inquiries involving children, the answers often lie with the children themselves and so, it is to them that I instinctively turn. Within the frame of The United Nations Rights of the Child and social constructivist learning theory, this qualitative case study investigates the perspectives of young children 3-5 years old through their own digital photography. With this in mind, the following question guided my investigation:

What are young children’s self-chosen points of interest and connection within their natural outdoor early learning environment?

The significance of this study, therefore, lies in identifying what young children find particularly important and engaging in natural outdoor spaces.

**Methodology Choices Flowing from the Research Question: A Summary**

The type of research best suited to answering the above questions is descriptive, qualitative research conducted in the naturalistic setting of a preschool classroom (Bogdan & Biklen, 1992). In order to study the children’s perceptions of their outdoor spaces, a unique site was needed to ensure the context and conditions were available to provide a rich source of data. Purposive sampling was used and four variables were considered necessary for the site to be included in this project. First, the Centre needed to be a full year licensed group child care facility that accommodates children 3-5 years of age. The second was the presence of onsite natural outdoor space. The third requirement was that children have access to the natural outdoor spaces and the fourth and final requirement was that the centre practises encouraged the children to interact with the environment, materials, peers, and adults. A site meeting all four requirements was identified for this research project.
As this research was exploring the children’s perspectives and the children’s role was that of participant researchers, photography was chosen to serve as the primary source of data. It was anticipated that child participants would create the primary data themselves through their own self-chosen and self-directed photography.

Video recordings during children’s ordinary moments of outdoor time were chosen as a secondary source of data to gain other visual perspectives and add the dimension of supporting narratives (Clark, 2001; Clark & Moss, 2005).

Bogdan & Biklen (1992) discuss the value of researcher field notations in qualitative studies and encourage their use as a tool that may assist the researcher’s awareness, sensitivity to research influences and to assist in ensuring the project is progressing. Field notations, therefore, we also used as a secondary data source.

In this study, the researcher’s role was that of a participant observer with passive to moderate levels of participation. In the field this translated to being present, involved in some events but not all and swaying back and forth between being an outside observer and an inside participant as the events in the field dictated (Spradley, 1980). Data were analyzed using the constant comparative method of analysis (Merriam, 1998).

Definitions

Interest

In this project something interesting or of interest, is a thing, idea or event that catches, engages, and holds one’s attention. It is a point of curiosity, emotion or excitement.

Nature

For the purposes of this research, nature is understood as all natural, non-human elements within the physical world. Examples would include such things as: trees, vegetation or climatic
elements such as water, sky, sun, clouds or geologic elements such as rocks, soil etc.

**Natural outdoors**

In this study, natural outdoors refers to all the collective elements and systems of nature that are within the outside context.

**Within nature**

Within this study, the phrase refers to anything or anyone that is physically within the natural outdoors and in close physical proximity to the elements of nature.

**Framing the Study**

The focus of this study is on an exploration of young children’s perceptions of their natural outdoor early learning environment. As such, it is important at the outset to establish an image of the child with which this project will be approached. The following three sections will each address a key component of the image. The first section identifies the child as a human with rights. This image is grounded in and highlighted by a set of four children’s rights as defined by the United Nations, that are considered significant to the topic at hand. The second section focuses specifically on the image of the child as a capable meaning maker and learner. In support, constructivist learning theory as it applies to early childhood education and this project will be reviewed. The third section examines the image of the child as a communicator, with an introduction to the concept of multi modal communications. The three sections combined, provide the underlying vision of the young child from which this study is approached.

**Children as humans with rights**

Images of children vary and are influenced by many factors including culture, beliefs and values (B.C. Early Learning Framework, 2007; Louv, 2008; Roopnarine, Johnson &
Hooper, 1994). The image of children as human beings that has been adopted for this research project is drawn from the collaborative vision of the United Nations as written in The United Nations Convention on the *Rights of the Child* (1990). This document acknowledges children as humans and defines their rights as human beings to live in health and peace with freedom and respect (Preamble section). Within Part 1 of the United Nations *Rights of the Child* document, 41 individual yet related rights are identified in the form of *Articles*. Although each is important, the four *Articles* noted below are considered to be of particular relevance in defining an image of the child with which to approach this research project.

**Article 12**

1. States parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child.

**Article 13**

1. The child shall have the right to freedom of expression; this right shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of the child’s choice.

2. The exercise of this right may be subject to certain restrictions, but these shall only be such as are provided by law and are necessary:

   (a) For respect of the rights or reputations of others

**Article 14**

1. States Parties shall respect the right of the child to freedom of thought, conscience
and religion.

*Article 29*

1. States Parties agree that the education of the child shall be directed to:

   (e) The development of respect for the natural environment.

It is within the combined messages of the above 4 *Articles*, created collaboratively by world nations, that an image of children appears. This is an image of children as human beings with human rights. Children who are able to form their own views of the world and freely express those views on any matter that involves them. Children who are capable of communicating in multiple modes while respecting the rights of others. This is an image of children actively seeking out, receiving, sharing ideas freely and expecting reciprocal respect for their thoughts. This vision is one in which children trust that their education will include an acknowledgement and respect for the natural world.

As a participating country in the United Nations since 1945, Canada supports these rights of children. This support is confirmed in the *Canadian Charter of Rights and Freedoms* (1982) that states “everyone has the following fundamental freedoms: (a) freedom of conscience and religion; (b) freedom of thought, belief, opinion and expression” (Part 1, section 2).

*A Canada Fit for Children* (2004) states that Canadian children “should have the opportunity to be fully prepared to live a responsible life in a free society, in a spirit of understanding, peace, dignity, tolerance, equality and solidarity” (p.16). Additionally, Canada has made the firm commitment to realizing these rights by stating that Canadian children will not only be educated about their human rights and freedoms and also how to apply them to their lives in meaningful ways (*A Canada Fit for Children*, 2004). It is in the spirit of this rights based image of children that the current research project is designed.
Children as able meaning makers

Keeping this image of children in mind, I return to Article 12 of the United Nations Rights of Children document that begins by stating that children who are capable of forming their own views also have the right to express those views. The first phrase of this statement is powerful and important to address as it raises fundamental questions concerning if and how young children can be considered capable of forming their own views. To discuss this, I draw on constructivist learning theory as it applies to early childhood education and this research project.

First, it is acknowledged that a deep discussion of any learning theory is a complex undertaking and such a comprehensive investigation into constructivist learning theory is beyond the scope of this work. Rather, a review of the core understandings of the theory as it applies to education is presented with the intent of providing a frame within which to hold an image of the young child as a capable meaning maker and learner.

Constructivist theory is a broad concept and within the context of education, is addressed in terms of teaching, learning, the construction of knowledge and meaning making. Although each of these specific areas is related, here I will focus primarily on learning aspects of constructivist theory. Sjoberg (2007) identifies core understandings that are shared among constructivist theorists and notes that these common concepts provide a base from which variations of constructivist theory arise. There are nine common concepts that are directly applicable to this research. As a starting point, I will begin with Soberg’s statements that generally shared constructivist concepts are grounded in the view that learning is a process, in which the learner is actively engaged. It is also acknowledged that learning takes place through social and environmental interactions and these interactions occur within culturally influenced contexts. It is through these interactions, that knowledge is constructed in the form of conceptual
structures within the learner’s brain. The sixth point follows, that learners approach each new experience with pre-existing ideas based on their former experiences. Sjoberg points out that while constructivists acknowledge that learners may share common patterns of knowledge at times and have their ideas reinforced, there may also be conflicts when the pre-existing ideas do not align with new external realities. This leads to the ninth shared understanding that in educational situations, constructivist educators will attempt to gain insight into the learner’s already established ideas before introducing other opportunities that will challenge or extend the learning experience.

As noted, even with these shared understandings of the theory, there are varying perspectives, approaches and applications. Soberg (2007) points out that the finer points that separate these different perspectives of constructivist learning theory can be traced to the degree to which the core notions are interpreted and applied to the learning experience. For example, psychologist Jean Piaget’s quest to understand how children learn was focused on how the individual learner adapted to the environment by advancing through biologically determined stages (Bee & Boyd, 2010; Berk, 2010; Levine & Munsch, 2011; Soberg, 2007). Another view is that of John Dewey who supported children learning together. Further, within his progressive educational approach, he advocated that the child must be actively engaged in experiences of their interest and that a problem must be embedded in the experience to provide the spark for thinking, problem solving and understanding of democratic processes (Dewey, 1916; Dietze, 2006; Fraser, 2006). The work of Russian psychologist Lev Vygotsky emphasized the social and cultural influences in the learning process (Bee & Boyd, 2010; Bodrova & Leong, 2001; Levine & Munsch, 2011; Vygotsky, 1978). However, despite any difference in interpretation emphasis, these experts all shared the fundamental idea that young children are capable of actively
constructing knowledge, theories, strategies and views of the world. Given the interest of the current research project, this is the relevant point. Children are able to form their own views and they do so actively and continually, by creating meaning of their world based on their experiences within it.

As this research takes place within the highly social setting of an early learning environment, I return for another look at one particular aspect of the social constructivist approach that acknowledges a key time in the learning process. Vygotsky (1978) proposed that children’s understandings of the world are created at critical moments within social contexts and he referred to these moments as zones of proximal development. He suggested that these zones represent the space between independently achieved knowledge and potential knowledge that is possible with assistance (Bodrova & Leong, 2001; Fraser, 2006; Levine & Munsch, 2011; Vygotsky, 1978). He proposed that in order for potential knowledge to be reached, interaction with more knowledgeable others is imperative as it provides the required bridge for the learner to construct new understanding. This process of socially assisted learning is referred to as ‘scaffolding’ (Bodrova & Leong, 2001; Fraser, 2006; Levine & Munsch, 2011).

When social constructivist theory is applied in early learning settings, the influence of the social, cultural and environmental contexts in the learning process is acknowledged within the setting’s philosophy. The philosophy serves as the link between theory and practise. It is the blueprint for decision making and guide for daily experiences (Dietze, 2006). In this way, the theoretical grounding is realized and becomes visible on the floor of the early learning setting. It is reflected in the educator’s interactions, the opportunities made available to children as well as the physical design of the early learning environment itself and the types of the materials within it. The learner’s social construction of knowledge is encouraged and visible in many ways that
might include project work in social groupings, self and group pedagogical learning reflections, inquiry leading to collaborative problem solving, facilitation of holistic, child centred or emergent programming. More knowledgeable others available in socially assisted learning moments could be peers and/or educators. Rich, open-ended materials may be provided and could be considered provocations, tools for meaning making and/or communication of ideas. Environments may be viewed as both an inspiration and a reflection of learning and as such, designs and opportunities receive thoughtful attention (Fraser, 2006; Gandini, Hill Cadwell & Schwall, 2005; Hendrick, 2004; Reggio Children, 2011). This research project is theoretically grounded in social constructivist learning theory as it honours and aligns with the already established rights based image of the child and respects the children’s abilities to construct their own world views based on their experiences with others and their environments.

**Children as communicators**

Keeping in mind the constructivist perspective that children are capable of forming their own views, I now consider the second part of Article 12 and Article 13 of the Rights of the Child. These articles state that the child capable of forming their own views also has the right to express those views freely in any media of their choice. This suggests that there are multiple modes of expression in which children are capable of communicating their views and Article 13 acknowledges oral, print and artistic forms.

To explore this further, I turn to psychologist Howard Gardner, who describes an alternative model of human intelligence (Gardner, 1993). In this model, he discusses multiple ways in which humans understand and communicate. To date, he has identified nine different types of intelligence through which people make sense of the world: musical, interpersonal, intrapersonal, naturalistic, logical/mathematical, spatial, bodily/kinaesthetic, linguistic and
existential (Lazear, 2004; Levine & Munsch, 2011). Gardner states that each type of intelligence has specific qualities and that each represents the potential for individuals to engage with the world, understand it and communicate about it in meaningful ways (Lazear, 2004). It must be noted that Gardner’s theory has been strongly challenged for the limited empirical data base and choice of the word intelligence. As well, some interpretations of emerging neurological imaging studies provide evidence that contradicts Gardner’s understanding of how the brain functions. Yet, Gardner’s fundamental concept that there is more than one way to interpret the world is acknowledged in the early childhood education field (Berk, 2010; Levine & Munsch, 2011). Of significance to this research project, is the idea that individuals have different strengths and ways of knowing, and the lens through which anyone understands the world will also affect the way they choose to communicate about it. The concept of multiple modes to communicate is extended by Haggerty (2010) when she states that the mode is also influenced by cultural contexts. In her work with children’s communications, she cites anthropologist Ruth Finnegan (2002) who explains human communications as including:

[Their] powers of eye and ear and movement, their embodied interactions in and with the external environment, their capacities to interconnect along auditory, visual, tactile and perhaps olfactory modalities, and their ability to create and manipulate objects in the world (Haggerty, 2010, p. 188).

She encourages the broad understanding of communication and meaning making through multiple modalities in early learning environments “so that children’s favoured modes can be noticed, supported and expanded” (Haggerty, 2010, p. 188).

