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The Child in Nature

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Except where due acknowledgment has been made, this is the work of Rebecca K. Fletcher alone. The work has not been submitted previously, in whole or in part, to qualify for any other academic award. The content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program.

Signed:
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Doing

Exploring

Sharing

Chapter 6: Conclusion

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The Child in Nature
A study of the childhood experience of nature.

Six case studies of Melbourne preschool children illustrate how children interact in nature accessible to them in both the outdoor preschool play space and the natural environment of the Royal Botanic Gardens, Melbourne.

Abstract

There is little research on the young child's experience of the natural environment. Due to the increase in urbanisation, indoor recreation and indoor schooling many young children have become isolated from the natural environment. A love for nature and a sense of wonder in nature is being lost in the hurried childhood. This loss of access to nature impacts on the child's health and wellbeing, sense of connection and environmental literacy.

This research study explores how Melbourne preschool children experience and use nature through the environments provided to them in the preschool program. The main environment is naturally the preschool play yard; however, as excursions also form part of the curriculum, the child's visit to the Royal Botanic Gardens and the Ian Potter Foundation Children's Garden forms part of this experience.

Six case studies of Melburnian preschool children have been developed as a means to capture and communicate the interactions of individual children. Each of the six case studies present a child or pair of children 'in the moment,' as a snap shot of ecological learning and play behaviour and are presented as six stories, which allow the child's individual character and unique experience of nature to be expressed. Issues and behaviours evident in the children's interactions are then discussed through a framework of the seven ways of interacting in nature, which emerges from the demonstrations of these children.
This information was collected using research techniques in observation; structured observations using time sampling and behaviour mapping; participating in conversations with children and collecting anecdotal observations and children's artwork.

The case studies provide insight into childhood interactions with the natural environment and the levels of engagement experienced by children, with nature. The six stories, alongside topical literature, form the basis for deep discussion on the observed ways of interacting with nature.
Chapter 1: Introduction

Children’s gardens

Early childhood education and gardens have been linked from the very beginning of the kindergarten movement in the 1830’s. Essentially, the word kindergarten, coined by German forester and founder, Frederick Froebel (1782-1852) (McKenna, 1995, p 1), tells us of a ‘children’s garden’. More recently public children’s gardens have been springing up both in Australia and internationally. The United States of America (USA), in particular, has recognised the value in designing outdoor spaces specifically for children below eight years (Hart, 2003, p 16). This prompted the construction of play gardens, such as Brookfield Zoo, Chicago, and environmental based programs for children, such as the Centre for Ecoliteracy, San Francisco. Many other countries around the world have begun their own environmental programs for children, such as the Evergreen Project, Canada; Learning through Landscapes, UK and the Nature Schools of Denmark (Foster, 2001). In local initiatives, the Royal Botanic Garden, Melbourne, Australia has developed the Ian Potter Foundation Children’s Garden, which opened on October 23, 2004. These gardens are becoming islands of green in a concrete jungle and visits to them form new experiences for urban and suburban children who live in treeless urban areas or overcrowded housing estates. Malone (2004) writes that “the challenge [for botanic gardens] is to ensure that the means and opportunity [for children] to access this space is based on contemporary research on children’s needs and their preferred forms of environmental learning” (p. 14). The topic of botanic gardens will be discussed later in greater depth.
Australia: Current support in the early years

Teaching practice within early childhood settings has traditionally been based around developmentally appropriate programs. Guidelines set by the Children's Services Regulations (1998) provide teachers with little direction in involving children in outdoor organic experiences, limiting recommendations to the physical