Aligning with the idea that there are multiple ways to communicate about the world, are the thoughts of Loris Malaguzzi, the inspirational force behind the philosophy of early learning
environments in Reggio Emilia, Italy. He recognized the skilled communication abilities of young children and proposed that children’s multi modal communications not only exist but could be encouraged. Fraser (2006) writes of the Reggio languages of art, numbers and relationships. Materials are also considered languages and children are encouraged to explore relationships with and between materials in order to express themselves through the language of the materials available. The expressions are made visible through the children’s drawings, paintings, clay constructions, wire structures and multi-dimensional forms using materials from nature and a variety of other sources. These tangible representations of thought and learning are often but not always, accompanied by some combination of verbal and written symbols (Fraser, 2006; Gandini, Hill Cadwell & Schwall, 2005; Hendrick, 2004; Kolbe, 2007; Reggio Children, 2011; Reggio Children: Project Zero, 2001). Malaguzzi suggested that children employ multiple languages to understand their world, build relationships and communicate within it (Edwards, Gandini & Foreman, 1998). These thoughts are relayed in his poem The Hundred Languages of Children, a portion of which I share here:

Il bambino
fatto di cento.

The child
is made of one hundred.

Il bambino ha
cento lingue
cento mani
cento pensieri
cento moì di pensare
di giocare e di parlare
cento sempre cento
modi di ascoltare
di stupire di amare

The child has
a hundred languages
a hundred hands
a hundred thoughts
a hundred ways of thinking
of playing, of speaking
A hundred always a hundred
ways of listening
of marveling of loving
cento allegrie a hundred joys
per cantare a capire for singing and understanding
cento mondi a hundred worlds
da scoprire to discover
cento mondi a hundred worlds
da inventare to invent
cento mondi a hundred worlds
da sognare. to dream
Il bambino ha The child has
Cento lingue a hundred languages
(e poi cento cento cento) (and a hundred hundred hundred more)

(Edwards, Gandini & Foreman, 1998, pp.2-3)

I return now to Article 12 and Article 14 of the Rights of the Child that state children have the right to express their views in all matters that affect them and they should expect others to respect their freedom of thought and voice. Participation, freedom of voice and reciprocated respect for same is a point of interest in the context of early learning settings as these notions are only possible if the opportunities are available in two ways. First, awareness and respect for the child’s rights must be in place and accompanied with an understanding of how to facilitate these rights in meaningful ways within the daily experiences of children. Second, multiple potential modes of communication are routinely made available with encouragement to explore and engage with these mediums as both pedagogical tools and avenues for effective communication.

Summary

This study seeks to answer the question: What are young children’s self-chosen points of interest and connection within their natural outdoor early learning environment? It is significant
to investigate this question as related literature surrounding this topic is written primarily from
the adult view and focuses on school aged children in school, home or community settings. The
small amount of research in this area that does address young children concentrates on either
methodological or spatial approaches and does not focus on the natural outdoor early learning
environment. This leaves a gap in the literature that invites exploration. This gap becomes more
significant with the acknowledgment of the children’s right to express their views on all matters
that concern them as stated in the *Rights of the Child*.

This study is grounded in the United Nations Conventions on the *Rights of the Child* and
theoretically supported by social constructivist learning theory. An image of children has been
described that views children as human beings with rights. They are capable of forming their
own views and have the right to share those views on all matters that involve them, using their
choice of communication mediums while respecting the rights of others. With this in mind, this
qualitative case study will investigate the perspectives of a small group of young children
between 3-5 years of age through their own digital photographs of points of interest in their
natural outdoor early learning space. These photographs will be supported by both video
recordings and researcher field notes.

**Overview of Chapters**

The research is organized and presented in five chapters. Chapter One has stated the
purpose, significance and question for the study. The *Rights of the Child* was identified as a
grounding framework that provides an image of the child within which to approach this research
project. This image was based in four related Articles from the United Nations *Rights of the
Child* that first, acknowledge children as human beings with human rights. This was further
supported by federal documents stating Canada’s position on this matter within the *Canadian*
Charter of Rights and A Canada Fit for Children. It was noted that the Rights of the Child state that children capable of forming their own views of the world may communicate about them in multiple mediums while respecting the rights of others. It was also recognized that children are active seekers, receivers and sharers of knowledge. Within Chapter One the concepts embedded within these four Articles were applied to early childhood education and supported by constructivist learning theory generally and more specifically to zones of proximal development within social constructivist theory. The rights based image was further applied and supported in early childhood education by a broad discussion of multimodal communication drawing on Howard Gardener’s theory of multiple intelligences and Loris Malaguzzi’s philosophy from the schools of Reggio Emilia, Italy.

Chapter Two will address the Article 29 from the Rights of the Child that states children have the right to expect an education that includes acknowledgement and respect for the natural world. Within this chapter, the role and design of natural outdoor spaces in early learning environments is explored historically, within the current social context and from the Landscape Architecture lens.

To begin, the historically perceived role and subsequent design of outdoor spaces in early learning environments is acknowledged. Within the current social context of trends toward sedentary indoor lifestyles; a review of research surrounding the benefits of children within the natural outdoors shows that a) regular time spent in natural settings is beneficial for young children’s healthy growth and learning and, b) the role of the natural outdoors can be that of a valuable, healthy and holistic learning environment for children. With this literature in mind and in light of children’s right to an education that includes acknowledgment and respect for the natural world; the chapter will conclude with a review of Landscape Architects Susan
Herrington and Sandra Lesmeister’s work entitled The 7C’s. In this, they identify and recommend design elements for outdoor early learning spaces that align with the research literature supporting the valuable role and connection between the natural outdoors and children’s health, growth and learning progression.

Chapter Three will describe the methodology details and decisions for the study. An overview of the qualitative case study approach and design will be followed by an in depth description of the site choice rationale and participant recruitment. Also in this chapter, the role of the researcher will be discussed as well as the participant’s roles including children as participant researchers. Data sources will be explained that include children’s photography as the primary source, supplemented by video recordings and researcher field notes. A description of the phases and procedures of data collection as well as the fine points of the systematic data analysis process will be presented. The chapter concludes with a discussion of methodological considerations surrounding the critical analysis of qualitative research and in particular research which involves young children.

Chapter Four presents the findings of the research that both quantitatively and qualitatively acknowledge: categories representing points of interest, perspectives, contrasts, interactions and silence. The findings are merged into a frame of Interfaces and Connections for discussion in Chapter Five.

Chapter Five discusses the findings within the frame of Interfaces and Connections and summarizes the work relative to constructivist learning theory, children’s rights and early learning practice. Limitations and strengths are noted, implications for practise are suggested, and invitations for future research are offered.
CHAPTER 2: A REVIEW OF LITERATURE

Outdoor spaces for children have historically been heavily influenced by their perceived purpose. Review of playground history in North America reveals that political, educational, social and economic interests have influenced both the purpose and the consequent design of children’s organized outdoor spaces (Frost, Wortham, & Reifel, 2007; Herrington & Nicholls, 2007; Stoecklin, 2000, White, 2004). In particular, White (2004) notes the significant affects of Herbert Spencer’s surplus energy theory of play. This surplus energy theory of play captured public attention and translated into a widely held view that the purpose of children’s play was to run off excess energy. In White’s article (2004), he states that “although [Spencer’s] theory was rejected by researchers and developmental theorists, it has had a lasting and unfortunate influence on the design of children’s outdoor school environments” (p.1). From an educational perspective this excess energy run off was necessary, so children could return to the classroom more able to concentrate and focus on indoor learning tasks. This view places priority value on classroom learning and implies that the role of outdoor space and time only serves to strengthen indoor learning goals and outcomes. It comes as no surprise then that outdoor spaces were designed accordingly to only meet the ‘running off energy’ purpose (White, 2004). To offer a visual image, such spaces are often defined by some form of fencing boundary that contains open areas largely surfaced with a possible combination of gravel, wood chips, synthetic ground tiles and/or cement. The spaces are primarily flat and dotted with some form of fixed modular climbing, swinging or other gross motor equipment (White, 2004). This design of children’s outdoor space is also seen as desirable in terms of supervision ease and low maintenance costs. As such, it has been widely adopted and can still be seen in many North American school grounds and public parks today (Herrington & Nicholls, 2007; Rivkin, 2000; White, 2004).
Other types of early learning settings other than schools are situated in areas with more limited outdoor space and in these places it is common to see a miniaturized version of the large areas described above.

A review of research however, presents another perspective of children’s outdoor spaces. The literature provides strong evidence that the benefits of outdoor contexts extend much further than running off excess energy. Furthermore, these benefits are directly linked to children spending time within nature. It is to a review of literature connecting children with the natural outdoors that I now turn.

This chapter is presented in three parts beginning with a brief acknowledgment of current lifestyle trends to provide a general social context. This is followed by a literature review focusing on the potential benefits children may experience from natural outdoor environments. The chapter concludes with a spatial design perspective provided by Herrington & Lesmeister, (2006) in their work examining the design of early learning outdoor settings.

**Social Context**

A significant amount of research sourced in countries around the world, both developed and developing, within rural and urban settings and across cultures reveals that children are increasingly involved in sedentary indoor lifestyles both at school and home. These reports consistently identify contributing factors to this indoor, sedentary lifestyle trend as: technological advances (Lauman, 2006, Louv, 2006; Roopnarine, Johnson & Hooper, 1994); increases in actual or perceived crime rates and high density living (Malone, 2007), shifts in family structures and changing social values (Lauman, 2006; Louv, 2008; Roopnarine, Johnson & Hooper, 1994); actual or perceived levels of safety (Malone, 2007); and attitudes surrounding quality education, media, mobility and economics (Dietze & Kashin, 2012; Fjortoft, 2001;
Moore & Marcus, 2008). An exploration of this increasing trend toward sedentary lifestyles and the root causes is a complex undertaking and too broad a venture for this review. However, it is important to point out that this trend is not something that is happening at a distance, somewhere away from Canadians or the daily life of British Columbians. Statistics Canada (2007-2009) states that the health of Canadian children has declined over the past 30 years and has been accompanied by a drop in physical activity and fitness. Only 7% of Canadian children are meeting the Canadian recommended guideline of 60 minutes of physical activity per day and less than 2% are physically active for 90 minutes per day (Active healthy kids, 2011). The Canadian report card (2010) on children’s physical fitness notes that 90% of Canadian children begin watching TV before their second birthday and of these children, 27% of 2-3 year olds and 22% of 4-5 year olds are watching TV for more than 2 hours per day. This is directly contrary to the position statement and recommendation that children under two years should not be watching TV at all and those over two years no more than 1-2 hours per day (Canadian Paediatric Society, 2011). As children are spending more sedentary time indoors, data is simultaneously accumulating that reveals an increase in children’s health problems that directly relate to lifestyle choices. These include increased prevalence of myopia (Nowak, 2004), childhood obesity and related medical conditions such as childhood diabetes and heart disease. (Katzmarzyk & Arden, 2004; Warburton, Katzmarzyk, Rhodes & Shephard, 2007). Most recently is concern surrounding the emergence of biophobia, a condition in which a person experiences intense fear of the natural world and all nature within it (Louv, 2008; Stoecklin, 2000).

The collective data has set off alarm bells and initiated predictions that if these trends continue, the current generation of children is headed into a life of accelerated disease, increased
health care costs and decreased productivity (Statistics Canada, 2007-2009). A more radical articulation is provided by Louv (2008) when he states that if current lifestyles and health trends continue, we may be facing the first generation of children that may not outlive their parents. All in all, a recognizable picture has been painted of our children’s present and future lives.

**Children and Nature**

A second perspective in the literature however, addresses the many ways in which children may benefit from spending time regularly in natural outdoor environments. Empirical studies across multiple disciplines have provided strong links between children’s frequent experiences within nature and healthy growth.

The positive impact that natural environments may have on children’s motor functioning has been identified in several studies including those by Fjortoft (2001). He investigated the environmental affordances available and the correlation between the affordances and motor abilities. His findings indicated that children who spent regular time in natural environments had improved movement abilities. He also found that their mastery of movements improved, most significantly in the areas of balance and coordination. This led to the discovery that the natural landscape itself (e.g. topography, ground cover) was an affordance that both invites and stimulates motor challenges.

The concept that natural outdoor environments offer a variety of changing affordances is a position also offered in the work of Blanchet-Cohen & Eliott (2011); Dietze & Kashin (2012); Fjortoft (2001); Frost(2007); Keeler (2008); Niklasson & Sandberg (2010); Titman (1994); Trimble & Nabhan (1994); Waters & Begley (2007) and Waters & Maynard (2010). They argue that due to the variety of affordances available by organic materials within natural outdoor settings; time spent within nature not only improves movement and spatial
understanding but also fosters creative, complex play and imagination. This in turn serves to extend literacy, problem solving abilities and cognitive progression. Waters & Maynard (2010) suggest that the wide variance of affordances offered in natural wild spaces invites children to self chose their interests and in effect edit their own learning curriculum. The interactional affordances within natural outdoor settings also encourage children’s true risk assessment (Canning, 2010; Dietz & Kashin, 2012; Little & Eager, 2010; Waters & Begley, 2007).

In a review of qualitative research studies that examine children’s behaviour in nature, Crain (2001) summarized the findings into three categories that address how nature benefits children: a) it heightens awareness, b) supports creativity and c) fosters a sense of peace. A socio emotional perspective was offered by Wells & Evans (2003) who conducted a large study of 337 young school children in upstate New York. Their investigation examined the impact of nature on stress. Their findings revealed that high levels of exposure to nature reduced the impact of stress. They concluded that nature has a buffering effect on stress and contributes to children’s emotional resilience. Physical resilience has also been researched and findings correlate regular time in nature with reduced chronic illness (Edwards & Torcellini, 2002) and illness recovery. (Edwards & Torcellini, 2002; Hathaway, 1992; Verderber, 1986).

Natural light has been proven necessary for healthy lives. Unlike artificial light, natural light provides the full balanced spectrum of light waves which includes blue-green, assisting in the biological regulation of circadian rhythms and hormones. This full spectrum light acts as an immune booster by triggering vitamin D synthesis and melatonin production as well as activating and improving the functioning of the central nervous and muscular systems, which in turn aids physical growth, and dental health (Edwards & Torcellini, 2002; Hathaway, 1992). Studies on eye health show that both gross motor movement and viewing of natural landscapes
combine the short, mid and long range eye focusing and refocusing necessary to promote healthy vision (Hathaway, 1992; Nowak, 2004).

Regular gross motor movement in natural environments with natural light is also beneficial to organ health, muscle growth, maintenance, strength and coordination (Edwards & Torcellini, 2002). Additionally, it assists brain functioning by stimulating axon growth, fixing and strengthening neural connections (Howard, 2006).

Research focused on the relationships between nature, attention and the restorative effects on attention have found that even short periods within nature increase concentration abilities in school aged children diagnosed with ADHD (Faber & Kuo, 2009) and symptoms of ADHD are reduced both immediately and with positive after affects (Kuo 2004). Furthermore, the greener the space the greater the benefits (Faber, Kuo & Sullivan, 2001; Wells, 2000).

Taking a community perspective, are Maynard & Waters (2007) and Lauman (2006) provides a strong case for the natural outdoors as a common meeting place for community and intergenerational connections. The school garden experiences of Alice Waters (2008) show that the natural environment offers not only positive social and emotional connections but also the opportunity to develop healthy lifestyle choices.

On a larger scale, nature experiences foster the development of a personal relationship between the child and the natural world. These personalized connections serve as a cornerstone for children to become socially responsible leaders and environmental stewards (Bai & Scutt, 2009; Blanchet-Cohen & Eliott, 2012; Phenice & Griffore, 2003; Rivkin, 2000; Smith & Sobel, 2010). Additionally, Aasen, Grindheim & Waters (2009) argue that natural environments are desirable social settings for children to learn democratic values within meaningful contexts.
To summarize, two main messages may be extracted from the literature surrounding child nature connections. First, regular time spent in natural outdoor environments is beneficial for young children’s healthy growth and learning. Second, an alternative role exists for children’s outdoor spaces. The natural outdoors can be viewed as a potential site for rich, healthy and holistic learning. With a shift in purpose, comes a shift in outdoor space design to serve the new purpose. To visualize what such spaces for young children might look like, I turn to the research of Landscape Architects Susan Herrington and Chandra Lesmeister.

**The 7 C’s**

Susan Herrington and Chandra Lesmeister researched outdoor spaces in early learning environments from the Landscape Architecture perspective in their study entitled: The 7 C’s (2006). Their work is particularly relevant to the research project here as their study was also located in the Lower Mainland area of British Columbia, Canada and targeted early learning settings for children 5 years and under. As well, their comprehensive work in 12 settings was informed by the combination of landscape design theory, early learning theory, field experiences of the onsite early childhood educator practitioners and observations of children within the outdoor context of the sites. In their findings, they identified, clearly defined and recommended seven design elements that weave together to create rich, stimulating outdoor spaces and opportunities for young children. These elements are referred to as the 7 C’s: Character, Context, Connectivity, Change, Chance, Clarity and Challenge (Herrington & Lesmeister, 2006).

**Character**

Character encompasses the intended purpose and the general feel of a space. When considering the potential character of an outdoor design, the researchers suggest first thinking
about the intended use for the space. The intended use is visible within five defined categories of character: Metaphor, Modular, Modern, Re-use and Organic.

1. **Metaphor** describes space and materials designed to represent a thing or a theme. For example, the focus may be a boat or airplane structure with accompanying related materials.

2. **Modular** character is a space focusing on pre-made outdoor equipment that is usually purchased and assembled in modular units. These units vary in size, shapes and colours but usually include some combination of slides, ladders, platforms, above ground tunnels or bridges. Sometimes other units are attached such as climbing walls and fire poles.

3. **Modern** is a design that focuses on inquiry and highlights systems and mechanisms that may be part of a building structure. An example provided by Herrington and Lesmeister is when children are viewing a working elevator as part of their space.

4. **Re-use** character is space that was originally intended for one use but is now used for another. There are many ways this reuse is possible. One example could be a former fire access lane or parking lot that now permanently serves as both a vertical and horizontal large game surface for ball play and/or jumping games.

5. **Organic** character is visible in spaces that are primarily made with and contain materials of an organic nature, such as trees, shrubs, soil, rocks and water. The organic setting is subject to and affected by seasonal changes and weather conditions. Many of the organic materials may be permanent components of
the landscape while others are moveable and open to manipulation by children.

In their research they found that when no materials were available for manipulation, aggression between the children increased.

**Context**

Context refers to the location of the space within the larger surrounding community, the character of the surrounding community and the possible connection or reciprocal relationships between the two. It also includes awareness of the number of children using a space relative to the size of the space. In B.C., childcare licensing regulations state that $7m^2$ is the minimum outdoor square footage per child that must be provided in licensed group childcare settings (Childcare Licensing Regulations, 2009). In more recognizable terms, this is the equivalent square footage to half an automobile parking spot per child (Herrington & Lesmeister, 2006). Herrington and Lesmeister found that high density space use is another factor in the children’s increased aggression and they recommend outdoor space of $14m^2$ or higher per child as well as designs that favour lower density use. Context also takes into consideration how visible each area is from any other area from the child’s perspective. Herrington and Lesmeister state that children would benefit both cognitively and physically from increased transparency between play spaces. Light and sound are acknowledged and their research confirms that sound impacts space, with high noise levels relating to higher levels of stress for both children and adults. They note that organic materials can act as effective sound absorbers or barriers, supply shade and affect temperature, all of which play a role in space appeal and participant’s willingness to enter and use the space.
Connectivity

Connectivity is the level of connection within the space visually, physically and cognitively. Connectivity includes linked pathways, indoor/outdoor connections and how the space is read by children. The researcher’s recommendations are for either a hierarchy of paths or intersecting circles of pathways that provide flow, invitations and opportunities for complex play and thought.

Change

Change addresses how spaces change over time; how spaces can be used in different ways; and how the alteration of materials can provide both definition and opportunities for use within the space. Herrington and Lesmeister’s research suggests designs that offer spaces and materials that are different sizes, are interconnected, have many potential uses, are adaptable to modification, manipulation and reflect seasonal shifts, nature cycles, and systems.

Chance

Opportunities for children to create change in the space are referred to as chance. The researchers caution that there is a fine balance between over stimulating and under stimulating children with choices and opportunities. They advise using materials and spaces in a balanced way to invite curiosity, imagination and possibilities without overwhelming the children.

Clarity

Clarity is the sixth design element and this looks at the presence of clear boundaries and entry/exit points. It is necessary that these elements are visible and logical from the children’s perspective as well as the adult perspective. This ensures that children and adults can reach each other quickly when needed. It also enhances the use of the space as children can easily see and reach opportunities.
Challenge

The seventh and final element of challenge considers both motor and cognitive challenges. The researchers state that challenge should be available within outdoor play spaces and suggest that flexible design features are in place to encourage graduated levels of challenge as children are ready.

The findings of the 7C’s research project led to the recommendation that outdoor designs most beneficial for young children are those that increase children’s contact and manipulation with organic materials and provides opportunities for active exploration and inquiry. The 7 C’s provides a theoretically grounded, clear yet flexible guideline for the design of outdoor spaces that are supportive of young children’s healthy growth and learning.

Summary

Three major points summarize this chapter. First, considerable multi disciplinary research exists to support the natural outdoors as a positive space for young children. This collective body of qualitative and quantitative work has origins from around the globe including Norway, America, Canada, Australia, China and England and the research lenses range from play and environmental education to design, psychology and medicine. Second, the literature reflects a shift in perspective regarding the purpose of outdoor spaces in early learning environments. The shift is toward an understanding that these spaces offer value beyond merely being a place to run around blowing off steam or running off excess energy. Last, this ‘other’ view of the outdoors as a potentially rich, healthy, holistic learning context is supported by thoughtful design recommendations that include organic materials in children’s outdoor spaces.
Combined, the literature provides a broad base of understanding and offers many valuable insights. Yet, it is notable that the literature regarding children within nature is largely based on adult perspectives and primarily involves school-aged children in family, school, neighbourhood or artificial contexts. There remains another perspective to consider: that of children under 5 years of age regarding their natural outdoor early learning environment.

To underline the significance of this group, I offer statistics from one of the more than 50 municipalities within the Vancouver Lower Mainland area. In 2009 within Richmond alone there were 3,938 licensed full time childcare spaces available. The childcare assessment needs study for the area shows they are planning for an additional 1,429 spaces to be made available by 2016 (City of Richmond, 2010). Furthermore, in British Columbia, children 3-5 years of age can spend up to 13 hours per day all year (less statutory holidays) in professional group, full time early learning settings (B.C. Licensing Regulations, 2012).

The few research studies that do address this age group, take either a methodological or spatial approach. This too is valuable as it informs research methods and guides practice by identifying spaces/places (e.g. sandboxes; small spaces, quiet and social spaces) that attract children and invite different types and levels of play (Clark, 2007; Clarke & Moss, 2005; Titman, 1994). However, this still leaves a gap in the literature that specifically focuses on the children’s perspectives of the natural, outdoor space in their early learning setting. This research project undertakes such an exploration.
CHAPTER THREE: METHODOLOGY

This chapter which outlines the methodology of the study is organized into five sections. The first section provides an overview of the methodological approach and design. The second addresses the details of the research site and participants. This includes a detailed description of the site selection rationale as well as an explanation of the recruitment process and details of the research participants. The third section describes the data collection process including the researcher’s role, the child participant’s role, the types of data collected and the phases and procedures of data collection. The fourth explains the decisions surrounding the data analysis process, including an explanation of methodological strategies employed. The fifth and final section examines issues in the critical analysis of qualitative research.

Methodology Overview

Merriam (1998, p.6) states that the underlying assumption of qualitative research is that “reality is constructed by individuals interacting with their social worlds” and that qualitative inquiry is concerned with processes, meanings and understandings that occur within a particular context. Merriam also suggests that qualitative research can be defined by five characteristics. First, it adopts an emic perspective that focuses on the participant’s lived experiences rather than the researcher’s experiences. Second, qualitative inquiry involves the researcher gaining a close, intuitive understanding of the subject of exploration by being in the field engaged in observation and documentation. Third, data is processed through a human researcher that can be aware, sensitive and responsive to both the finer details and the broader context being explored. Fourth, qualitative research applies an inductive approach to the work that involves building understandings from empirical experiences. The fifth and final characteristic is that qualitative research is presented in rich descriptive forms that may include visual images, participant
quotes, detailed context and/or event descriptions as well as narratives. These five characteristics align with the purpose of this research study that explores young children’s perspectives of their natural outdoor early learning spaces. This alignment led to the identification of a qualitative study as being the methodological approach best suited for this project.

I also draw on Merriam’s definition of the term case study as being “a unit around which there are boundaries” and in which the researcher is “interested in insight, discovery and interpretation rather than hypothesis testing” (Merriam, 1998, p. 28-29). Bogden & Biklen note that in qualitative case studies, the researcher chooses a naturally existing part of the field to study that “the participants themselves see as distinct and the observer recognizes as having a distinct quality of its own” (1992, p.63). In this project the unit is a finite group of children providing their perceptions of a specific area within an early learning context, within a closed time frame. The area of study was one part of the whole setting but distinct by its location and available opportunities. By definition, this research can be more narrowly described as a qualitative case study.

With this qualitative case study approach established, a search began for a research site within the Greater Vancouver region in which young children’s perceptions regarding their natural outdoor environment could be explored.

Site and Participants

Site

In order to study the children’s perceptions of their outdoor spaces, a unique site choice was required to ensure the context and conditions were available to provide a rich source of data. Purposive sampling was used and four variables were considered necessary for the site to
be included in this project. First, the centre needed to be a full year licensed group child care facility that accommodates children 3-5 years of age. The second was the presence of onsite natural outdoor space. The third requirement was that children had access to the natural outdoor spaces and the fourth and final requirement was that the centre practises encouraged the children to interact with the environment, materials, peers and adults.

The site meeting all four requirements and chosen for this research project was an early learning centre located in Richmond, British Columbia, Canada. The centre offers all day licensed group child care for infants, toddlers and children 3-5 years of age. As such, it complies with community business and ECE provincial licensing standards that ensure safety, health, qualified staffing and programming as well as meeting physical space requirements both indoors and out. The Centre operates Monday to Friday from 7:30 to 5:30 all through the year with the exception of statutory holidays and pre planned closure times such as spring break.

This site is located within an urban/nature interface, having direct exposure to nature while still being in close proximity to and inside an urban region. A building has been erected within the front third of the lot, which leaves a small front outdoor space but provides a large outdoor space along one side and at the back. These side/ back spaces are adjacent to a municipal trail/wild space on one side and a working farm on the other 2 sides. The front of the lot faces industrial and community services but is separated from them by a greenbelt buffer that also serves as a railroad right of way. The building is a one level wood framed house, renovated to meet the needs of an early learning environment. This single storey design and location within the lot allows sunlight to fall on most areas of the site at various times throughout the day, despite the trees inside and outside of the lot perimeter. The outdoor spaces offer physical, audio and visual access to the surrounding wild and agricultural spaces, people from the
community passing by as well as the daily passage of trains. The outdoor spaces were inspired, thoughtfully, and collaboratively designed by educators and children without having seen the work of Herrington & Lesmeister as described in Chapter Two; yet the space is organic in character and includes all components of the recommended 7 C’s. This is evident in the photographs below (Figure 1). The outdoor space of the lot is defined by a variety of fencing materials that are primarily wood frame and wire. Some of the major features within the outdoors include: a honeysuckle house, greenhouse, very large children’s garden, several smaller gardens, full size wood playhouse and wood triangle, large raised wooden platform area, tree house, hill and tunnel, 2 large sand/mud areas, open grass space and a cement bike riding area.

Honeysuckle house          Large garden          Large sand/mud space

Triangle house            Bike area               Fencing
From the website, program book and conversations with the Director, much information was gained about the program itself. The philosophy of the chosen site embraces nature, organic materials and outdoor experiences as valuable for young children’s health and learning. Therefore, programming priority has been placed on ensuring children have both time and physical accessibility to the outdoors every day in all weather conditions that would be expected. The amount of time spent outdoors fluctuates with the seasons, with the shortest periods being between November and March and averaging 2-3 hours per day. The longest periods of available outdoor time during a normal operating day are in the late spring, summer and autumn months and average between 3-5 hours per day.

A practice philosophy that includes social constructivist theory has been adopted by the Educator team. The children are encouraged to learn individually and collaboratively in social groupings as well as to communicate and socially construct knowledge by employing multi modal mediums. Socio-emotional and democratic learning is promoted, including responsible individual and group attitudes and actions. The children engage in such things as: growing and eating organic food, composting, recycling, supporting local business, and engaging in local government. Children’s rights are honoured and integrated into learning attitudes, interests,
problem solving and collaborative project work. One example of this can be viewed in the photograph below (Figure 2). It serves as a visual representation of their awareness, interpretation and meaningful application of their rights.

![Children’s Rights Message](image)

*Figure 2. Children’s Rights Message created collaboratively by the children*

Last, this centre is an active research site that supports children as researchers of their own world and Educators as researchers. They are regular hosts for students and visiting researchers who are advancing their knowledge and/or experience in the field. The Centre engages in the pedagogical documentation process (see Appendix A) that combines text, photographic imaging, technology and tangible artefacts as communication and learning tools in the process. This reflective documentation method is included in routine operating practice in a 360 degree process that includes the children, parents, and educators.

**Participants**

Each day within the chosen research site, children spend time engaged in small and large social learning groups. For part of the day, they work collaboratively in small Educator organized groups on projects of emergent interests. The size and membership of these small groups are dependent on: the number of children registered in the program, the age and learning position of the children, personalities, learning styles, the time of year, and the children’s
interests. As the children are accustomed to working in groups on projects, it was agreed by the Director and researcher that it would be natural and seamless to create a working group for this research project as well. Merriam (1998) states that purposive sampling in qualitative research is a common choice as it “is based on the assumption that the investigator wants to discover, understand, and gain insight and therefore must select a sample from which the most can be learned” (p. 61). It is also noted that typical participant sampling offers a reflection of the average person that would be involved in the topic of interest. Considering both these points and the research goal, a purposive participant group composed of children representing a typical population was targeted for the recruitment process.

The group invited to join the study were children who met three criteria. First they were in the late preschool age range; second, they were registered full time in the Centre program; and third, their regular attendance at the Centre was expected during the data collection period. Criteria surrounding full time attendance and the age group was put in place to narrow the potential participants to those most likely to be experienced in the use of multiple modes of communication. It was also anticipated that this older age group would have the best conceptual understanding of research, understanding of their role as participants and have the most experience with the process of pedagogical documentation as a communication, reflection and learning tool.

With assistance from the centre Director, twelve children who met the criteria were identified as potential participants. Letters introducing the research project and inviting participation accompanied by consents and assents were hand delivered to the twelve families by an Educator familiar with the families and acting as a representative of the Centre’s Director and myself. From these invitations, eight families agreed to participate (n=8) and returned
signed parent consents and child assents. After receiving these consents and assents but before beginning data collection, the child assents were reconfirmed with the children by the researcher.

The eight child participants included five boys and three girls, ranging in age from 3 years, 9 months to 5 years, 1 month. Although multiple cultural backgrounds were represented, the common fluent verbal language was English. This eight child research group remained constant for the duration of the data collection period.

As British Columbia licensing regulations require an 8:1 educator to child ratio in this setting, at least one early childhood educator participant was required for this study (B.C. Licensing Regulations, 2012). One early childhood educator consented to participate, was fully licensed in British Columbia to practise in an early learning centre offering a group program for 3-5 year old children, was employed in a full time position at the Centre, and familiar with the children in the research group. The educator consent to participate was received in the same time period as the parental consents and child assents.

Roles of Participants and Data Sources

This section outlines the data collection process of the study, beginning with a description of the roles of the researcher, participant children and educator. This is followed by identification and explanation of the data source choices.

Role of the researcher

In any research endeavour, the role of the researcher requires careful consideration as it has the potential to influence data and affect the accuracy of findings. As already discussed, in qualitative case studies it is beneficial for the researcher to be in the field and while in this position, a balance of roles must be negotiated between an observer and a participator (Freeman
Spradley (1980) identifies five types of researcher participation: nonparticipation, passive participation, moderate, active and complete participation. Each is defined by the field researcher’s level of engagement with the participants and site events. Spradley also notes that it is to be expected that some fluctuation of participation will occur and this is dependent on the situations that arise on site. In this study, the researcher role was that of a participant observer with passive to moderate levels of participation. In the field this translates to being present, involved in some events but not all and swaying back and forth between being an outside observer and an inside participant as the events in the field dictate (Spradley, 1980). Within this role, the researcher in this project also observed, recorded field notations and video recorded children within their ordinary moments of outdoor time. The participant researcher role is also reflected in the vocabulary of this written report as at times, the wording reflects the outsider role by the use of the term ‘researcher’, whereas the more active participant role is seen in the more personal ‘I’ or ‘me’ references.

**Role of the educator participant**

The role of the educator participant in this study is that of an actively participating facilitator and observer. As a participating facilitator, the educator ensured the research camera was available for the children’s use during their time outdoors; that only the participants used the research camera; and that the camera was kept in a safe location during times of non-use. As an observer, it was expected the educator would video record child participants during ordinary moments of their outdoor time. As noted previously, this is part of routine pedagogical practise at this site. However, it was recognized that the professional responsibilities of the educator toward the children and families in their care took priority within the setting and as such, it was expected that video recording would only take place as possible. Also within the observer role,
the educator would share with the researcher, any observations or concerns regarding the research project as it unfolded and provide her perspectives for member checking purposes.

**Role of the child participants**

As introduced in Chapter One, this study is grounded in the image of children as capable meaning makers and skilled communicators that employ multiple modes of communication to share their perspectives on matters that concern them. Therefore the child participants in this study had an active and key position. Nespor (1998), Hart (1997), and Clark (2001) among others present strong cases for children assuming the participant researcher role as a method for joining and balancing inquiry positions. They suggest that this linking of child and researcher inquiries may strengthen and enrich research studies as it offers more balanced input to data creation and contributes multiple perspectives that may present new questions and opportunities for exploration.

As explained in the site description for this study, part of the centre philosophy is to facilitate learning by engaging in active research and this approach to learning also applies to the children. As an ongoing research site, the children regularly experience some of the multiple roles involved in research. At times, they see pre service educators in their journey of research and learning. They live the daily experience of site employed educators researching and learning personally, as a team and in collaboration with children and families. The children are also encouraged to learn and explore the world as researchers themselves. Over time, the children then live various research roles such as being subjects of research, co researchers, individual researchers and participant researchers.

With this in mind and in respect of children’s rights to participate in matters that concern them and be heard as noted in Chapter One; the primary role of the child participants in this
research was that of participant researcher (Clark, 2001; Formosinho & Araujo, 2006; Hart, 1997; Nespor, 1998; and Schratz-Hadwich, Walker & Egg, 2004). In a secondary role, the child participants were also the subjects of research when they were video recorded, or observed for field notes.

**Data sources**

As discussed in the methodology overview, Merriam (1998) recommends the use of more than one source of data in qualitative research. This assists in capturing varying levels of detail, different perspectives and also serves to strengthen validity. On reviewing methodology literature that specifically involves young children, it also consistently recommends the inclusion of multiple sources of data to accommodate for the children’s varying levels of verbal language acquisition, scripting skills and respect for their preferred mode of communication. Potential data sources that are recommended as effective and valid in research that includes young children are: interviews, informal conversations; consultations, children’s drawings and artefacts, mapping, children’s journals, storytelling, video and audio recordings, tours, photographs, formal documentation methods and field notes (Cappello, 2005; Clark & Moss, 2005; Darbyshire, MacDfougall & Schiller, 2005; Hart, 1997, Roulston, 2010; Schratz-Hadwich, Walker & Egg, 2004; Smith, Duncan & Marshall, 2005; Stainburn, 2001).

Keeping in mind the purpose of the research, the strengths and limitations of each source and the multiple source Mosaic approach (Clark, 2001); three data sources were chosen for this project: 1) digital photographs created by the child participants; 2) video recordings of the child participants; and 3) researcher field notes that included member check consultations.

As this research was exploring the children’s perspectives and the children’s role was that of participant researchers, photography was chosen to serve as the primary source of data. It
was anticipated that child participants would create the primary data themselves through their own self chosen and self directed photography.

Video recordings during children’s ordinary moments of outdoor time were chosen as a secondary source of data to gain other visual perspectives and add the dimension of supporting narratives (Clark, 2001; Clark & Moss, 2005).

Bogdan & Biklen (1992) discuss the value of researcher field notations in qualitative studies and encourage their use as a tool that may assist the researcher’s awareness, sensitivity to research influences and to assist in ensuring the project is progressing. Field notations can also serve as a secondary data source that supplements other sources (Bogden & Biklen, 1992). The potential content in field notations may be broad or finely detailed or both and fall within descriptive, reflective, observational, methodological, theoretical and/or personal categories. The descriptions may include notes regarding such things as observed events, conversation segments or points of interest with people involved in the research (Bogden & Biklen, 1992; Palys & Atchison, 2008; Spradley, 1980). In this study, the descriptive notations also included member checks that took place between the researcher, child participants and educator participant.

Reflective notations offer a more personal perspective acknowledging the researcher’s intuitions, feelings, wonderings and inspirational thoughts in the moment within the field, as well as points of reflection on dilemmas, methods, theoretical or ethical issues that may arise. (Bogden & Biklen, 1992; Palys & Atchison, 2008). Given the additional value, researcher field notes were included as another secondary and supportive data source in this project. Although all data sources were included in the coding and analysis process, the findings and discussion focus primarily on the children’s digital photographs with video and field notes serving to
provide children’s narratives, actions in context, member checks, and researcher observations as supporting evidence.

**Project Phases and Data Collection**

The data collection period of the study took place over a five week period in the spring/summer months at the early learning site and within regular working hours. During this time, the researcher was on site in the field 2-3 times per week for 3-4 hours each visit and during the most likely period of children’s outdoor time. The process was organized into three phases: Preparation, Data Collection and Conclusion. This section will provide a detailed description of the rationale and procedures of each phase in the order they occurred.

**Phase 1: Preparation**

Methodology literature concerning qualitative research consistently stresses the importance of advance preparation for the data collection process. Factors to consider in this preparation stage are: a) how to understand and interact within the research environment b) how to present oneself c) how trust will be gained between all parties and d) how rapport will be established (Lofland 1984). It is suggested that in addition to prior planning for safety, confidentiality and ethical practice, these factors can be facilitated by the researcher spending advance time within the research site. Lofland (1984), Palys & Atchison (2008) and Roulston (2010) discuss how these preparations become more complex when the research involves young children. For example when working with young children it is suggested that the researcher reflect on issues of space, time, movement, size of materials and furniture, power differentials, performance anxiety, and children’s learning positions. Taking all of this into consideration, the current project made provision for informal visits to the centre in preparation for the active data collection period. The intent of the informal visits was for the children, educators, parents and I
to become acclimatized to each other and this proved to be reciprocally beneficial. The children, educators and parents saw and spoke casually with me, observed my interactions with people and the environment and became comfortable with my presence. During this period, I gained a practical vision of the research environment and how the program philosophy was realized on a daily basis. This included becoming familiar with the people, routines, the vocabulary employed to facilitate the philosophy and the type of social relationships that were encouraged between the children and with the educators. This information provided valuable clues to understanding how the environment could be entered seamlessly, a positive rapport established quickly and how to gain the trust of both the children and the educators. It also offered the opportunity to informally establish my role in the centre, the project at hand and answer any questions that arose. This acclimatization and preparation period took three afternoons before I sensed that an acceptable level of familiarity, trust and comfortable communication had been achieved. Indications of this were evident when on arrival at the centre children and educators paused, greeted me by name and quickly extended invitations to join into the day. As well, children and educator’s approached and initiated conversations with ease, families greeted me with smiles and casual conversation. Other indications of readiness were that I was able to identify the participant children and educators by name and the children’s parents by sight. I could follow and predict the daily routine, speak using a site appropriate style and vocabulary, understand the philosophy and a positive, comfortable and natural rapport was established with each participant child and others.

The short time frame leading to this smooth inclusion may be explained in part by my field experience as a licensed ECE and in part because the centre is both a research and teaching site. In this environment the children, families and educator team were familiar with the
concepts of practical learning and research endeavours and therefore, routinely welcome and work with students, researchers and other guests toward furthering understandings of children.

Following the acclimatization period, time was spent directly interacting with the child participants as a group one afternoon during a regular period of time outdoors. With sensitivity to the study context and respect for the children’s space, comfort, safety, and movement needs, this interaction took place within the Centre’s back outdoor space. The educator participant and I invited the group to gather at a long piece of wood lying in the grass. The educator moved slightly away, still within visual and audio supervision distance but engaged in another activity while the children were reminded of the overall research goal and presented with an inquiry. The children’s role as participant researchers was confirmed at this time and they were asked to take photographs of what they found interesting in their outdoor early learning environment.

This invitation was received positively with each child expressing an immediate interest in the project. The children also took this opportunity to choose their own pseudonyms\(^1\). At the first reminder of their role as photographers, they were very curious and their questions began tumbling over each other. In response to these inquiries, assurance was first given, that each child would have a turn to explore the camera. They were also assured that the camera would be living at the Centre for many days (sleeps) and they would have chances each day to photograph. It was also made clear that each turn could be as long as needed and the person holding the camera could take as many or as few photos as they wanted during each turn. They might also have more than one turn in a day. The children were free to move about and take the

\(^1\) In an attempt to respect the children’s rights, they were offered the opportunity to choose their own pseudonyms for this project. However, even after explaining the idea and importance of pseudonyms, there was a period of discussion surrounding this as they struggled to understand why they would want to be represented as anything but themselves.
camera wherever they chose while outside. In addition, it was emphasised that the children always had the choice to photograph or not on any day.

The process of sharing the camera was explained as follows: once a photographer decided they were finished with their turn, they could either return the camera to the educator, me or alternatively if they knew which participant was waiting for a turn next, pass the camera to that person.

When the children’s comments, questions and curiosity turned toward the camera itself, it was introduced from the case in my lap. Previous experience working with children and cameras helped to guide the choice of camera. The camera I supplied was an electric blue and silver coloured Nikon Coolpix 55100. This colour was chosen with intent to be as gender neutral as possible from the choices available. The camera offered compatible features for this project while being in the mid range of cost. It was small enough to fit into and be manipulated by small hands. Other desirable features included: automatic focus and flash, focus boxes in viewfinder, built in stabilizer, simple manual zoom function and instant imaging for children to see their photos immediately. The camera provided good-high quality images, fast and easy image downloading, date and time stamps, quick battery recharge and was constructed of a durable metal body and design that could withstand minor bumps and drops. Although the camera could be used with basic functions only, it offered a myriad of technical choices for a more complex photographic experience and product if desired. The camera’s body housing was labelled ‘research camera’ to avoid possible confusion with any other onsite cameras.

The use of a quality digital camera for the children was regarded as a strength as it provided quality images, reflected value and respect for the children’s abilities, and their efforts
to communicate their perspectives. A limitation discovered later was that the camera was not waterproof.

The participants took turns individually holding the camera while I indicated the location of the on/off button, shutter-release button and viewing window. The focus boxes within the viewing window were not discussed, nor were framing instructions given. However, it was mentioned that what they saw in the viewing window was what would be photographed. It was very briefly explained that if they wanted to create a photo of what they saw in the window, they only needed to hold the camera still, watch the window, push the shutter release button and listen for the click sound. The click would tell them a photo was made and saved. Every child had the opportunity to explore and experiment with these functions and ask questions. They spent the remainder of the afternoon experimenting and closely watching the interaction of the camera mechanisms. Once discovered, the extension of the zoom lens and the shutter opening and closing seemed to be particularly fascinating as these actions were repeated under close scrutiny by every participant. As they extended their exploration from the mechanics of the camera to image recording, I offered a reminder to photograph what they found interesting outdoors. They were very eager participants and within the day had experimented with the basic mechanical options of the camera, discovered other features including the zoom lens and had taken their initial photographs.
Phase 2: Data collection

The second phase of data collection began on day 2 with the children again reminded to take photographs of what they found interesting in the outdoor space. On this day, I was actively involved in facilitating the process. At first, all the children wanted the camera right away and gentle reminders were needed to reassure them that they would have a turn and there was no rush. As they grew to trust that they would indeed have a turn and would have the camera until they decided they were finished, they were responsible and dependable in passing the camera on to another participant or returning it to the educator or me. The process was always supervised by the educator participant and/or I, to ensure the camera stayed within the participant group. If a child was waiting for a turn and not photographing, they engaged in play and other opportunities within the space. When their turn came, at times they took up the opportunity to photograph and at other times they opted to continue their play instead. In the first week, the children quickly discovered that if they were the first to tell the camera holder they wanted a turn, the camera would be passed to them next. Other times, a child inspired to photograph would ask the camera holder for a quick turn and they returned the camera immediately after taking their photograph. After the initial facilitation, children in possession of the camera moved freely within the outdoor space as they chose, although they were always visible to the educator participant and/or me.

The first day of data collection a child holding the camera at her side, fell while running. This propelled the child downward and sent the camera flying upward. Both the child and the camera were unharmed but in response to this event, two things occurred. First, the memory chip cover was taped closed for extra protection. Second, an additional guideline was suggested: feet are still or walking when holding the camera. As the group had witnessed the event, this
suggestion was quickly and easily adopted by the children with minimal reminders necessary over the course of the remaining data collection period.

During the first few days, the children checked the photo immediately after hearing the click that captured an image. If they could not enable this function through experimentation, they asked for assistance, which was provided. It was observed that these double checks decreased over time as if the children had perhaps become more confident and trusting of both their own and the camera’s abilities.

After the first week, the participating educator expressed concern that all the children may not be taking photos with intent, but rather some may be snap happy with a new camera. With this in mind, beginning the next day, close observation and documentation by the researcher revealed evidence that the children were giving thought to the photos. Evidence was seen in their deliberate actions while photographing. Observed actions included looking through the viewing window, then making adjustments with the camera and/or their own body position before then capturing the image. There were also occasions when they set up the shot and chose not to take the photo at all. Other observed actions were taking a photo, making adjustments, and taking a repeat photo or multiple photos. The two sets of images below (Figure 3) appeared on the camera memory in sequence and offer just two visual examples of many available, to support the above field observations of photography with intent. The second photograph in each set is a zoomed in perspective of the first photograph.
Figure 3. Examples of sequenced photographs

Another indication of photography with intent was in the accompanying narratives. The children were observed at times verbalizing voluntarily to others, to objects or themselves before, during or after taking a photo, about the object/action of the photograph or why it was of interest to them. One such instance is reflected in the two photographs (Figure 4) below and accompanying anecdote from the field notes.

‘Police’ was casually touching the wind chime pipes in a manner that made them gently move and create sound. After a short time, he stopped and took a photograph of a wooden piece on the chime. This was followed by the child kneeling down, twisting his body and looking up through one of the hollow wind chime tubes. He excitedly called to
others to come and see too. He was talking animatedly about how he could see light at the top of the tube. He twisted his body more and placed the camera lens over the bottom of the tube, and looked upward through the viewing screen. Although others came to see, he would not relinquish his position at the bottom of the chime and instead encouraged others to look up through the chime tube by looking through the camera viewing screen while he held it. He repositioned the camera and his body several times. Then, he took a photograph up the tube (Anecdote, June 14, 2011)

![Perspectives on a wind chime](image)

*Figure 4. Perspectives on a wind chime*

These and other such observations supplied enough evidence to suggest that the children were photographing with intent. However, as an additional measure to encourage and ensure thoughtful photography, the children were offered one final reminder: when photographing, look with their eyes first, then look in the camera window, make any adjustments needed and click. This was then summarized and shortened into a quick three step phrase that was only voiced occasionally as a reminder throughout the remainder of the data collection period: look with eyes, look with camera, click.
As the weeks progressed, the children self regulated their turns responsibly and respectfully with minimal need for adult involvement by the end of the data collection period. During the data collection time frame, the digital camera was left at the Centre and stored in the office for security when not in use. Memory chips were occasionally removed from the camera and taken off site for downloading onto a secure offsite computer for storage and safe keeping. Two memory chips were rotated in the camera to accommodate for this off site downloading process.

A second digital camera belonging to the Centre was available for any children not in the participant group but also wanting to take photos. In the instances that a non participant child was taking photos, they received assistance as needed and supervision from a staff member. Unexpectedly, this second digital camera although a different brand was a similar colour, approximate size and visual design to the research camera, which supported the smooth inclusion of all interested children in a general photographic experience. The images from this second camera were not included in the research data and remained with the Centre for use as they saw fit.

The video camera to record ordinary moments of the child participant’s day while outdoors was also provided by the researcher. Like the digital camera, the body was labelled as the research camera. Brand choice, the Cisco Flip, was informed by George Foreman in a lecture October 22 & 23, 2010, in an early childhood education workshop at UBC. This video recorder offered a small size, basic functions and portability. Other helpful features included: auto focus and lighting, good-high quality imaging and sound, built in USB for fast easy downloading, editing features, date and time stamping, battery power, instant playback feature and low price range. Discovered technical limitations of this camera were: limited available
video recording time and that power was quickly drawn down and frequent battery changes were required. This video camera and accompanying battery supply was shown to the Educator participant on the first day but no explanation of the camera functions was necessary as the Educator was already familiar with the brand. The video camera and a large box of batteries were left at the centre and kept in the office for safe keeping when not in use. On two occasions when the video camera memory was near full capacity, it was removed from the research site for overnight downloading of data onto a secure offsite computer and returned the next working day.

From the preparation phase, I took field notes to record observations, events and impressions related to the research project. These notes were written at three times: while in the field as possible; at first opportunity upon leaving the field site; immediately after member checks, and educator conversations. Field notes continued to and including the final member check meeting with the educator participant.

**Phase 3: Conclusion**

The final phase of the data collection process involved concluding the data collection and exiting the site. Five weeks from the start of the data collection process, several participants were graduating from the program. This same time frame marked the start of the summer program and family holiday time for the remaining participants. These scenarios combined offered a natural and seamless end to the onsite portion of the research project.

Although my presence at the site decreased after the active data collection period, I did return for three visits while confirming information and casually sharing some of my preliminary observations with the educator team. In appreciation for participation in this project, the children were given two varieties of blueberry plants for planting and harvesting in
their outdoor garden for all to enjoy. Each participant family requested a copy of the final findings of this research and on completion, this will be honoured. Last, at the request of the educator team, a copy of research findings was requested along with supplementary information regarding the benefits of outdoor learning and outdoor contexts. This request has been partially fulfilled and the findings will be forwarded when possible.

Data Analysis

On completion of data collection, methodology literature states that the next step in the research process is to analyse the data. As Merriam explains, this is the time to sift through, organize and apply interpretations to the data to discover what it all means within the context of the research question (Merriam, 1998). This analysis process requires the researcher to work through the steps of examining the collected data, merging the information together, breaking it down into smaller components for examination, recompiling these components into a concise, meaningful package and finally, interpreting it (Bogdan & Biklen, 1992; Heath, Hindmarsh & Luff, 2010; Merriam, 1998). For this project, the analysis process took place in three stages: Preliminary merging and overview, Secondary merging and reduction and third, the interpretation and reconstruction of the data into a meaningful context. This section presents the details of each stage of analysis, followed by an explanation of methodological issues that were considered.

Stage 1: Preliminary overview

Analysis began with a preliminary scan of all photographs, video and field notes to gain a landscape view of the raw data (Heath, Hindmarsh & Luff, 2010). Once this was achieved, video narration was transcribed using Jefferson conventions (Roulston, 2010) (see Appendix B & C) Anecdote observations and member checks from the field notes were identified and
organized outside the field notebook. With the data in this new format, a second landscape view was taken before beginning the secondary stage of finer grain analysis.

**Stage 2: Secondary analysis**

In this stage a continuous dance back and forth between data sources and a shifting of mind between the application of inductive and deductive thought took place. Although these shifts back and forth were described by Merriam (1997) and Bogdan & Biklen (1992) as something to expect in qualitative research analysis, in practise it proved to be more challenging, enlightening and inspirational than anticipated. For clarity, this stage of the analysis is organized and explained by data source, but it is important to note that the process itself was highly interactive with continual back checking across data sources.

**Composition of children’s photographs**

During the data collection period, participant children created a total of 541 digital photographs. These photos were downloaded from the camera memory chips and saved in a secure computer for preliminary viewing, editing and future editing. Once the preliminary viewing of photos within the computer was complete, the second stage of analysis began with editing using Microsoft Word computer software.

The first edit was the identification of photos that included non participants. At this time, it was necessary to define the parameters around which photos would be included, as some contained images of both participants and non participants together. As all photos created by participants were considered relevant, the decision was made to make every effort to include as many photos as possible. With this in mind, if the photo depicted at least one participant in the image, it was included in the data. In these cases, the non participant faces and identifying features were blurred as to be unidentifiable. Photos that included only nonparticipants were
removed from the data. This editing process removed 73 images. An additional 27 photographs were removed from the analysis as they were unidentifiable due to too low/high lighting conditions, distortion or were highly blurred, resulting in 441 remaining photographs.

Another decision was made at this time to analyse the photos manually and the remaining 441 photos were printed into hard copies for manual analysis. As a spatial thinker and researcher, this decision of manual analysis held an immediate appeal. It was expected that it would enable many photos to be viewed together at the same time, in relation to each other. It was also anticipated that the tactile nature of physically handling the photos might offer a more personal connection and enrich interpretation of the data. As the analysis progressed however, there were other unexpected benefits to employing this method. In addition to viewing the photos together in a broad view, it was also possible to have a micro view and examine them very closely from varying angles and within different light sources. Through this, many of the finer points within the photographs were discovered. It was especially helpful when coding, to quickly and easily move the images into new groupings and then review them again as a whole. When coding, the physical stacking and restacking of photos as the categories evolved created striking vertical images and new perspectives to consider. Another surprising benefit to using a manual method was the ability to observe the photos relative to my own body position. The perspective when sitting, standing, walking past quickly, slowly or even walking past with a sideways glance while thinking of unrelated matters, each offered unique and different insights. In all, the benefits of this decision far outweighed the cost of printing.

The photograph coding process was primarily informed by a large European research study jointly conducted by the National Museum of Photography, Film and Television, the University of Birmingham and Kodak and entitled *Children as Photographers*. The researchers
worked with 180 children across 5 countries “to analyze children’s behaviour as photographers and their attitudes to photography as they develop between the ages of 7 and 15 years” (Sharples, Davison, Thomas & Rudman, 2003, p.1). In the project, photographic data was categorized in several ways including: context (indoor or outdoor), time of day, subject matter (people, animals, buildings, nature, sports etc), judgment areas (humour, technical quality, staging etc), age of child and gender of child. When considering these categorizations in light of this research project, many of the categories did not transfer. For example, all photos were taken outside during the day and although each photograph was time stamped, the time of day was not a variable directly applicable to the research question at hand. This project also explored the children’s perspectives broadly as a group and did not focus on the more individual details of age and gender as applied to each photograph. However, the idea of specific content categories seemed possible.

Keeping this content coding frame in mind, the children’s photos were examined and categorized using the constant comparison method (Merriam, 1998; Palys & Atchison, 2008; Roulston, 2010). This produced some similar categories to the informing study but also new ones. Categories resulting from this process were: water, trees, sky and tops, shelters, signs/symbols, paths, people, movable pieces, holes, lumber, grass, greenery, dirt/sand/mud, garden, creatures and apparel.

Despite the well defined categories and descriptions, many photos still proved difficult to concretely place and I felt conflicted. My uncertainty was confirmed when despite careful instructions and concise category definitions and redefinitions, initial exploratory Inter rater testing by three adults independent from the research, also indicated uncertainty and confusion with the testers and resulted in 60-70% accuracy. When back checking, the preliminary analysis
of the other secondary data sources did not align well with the categories either. Following this
discovery and assured by Bogden & Biklen (1992) that there is no one ‘right’ coding system to
fit all research, I stepped away for a period of reflection about how best to proceed. During this
time, I attended a lecture by eco artist Sharon Kallis in an early childhood education workshop
‘Pedogogista and Atelierista’ October 1, 2011 at Capilano University, where she stated that she
approaches new work by looking for what she does not know. This was a crystallizing moment
and I instinctively felt she had provided a clue to this project’s coding dilemma. With refreshed
mind and eyes, I returned to the photos and began anew by thinking more holistically. I
observed the photographs while also reflecting on the preliminary analysis of all the data
sources, the established image of the child from chapter one and all the while being alert to the
unknown. The first insight appeared with the following photo (Figure 5) and accompanying
field anecdote.

![Figure 5](image)

**Figure 5.** Example of convergence

*On asking what the child had just photographed, he said he was taking a picture of the
corner of the roof on the blue sky (anecdote, June 9, 2010)*
With this, I realized that the child was not capturing an image of just one thing, but rather a convergence of things that in this case was the corner of the building and the sky. With this possibility of convergences in mind, a return to the photographs, video clips and narratives brought many more such examples and new insights. Believing this was enough to warrant further investigation, the photos were re viewed in their entirety, the constant comparison method was employed again and photographs were re organized. This approach revealed a new dimension to the images: one that involved contrasts, connections and relationships and new categories surfaced.

When creating categories, Merriam (1998) offers guidelines to ensure the effectiveness of the classifications. She recommends that they reflect the purpose of the research, be exhaustive, mutually exclusive, sensitizing and conceptually congruent. The newly established saturated set of codes did this and also acknowledged the complexity of the photographs. In this second attempt at coding, my eye initially caught photographs like the ones shown below (Figure 6).

![Photographs 1 and 2: Nature](image-url)
Photographs 3 and 4: Manufactured objects

Photograph 5: People

Figure 6. Examples of nature, manufactured objects and people.

These images and others highlighted three singular areas of content: nature (photographs 1 and 2); manufactured objects that were constructed or finished by humans (photographs 3 and 4); and people or parts of people (photograph 5). When considering what might constitute a manufactured object, it was determined that the object may be made of either synthetic materials or organic materials and could include: finished lumber for fencing or decking, carved tree sections finished for seating or edging, soccer balls, plastic, metal or fabric for example. These photographs depicting singular content then formed the first three new coded categories (see Figure 7 below).
Figure 7. First three categories

Once these three categories and aligning photographs were identified, the remaining photographs were those images in which all three categories merged together in differing combinations, such as those shown below in Figure 8.

Photographs 1 and 2: Nature/manufactured objects
This led to the creation of four additional primary categories as illustrated in Venn diagram below (Figure 9). Within the intersecting circle areas of the diagram, the categories of nature/people (photographs 3 and 4), nature/manufactured objects (photographs 1 and 2) and manufactured objects/people (photograph 5) are visible. The centre of the Venn diagram in which all three categories meet represents the seventh and final category: nature/manufactured objects/people (photograph 6).
As previously noted, all the photographs found a home within these 7 categories. Yet when closely observing the following photograph (Figure 10), I became acutely aware of the complex level of detail present in the image.
Figure 10. Example of sub-category Nature/nature

Although this photograph (see Figure 10) was of nature and therefore fell into that category, there were several different elements of nature represented at once: clouds, sky, tree branches and sunlight. With this in mind, another re-examination of all the photos revealed that this level of detail was present within two of the categories: nature, and manufactured objects. To acknowledge and draw awareness to this level of complexity, two subcategories were created. Within the nature category, the subcategory: nature/nature and within manufactured objects: manufactured objects/manufactured objects.

The new set of categories was tested by two raters. The first was a male university graduate in Geography who works in the field of economics and is not professionally involved in any field of education. The second rater was a male, senior Human Kinetics university student also not professionally involved with education. The perspectives of the raters being outside the Education field was viewed as a positive contribution to this research as it provided two independent sources of validity. Both raters were male, in an attempt to balance any potential gender bias that may have been in place in the coding process. The first rater was given
specific instructions and detailed explanations of the coding system and a 10% sample of photos tested resulted in 90% reliability. Upon inquiry into the rater’s coding decisions, the category definitions were refined. With the refined definitions and further explanation, the same rater tested a different 10% sample of photos with a result of 99% reliability. To ensure the coding accuracy further, on another day, the second rater was given only a brief description of the refined category definitions and minimal explanation. This rater tested a 20% sample of photos that resulted in 94% reliability. Satisfied that the coding system was consistently above 80% (Palys & Atchison, 2008), a second edit of the photos within the computer served to sort and store them within the coded categories in preparation for presentation.

At this time, any other general observations regarding the composition of the digital photographs were noted for separate review after the initial coding process was complete.

**Field note anecdotes**

During the preliminary stage of analysis, observed episodes and member checks were identified and extracted from the field notes and reformatted into twenty anecdote documentations. In this secondary analysis stage, these anecdotes were reviewed again and content topics, context and children’s actions were noted in a side bar (Bogden & Biklen, 1992; Heath, Hindmarsh & Luff 2010). The coding system from the photographs was then applied to the anecdotes and all aligned. Consider the following anecdote for example:

‘Police’ was sitting in the large garden looking at the vegetable plants. White cottonwood fluffs were flying heavily in the air and were accumulating on the ground. He picked up a large ball of fluff, held it out and stated that the fluffs were pieces of clouds falling from the sky. He said that when there were a lot of clouds and they got very heavy
in the sky, some of them fell to the ground because they were just too heavy to stay up there anymore (Anecdote June 14, 2011)

It is noted that the context was sitting in the garden (nature), the child was actively engaged with the fluffs (nature/people), and the narrative talk was about the fluffs, clouds and sky (elements of nature).

However, within the narrations, there were also segments such as the following one that provoked another pause for reflection.

‘Nothing’ was sitting quietly at the edge of the strawberry garden gazing out toward the nearby fence and wild greenery. When he spoke, he said he was looking at the place where the big trees used to be on the other side of the fence (on the edge of the farmland). He went on to say that the trees were dead and one day the farmer brought big machines to cut them down. He had watched as the trees were cut and then taken away. He remained sitting and looking awhile longer, then stood and walked away (Anecdote from field notes June 9, 2010)

This narrative suggests that at one time through a past experience, the child had made a connection between himself, nature, a manufactured object and the world that exists outside the fence. Now, here he was at another point in time, sitting quietly, looking at where the big trees used to be and recalling the event.

The data revealed other similar connections outside the early learning environment. Sometimes it was in reference to home environments, observations or recalled events that took place outside the fence in the larger community. Based on this, another subcategory was created that was named simply ‘the world’.
With the creation of this subcategory from the anecdotes, I again returned to re-examine and apply the new subcategory to the photographs. This back and forth, ebb and flow process revealed that visual images of ‘the world’ were present in 95 individual photographs within 3 categories. This was seen through the photographer’s choice of perspectives, primarily up, through, over and beyond the boundaries of the fence. Examples of these photographic perspectives are discussed in more detail in the findings section to follow. Now with seven primary categories and three subcategories established, I turned to the third data source of video recordings.

**Video recordings**

Video recordings were downloaded directly from the camera into a secure computer for transcription, editing and storage. Recordings totalling 44 minutes, 6 seconds were divided into 76 individual clips determined by time stamped episodes. 14 clips totalling 3.08 minutes were identified as visually unclear, entirely inaudible or shorter than two seconds and not included in the data. The verbal utterances of the remaining 62 clips were manually transcribed using Jefferson conventions (see Appendix B & C) with the intent of gathering as much narrative detail as possible for the data base. Through additional readings of the narratives however, a decision was made that the fine details of the Jefferson convention transcriptions did not provide additional information that directly contributed to the research inquiry at hand. Therefore, the data analysis proceeded by more generally noting actions, context, possible relationships and units of narrative content in sidebars (Bogden & Biklen, 1992; Heath, Hindmarsh & Luff, 2010). Children’s actions noted from the video were defined for example, as broad motor movements or direction of gaze or similar action within each segment that was relevant to the research question. However, fine observations such as balance shifts, which fingers were used in what
order, would not be noted. For example, a child was kneeling down at a bench, looking down while she gently split apart a honeysuckle flower to reveal the inside pieces (Video clip #003 July 17, 2011). The coding system created for the children’s photographs, was applied to the video transcriptions. The narrative topic, context and actions were all variables considered within each segment to determine category placement. As an example, in the event noted above, the girl was kneeling at the bench (manufactured object) and splitting open the flower (nature/people). Side relationship notes were that she was using the bench as a platform for the exploration (manufactured object/people).

It is also a notable reminder that in the video analysis; ‘people’ are the children themselves and as they were the focus of every video recording, all video analysis will fall into categories that include ‘people’. The video transcriptions all aligned within the seven categories and three subcategories.

**Methodological Considerations**

Methodological literature advises that rigorous attention is required in all research endeavours to ensure the work is reliable, valid, outcomes are accurate and trustworthy and that the entire project is ethically conducted (Merriam, 1998; Palys & Atchison, 2008; Roulston, 2010). Merriam (1998) points out that this rigor needs particular attention in qualitative inquiries where the outcomes may be of an applied and practical nature. Evidence of rigor in a qualitative study can be defined within the areas of internal validity, external validity, reliability and ethical considerations throughout the study.

Internal validity refers to “the extent to which research findings are congruent with reality” (Merriam 1998, p218). This is made visible by the researcher building strategies into the study design such as: triangulation, member checking, long term observation, receiving peer
feedback, participant collaboration and acknowledgment of the researcher’s biases (Merriam 1998). The current study was designed to ensure the research components were compatible throughout the design. Within the study, triangulation is present by including three perspectives in the research process: participant children, participant educator and the researcher. Member checks were conducted in two ways: the researcher touching back for the Educator participant’s interpretations of events and a small photograph sample; and acknowledgment of the children’s active narratives within the data collection through field observations, conversations and notes. The data collection period for this study was five weeks during which a large and rich data base was created in the form of photographs, video and field observations. Throughout the course of this project, feedback was requested and received across multiple disciplines which enriched the project immensely. The primary focus of this research lies with the child participants and as such, as described previously in this chapter and in chapter One, the children were included as much as possible throughout the project. Researcher bias was recognized at the outset and acknowledged throughout the process in keeping reflecting field notes and receiving peer feedback.

External validity addresses the “extent to which the findings of one study can be applied to other situations” (Merriam 1998, p 207). Due to the inherent nature of qualitative research and case studies in particular, the ability to generalize is challenged. Merriam (1998) offers possible strategies to strengthen the external validity of qualitative case studies such as: rich description, typicality, multiple sites or multiple cases and standardized sampling methods. As this project was conducted at one unique and purposive site, the applicable strategies employed to strengthen external validity were: provision of a rich description of the study details and
process, inclusion of eight participants who each investigated one phenomenon and typical sampling within the research group.

In social science qualitative research, reliability is concerned with “whether the results are consistent with the data collected” (Merriam, 1998 p 206). It is further explained that this can be achieved by providing within the design: triangulation, inter-rater reliability, and statement of investigator’s position (Merriam, 1998; Palys & Atchison, 2008). Within this study, chapter One frames the assumptions and theory that ground the work, while Chapter Three describes the site, the participants and defines the role of the researcher and participants. Triangulation was achieved by including input from three sources: the children, the Educator participant and the researcher and using three methods of data collection: digital photographs, field notes and video recordings. In this project, pilot inter rater testing was unsuccessful. This was followed by subsequent inter rater tests of a revised coding system by two independent raters, with all three test results > 90% reliability. Satisfied that the code was saturated and reliable (Palys & Atchison, 2008); it was applied to the secondary data sources to ensure consistency. Last, detailed descriptions and rationales for each step of the project have been presented to provide transparency.

Validity and reliability are without value if the research study is conducted in an unethical manner (Merriam, 1998). There are many dimensions to ethics, some of which are outlined within the context of qualitative research as: relationships between researcher and participants, protection of participant and researcher rights, privacy and safety, responsibilities to sponsors and governments, data collection methods, researcher bias in analysis and presentation of findings (Merriam, 1998). Aware of the ethical concerns in research, efforts were made in this project at every step to be actively conscious of the issues, reflective of actions and decisions
through the writing of field notes, requesting peer input, taking time to consider ongoing events, planning ahead where possible and remaining flexible to events as they unfolded. These same efforts assisted in heightening sensitivity to the overall, unfolding human experience. Rigorous attention was paid in planning and processes to confidentiality, safety, respectful interactions and transparency of research procedures and findings.
CHAPTER FOUR: FINDINGS

In this section, the findings of the data analysis will be presented both quantitatively and qualitatively. Quantitative findings from all three data sources will be offered first by source and then in an amalgamated form. These findings reveal the children’s strong interest in nature and the convergences of manufactured objects and people with nature. The findings also suggest that the children relate to these convergences through the lens of the natural world. Findings also show that the children are aware of the world beyond the early learning environment. These quantitative findings will be followed by qualitative descriptions that focus specifically on general composition observations in the children’s digital photographs only. Through this approach the physical perspectives the children used becomes apparent, as do contrasts, interactions and silences. The chapter concludes with a summary that links the findings together within the larger concept of ‘interfaces and connections’ for discussion in Chapter Five.

Photographs: Quantitative Findings

Child participants in this project created 541 photographs, 441 of which were coded and categorized as previously described into seven primary categories and three subcategories. When viewed quantitatively as seen in Table 1 below, there is a drop in numbers between the two leading categories and the others. This drop is from a maximum 40% of photographs in the largest category of interest (Nature/Manufactured Objects), 30% in the second to 2% in the smallest category of people/manufactured objects. Recall that the children were asked to photograph what they found interesting in their outdoor environment. With this in mind, the quantitative photographic data suggests that the children found nature itself interesting, and nature when combined with people and manufactured objects. Finally, they indicate particular interest in the combination of nature and manufactured objects together.
Table 1

Frequencies and percentages of primary coding categories for all photographs

<table>
<thead>
<tr>
<th>Primary 7 Categories</th>
<th>Total # of Photographs</th>
<th>% of Photographs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature/Manufactured Objects</td>
<td>178</td>
<td>40%</td>
</tr>
<tr>
<td>Nature/Manufactured Objects/People</td>
<td>131</td>
<td>30%</td>
</tr>
<tr>
<td>Nature</td>
<td>57</td>
<td>13%</td>
</tr>
<tr>
<td>People</td>
<td>27</td>
<td>6%</td>
</tr>
<tr>
<td>Manufactured Objects</td>
<td>19</td>
<td>4%</td>
</tr>
<tr>
<td>Nature/People</td>
<td>19</td>
<td>4%</td>
</tr>
<tr>
<td>Manufactured Objects/People</td>
<td>10</td>
<td>2%</td>
</tr>
</tbody>
</table>

The addition of the 3 subcategories into the above noted findings provides a more detailed view of the children’s interests as seen in Figure 11 below.
Figure 11. Frequencies of all categories and subcategories of all photographs in all coded data

Figure 11 highlights three points: First, ‘The world’ subcategory is only present within the three leading categories of children’s interest (nature/manufactured objects; nature/manufactured objects/people; and nature). Second a large proportion of ‘nature’ and ‘manufactured objects’ recognizes the convergence of multiple elements within each category. Third ‘People’ only hold a noticeable interest when the people converge with both ‘nature’ and ‘manufactured objects’. This suggests that the children are making connections with the world through the lens of nature itself; nature combined with manufactured objects; and nature combined with manufactured objects and people. It also suggests that they are aware and interested in the details of both nature and manufactured objects. Last, the subcategories reveal that the children are interested
in people but primarily when the people are converging in some way with nature and manufactured objects.

**Video: Quantitative Findings**

Video recordings of the children’s ordinary moments while in outdoor spaces of the early learning environment provided a secondary data source. As discussed in Chapter Four, the recordings were categorized into seven categories and three subcategories. The video was examined on two levels: children’s actions within context and children’s narratives. The findings of children’s actions within context show that the child participants were actively engaged in actions with nature as viewed on 61 videotaped occasions and of these, there were 37 events that included manufactured objects. The remaining eight clips depicted children involved exclusively with manufactured objects. These frequencies are visible in relational percentages in Figure 12 that follows. There are two items of note here. First, in the eight instances within the manufactured objects/people category, more than half of involved children used the manufactured object as either a tool (ex. painting) or to effect change (ex. hitting the wind chimes for sound). In the remaining clips, the children had positioned themselves amidst manufactured objects but were not actively or clearly engaged with the object. This is not to say that no interaction was occurring; only that within this method, it was not visibly clear for documentation. Second, it is notable that the children’s interests as demonstrated in the second largest video category, aligns with the second leading category of photographs.
Figure 12. Percentages of children’s videotaped actions reflecting the dominant coded categories of nature/people; nature/manufactured objects/people; and manufactured objects/people.

On analysis of the children’s video narrative, eight clips were inaudible and 33 of the 69 clips were identified as having no talk. Examination of the 28 recordings that included children’s talk, revealed 23 instances when the talk was predominantly about nature. Within these 23, 5 episodes included talk involving more than one element of nature, while another five made reference to the subcategory ‘the world’. However, as Figure 13 illustrates, talk about nature predominated. There were six occasions that mentioned manufactured objects and three that acknowledged other people. On two instances, the children combined nature and manufactured objects in their talk and within this same category noted the subcategory ‘the world’ twice. Finally, one clip showed the children talking about the combination of people and manufactured objects.
Figure 13. Frequencies of children’s videotaped narratives/talk for all coding categories

There are two areas that draw particular attention here. First, is the high percentage (48%) of self chosen verbal silence in the videos and second, when the children chose to talk, they had a clear interest in talking about nature.

When the narrative and action findings are combined, it is of interest to note the differences and similarities are present. As seen in Figure 14 the children’s narratives were heavily weighted in topics involving nature. This represents 71% of the recorded talk. This corresponds with their actions that show they are physically engaged with nature as well, often with the inclusion of manufactured objects.

There is evidence of the children’s awareness in the multiple elements of nature and these, along with the subcategory ‘the World’ were primarily embedded in the nature narratives.
Although present in different proportions, these findings are similar to the photographic findings.

Alternatively, the video action findings reveal some interest in manufactured objects, yet neither the children’s narratives nor photographs especially reflect this same level of interest. This may be a result of the data source itself, as video recordings focused on the children were better able to capture their chosen actions and use of manufactured objects as tools.

*Figure 14.* Frequencies of children’s videotaped narratives/talk and actions for all coding categories
Anecdotes: Quantitative Findings

Application of the seven categories and three subcategories to the anecdotal events extracted from the field observation notes revealed that the children’s primary focus of interest surrounds nature, nature/people, the convergence of nature and manufactured objects, and the convergence of nature, manufactured objects and people. As seen in Figure 15 below, there were also references to ‘the world’ and acknowledgement of multiple elements of nature.

Figure 15. Anecdote findings by coding category and subcategories

The leading categories and subcategories of interest in the anecdotes align closely with the photographic data and video data. A point of deviation lies in the nature/people category as the photograph findings showed little interest in this area but the secondary sources did. However this is understandable when considering that ‘people’ in the videos in particular,
referred to the children themselves as they were the focus of every clip. In the anecdotes they sometimes spoke of themselves but more often of people other than themselves (ex. mom, dad, and farmer). The children took very few photos of themselves and very few focusing singularly on others. This mixture of data implies that the children may have more of an interest in their own engagement with nature and although aware of others, do not have the same level of interest in that area.

**Combined Quantitative Findings**

When the photographic, video and anecdotal results are combined together into the seven categories and corresponding subcategories as seen in Figure 16, the results suggest that the children have a strong interest in nature and an even stronger interest in nature when it converges with other things such as: nature with manufactured objects; and nature with both manufactured objects and people. The data also shows the children’s acknowledgement of elements of nature and elements of manufactured objects. Finally, the combined findings confirm the children’s awareness of the greater world beyond the early learning environment through nature itself, nature combined with manufactured objects, and nature combined with manufactured objects and people.
The children’s outdoor interests have been identified in the coded categories discussed in the previous section. As mentioned earlier, notes regarding general photograph observations were also made and from these, three points of interest surfaced within the composition of the photographs: perspectives, contrasts, and interactions. Although these points are not consistently represented through the photographic data, I believe they must be acknowledged as they provide more detail and insight into the categories of interest. Each has been identified and separated for discussion here but it is important to remember that they do merge in the photographs and one or more may be present in any one photograph.

*Figure 16. Frequencies of coding categories for all coded data*
**Perspectives**

The digital photographs reveal that the child participants view their outdoor environment from multiple physical perspectives that include the camera position itself and/or the child’s body position. This is evident in the examples below (Figure 17) which highlight the perspectives chosen for each photograph.

**Photographs 1 and 2: Up**

**Photographs 3 and 4: Down**
Photographs 5 and 6: Through

Photograph 7: Over

Photograph 8: Under

Photograph 9: Backward toward self
Photographs 10 and 11: Outside looking in

Photograph 16: Inside looking out

Photographs 12 and 13: Level
Photographs 14 and 15: Inside

Photograph 17: Inside looking up

Photograph 18: Behind

Photograph 19: Behind and through

Figure 17. Examples of perspectives
The following photograph with accompanying anecdote offers the possibility of a broader world perspective.

‘Superman’ was sitting at the top of a tall spot looking around. He pointed toward an overgrown wild space beyond the fence and stated that there was a river there. He went on to explain that the bushes and leaves had grown up and it was hard to see the river anymore, but it was still there. He then said he would take a picture of it, aimed the camera at the place and took the photo (shown below). (Anecdote from field notes June 14, 2011)

Photograph 20: River beyond the fence

This photo and supporting narrative is another example that draws attention to awareness of the world on the other side of the fence and additionally, provides another perspective: within looking over and beyond.

In summary, the digital photographs reveal that these children view the world from multiple perspectives: up, down, over, under, level, behind, through, backward, inside, over and
beyond, outside in and inside out. In recognizing these perspectives, insights may be gained into the various ways in which these children physically positioned their bodies and/or the camera to either view or discover areas of interest.

Contrasts

Within the photographs, some elements of contrast were captured. Although the contrasts are not consistent, they are present and therefore notable as a general observation. To illustrate this, contrasts in colours, context, type of materials and purpose are shown in the examples below. These contrasts are identified and presented separately, however keep in mind that multiple contrasts may be present in any one photograph.

Contrast 1: Colour

Although every photograph includes a variety of colours, some photographs show striking colour contrasts as seen in the following examples (Figure 18). There are bright colours that stand out, as a manufactured object such as the orange wheelbarrow, traffic cone or yellow ball. However, contrast is also seen in the vibrant yellow flowers growing amid green grass, or white and blue blooms on a bush. At other times the colours are not vibrant but the contrast is clear, such as the wooden fence sandwiched between greenery. Some colours are part of nature within the setting while others are added splashes as seen in the painted tree trunk and various movable pieces within the space.
Contrast 2: Context

Context contrasts refers to materials that appear out of context given the intended purpose of the material. Below (Figure 19) are photographs that highlight this, such as a plastic shovel lying in long grass. The shovel has dirt on it as if it was recently used for digging, yet the
grass shows no signs of digging disturbance. A chair perhaps expected to be elsewhere for seating, is found tilted and wrapped with yarn outside the playhouse. One shoe rests alone in the dirt, wedged between logs and out of context from a foot or another shoe. A camera placed outside amid buttercups rather than a more protected location.

Figure 19. Examples of context

Contrast 3: Type of materials

In the coded categories, one area of identified interest was the convergence of manufactured objects with both nature and people. In those categories, the definition of manufactured objects was broad and covered a wide variety of materials. Here, the objects are identified in more detail and offer a better understanding of the types of converging materials
that are capturing the children’s interest. Below (Figure 20) are examples that depict images in which wire, CD’s, wood, traffic cones, metal faucets, yarn, plastic containers, swaths of fabric, dirt, trees, logs and other elements of nature unite in various ways.

*Figure 20. Examples of types of material*
Contrast 4: Material purpose

Similar to context, this type of contrast includes materials that are out of context given their original purpose. However it differs as the materials are also deliberately being used for a purpose other than originally intended and will probably not return to their former use. For example, the tilted chair wrapped in yarn noted above, could be unwrapped, repositioned and used as a chair again. The yellow shovel can be used to dig again. The shoe will hopefully find a foot and the camera will be used for photography. Unlike these, the photographs below (Figure 21) show tires now used as garden dividers, planters and climbing objects. They will never be vehicle wheels again. The cooking pan is now one piece of an open air sound fence and an old water pipe serves as a pathway for children rather than water.

*Figure 21. Examples of materials used for purposes other than their original intent*
Contrast 5: Elements of nature

As noted in the category codes, there are many images in which two or more elements of nature converge. The term ‘nature’ is wide and may encompass many types of natural elements. This was in the top three leading areas of interest for the children and a closer look at the specific types of natural elements in the photographs that caught the children’s interest provided further insights. The photographs below (Figure 22) identify such combinations of living and dead trees, saplings and mature trees, sand, logs, clouds, sun, sky, grass, soil, water, light and cultivated food plants.
Contrasts are present in the children’s photographs in different forms: colours, context, types of materials, purpose of materials and in the converging elements of nature. Recognition of this provides deeper insight into another level of the children’s awareness of their outdoor space.

**Interactions**

Interactions with the environment are another occurrence noticed in some of the children’s photographs. These interactions are defined as objects or materials within the image that are effecting change or have effected change in some way. Three types of interactions were identified and are presented here as: alterations, transformations and reorganizations. In the photographs, alterations can be seen as some visible adjustment to the environment or how it is used (Figure 23). Transformations are identified by the presence of two or more objects or elements that have combined or are in the process of being combined to create something new (Figure 24). Reorganizations are seen when two or more elements or objects in the photograph have been or are in the process of being rearranged or constructed within space (Figure 25). The photos below provide examples of each type of interaction that the children captured in a visual image.
Figure 23. Examples of alterations
Figure 24. Examples of transformations
In the photos are some examples reflecting the presence of a large blue tarpaulin in the space. During the course of data collection, it was observed that this tarpaulin was reorganized and relocated over the weeks to create spaces of different sizes and shapes throughout the outdoor environment. These reorganizations were captured by the children repeatedly throughout the photograph collection.

Of particular curiosity are the last three transformation photos that show constructions that the children call crushers. The crushers are spontaneously created by the children and appear to be a collection of movable materials that are assembled and reconstructed in various ways inside, around or under a space. Although crushers at times seem to be thrown together in

*Figure 25. Examples of reorganization*
a haphazard manner, at other times they look more formally organized. The creation of crushers involves a highly organized, self-directed, social and collaborative effort by the children.

Interactions in the form of alterations, transformations or reorganization seem to be of significance to the child participants and may be an indication that they are aware of and are experimenting with their ability to effect change. The tools they use to effect the changes are depicted in the photographs as natural materials (sticks, water, mud etc), manufactured objects (shovels, water taps, wire, etc.) and themselves (bare feet, hands, faces, etc).

Silence

One might imagine the creation and collection of data in a research project such as this to be an active and noisy endeavour and in many ways this would be accurate. However in the midst of this, as noted in the quantitative findings there were many observed and documented moments when the children chose to be verbally silent. In fact as noted in the quantitative findings, this silence was documented 48% of the total video time. Field observations and notes indicate that participant children engaged in their photography would often choose to be alone and verbally silent during these moments. At these times they would move throughout the outdoor spaces by themselves, often away from others while they explored and took photographs. It was also noticed that sometimes the children were silent alone and sometimes they were a silent group. This supports the research findings of Clark & Moss (2005) and Titman (1994) that children need spaces to be quiet while outdoors. Of particular interest in the general photograph observations were the moments of silence captured by the children themselves in a few of their photographs as seen below (Figure 26), possibly indicating their awareness of these quiet moments amongst themselves.
In summary, the data findings presented in this chapter reveal that the child participant’s interests lay primarily within three areas: nature; nature and manufactured objects; and nature, manufactured objects and people. Findings also show the multiple perspectives that the children
used to view their environment. Contrasts and interactions are evident within the photographs, and self chosen moments of verbal silence were visually acknowledged.

**Summary: Interfaces and Connections**

As seen throughout this chapter, the photographs the children created had a recurring pattern of interfaces within and between all data sources. Each type of interface brings together two or more elements, materials and/or people in some manner. This convergence may involve natural elements, manufactured objects, people, contrasting materials, colours or contexts. Alternatively, it may be present in an interaction between two or more materials that effect change through reorganization, alteration or transformation. In whatever form the interface appears, embedded within each is a point of connection. The combined photographs, secondary data sources and findings can be captured within the larger concept of ‘interfaces and connections’ that will now provide a frame in which to link all the data together cohesively for discussion in the next chapter.
CHAPTER FIVE: DISCUSSION OF FINDINGS AND CONCLUSIONS

Discussion of Findings

The research findings considered within the frame of interfaces and connections reveals three major points for discussion. First, the children in this project had interest in three particular areas: connections within the natural environment itself, connections between the natural world and the human-made world; and connections between people, the natural world and the human-made world. Reflecting on how this information may be linked with our existing knowledge of young children, I return to the constructivist learning theory outlined in Chapter One. When considering the interaction and connection patterns in the photographs with constructivist learning theory, one component of the theory stands out as particularly relevant here. The interfaces present in the children’s photographs may be visualizations of their points of interest and conflict between pre-existing knowledge and new potential knowledge. If so, the interfaces then represent points of connection in which the child is interested in attempting to make meaning or new meaning of their world. In Vygotskian terms, these points of connection would be considered zones of proximal development and potential moments for scaffolding. In the literature review, there were references to several research studies that suggest children within nature are actively engaged in making a connection or reconnection with nature, or as Blanchet-Cohen & Elliot (2011) propose, that the children may be attempting to discover their own position in that relationship. The findings here both support and extend these concepts. The points of connection here suggest the children were interested and involved in the exploration of six different relationships: the workings of the natural world itself; the ways in which the natural world and the human-made world converge; the coexistence of people in a world that is a combination of both human- made elements and natural elements; how they themselves, as
children can coexist within these dual worlds; how they as children are able to effect change upon both the natural world and the human-made world; and how the natural world and the human-made world affects them as children.

A second point of discussion surrounds the volume of digital photographs the child participants created and their unflagging interest in the project. 541 photographs were created over five weeks by eight young children. The volume of photographic data could serve to support existing theory, research and policy and reveal more possible points of connection. For example it may be an indication of the children’s generosity to share their world perspectives with others and is a realization of their rights as defined in Article 13 of the Rights of the Child. Or as the methodology research states, it may be further evidence that photography is an effective and well received communication tool for children. Their interest may support constructivist learning theory in that the inquiry at hand held particular meaning for them which could account for their extended interest. Another possibility in support of the literature is that the rich organic outdoor setting offered an endless supply of changing interests and affordances. Or, when recalling that children are capable meaning makers and have the right to participate in matters that involve them, the volume of photographs might be sending the message that young children are not only capable but are willing to be included as participant researchers.

Additional points of connection exist here between the children and their: rights, interests, technology, and potential opportunities.

Last, the data from this research highlights the complexity, interests and multiple levels of interaction the child participants were experiencing within their outdoor early learning environment. It supports existing research advocating their abilities to share these perspectives with others through photography and in turn, informing practice. The findings also support the
research by Fjortoft (2001) and Herrington & Lesmeister (2006) in recognizing that the character of the outdoor space and the materials within it, affects the types of interactions that are possible. It aligns with the findings of Clark & Moss (2005) and Titman (1994) that children have an interest in varied sizes and affordances of spaces as well as what lays above, through and beyond the fence. The difference is that the findings in this study suggest that when the outdoor character is organic and movable materials include both nature and manufactured objects that are contrasting in some way; the interactions offer learning opportunities that could include dimensions of social and environmental responsibility within a meaningful context. The photographs also serve to highlight the children’s extraordinary awareness of their surroundings and their aesthetic sensitivity.

**Limitations and Strengths of the Study**

It is acknowledged that this is a small qualitative case study at a purposive site choice and this in itself is a limitation of the study in terms of both replication and generalization. However, this limitation also serves to strengthen the research in other ways. The combination of interface location, outdoor design and team philosophy offered a unique environment for the collection of rich data. The established program philosophy at the site also assisted with the smooth inclusion of the child participants within the role of participant researchers. This in turn supported the project and enhanced the quality of the research as a whole.

A second combined limitation and strength of this study is the position of the researcher. As it is unavoidable for researchers to bring their own biography to the work, it may be a limitation in this study that the researcher was also a licensed early childhood educator. Prior knowledge and experiences could have had a biasing influence that ultimately affected the project findings. Although awareness of this professional bias was kept in mind at every step of
the research process and measures were included to minimize this, the possibility of the limitation remains. Alternatively, having an early childhood education background was a strength as it assisted in gaining entry to potential research sites, communicating easily and professionally with children, educators and parents within the setting, acclimatizing to routines quickly and understanding the multi leveled, detailed expectations within the setting. All of this contributed to making the preparation and data collection processes very enjoyable. In the data analysis process, it was helpful to draw on early learning knowledge and field experience as this provided insights and sensitivity applicable to the understanding and interpretation of the data.

**Implications for Practice**

The findings and discussion bring new understanding in terms of implications for practise. The participant’s three leading areas of interest suggest that in practise it may be beneficial to include a contrasting combination of movable human made objects, and people (including children) within natural outdoor spaces. In this setting, children may benefit from encouragement to explore and interact with the environment and materials within it by altering, transforming or reconstructing as this could contribute to their identification and understanding of the interfaces, connections, interactions and effects between the natural world, the human world and their position living within both.

A second implication for practise surfaces when recognizing the many perspectives children use to view and experience their outdoor spaces. This draws attention to the outdoor design of early learning spaces and offers additional evidence to support the inclusion of varying topography and types of spaces that invite children to experience the world from a variety of positions such as under, over, inside and out.
The literature surrounding children and nature implies that the natural outdoors can be a valuable context for young children’s holistic learning experiences. This research more specifically highlights experiences that involve explorations and interactions in which change occurs. Through these opportunities children may gain experiential and meaningful understandings of the world, and their sense of social and environmental responsibility. This research joins existing literature in the reminder that there is much that young children can only experience and learn while being under an open sky within natural outdoor environments and as such, it can be beneficial in practise to not only bring the outside in, but ensure that children regularly go out.

**Invitations for Future Research**

The findings of this research also present invitations for future inquiry. This work focused specifically on the early learning environment but both the literature and data hinted that there may be more to discover about children’s points of connection between the early learning setting and the surrounding community. Second, although this study involved children 3-5 years of age, the perspectives of children under 3 year of age still remains to be heard. Also children’s silences that were documented in this study may be a topic of further investigation to expand our understanding of children’s voice and silence in outdoor contexts and the child’s right not only to voice but also to silence. Last, but not least is the opportunity for further exploration surrounding the educator’s role in outdoor spaces and how that role may be realized both in practise and pre-service education.

**Conclusions**

The purpose of this research was to explore the young child’s perspectives of the outdoor environment. To accomplish this, within the frame of the United Nations *Rights of the Child* and
constructivist learning theory, I asked what the children’s self chosen points of interest and connection were within their natural outdoor early learning environment. With a camera in hand, the children in this project exercised their right to expression and participation in matters that include them by assuming the role of participant researchers and creating photographic data to share their views. Their right to be heard was respected not only in the facilitation of this project but by focusing close attention and analysis toward discovering and interpreting the messages the children were sending. The children’s photographs supported by secondary data sources, revealed their interests in the interfaces and connections within nature, between nature and the human made world, and between nature, the human made world and humans. They also provided further evidence of their multiple physical perspectives and their abilities to share these perspectives with others through visual technology.

These findings hold implications for practise that extend to collaborative thought, action and support that realizes a convergence of nature, the human made world and children together within early learning outdoor spaces. As well, it draws additional attention to the types and combinations of materials offered within these spaces that may present valuable moments of opportunity and discovery for the children: to make sense of their interfaced world within a meaningful context; create connections and relationships with both types of environment; position themselves and secure their role within the reality of today’s world; and further understanding of how their actions effect reciprocal change.

Through the many dimensions of this study, it is hoped that we have gained a deeper appreciation of the potential within natural outdoor environments to be valuable, holistic learning contexts and that this may inspire actions that prioritize inviting educators and children from the inside, out.
REFERENCES


Toronto, ON: Random House Canada.


Appendix A

Pedagogical documentation process

Appendix B

Jefferson transcription conventions

(really) unclear words spoken, best guess

( ) unclear words spoken, inaudible

[ ] two speaker’s talk overlaps at this point

= no interval between turns

? interrogative intonation

(2.0) pause timed in seconds

(.) small untimed pause

We::ll prolonged syllable or sound

Why emphasis or stressed word or syllable

REALLY word spoken noticeably louder than surround talk

“yes” words spoken noticeably softer than surrounding talk

<I have to go> words spoken noticeably faster than surrounding talk

Heh heh laughter syllables

Fun(h)ny words spoken laughingly

↑ Upward rise in intonation

↓ Downward fall in intonation

Appendix C

Transcription sample using Jefferson conventions:

From video recording clip #010, June 18, 2011:

Nothing: O’Shal watch this. I can go through corners (.) through corners.

O’Shal: wow.

Nothing: I can lift heavy things and balance stuff. I can balance stuff.

O’Shal: lift a heavy one↓.

Nothing: you, you need two diggers. Lift this one↓. You can open it really fast↑.

O’Shal: that’s a crush pile↓. Get more crusher stuff↓. See how much how much damage I can do to this log. Damage it.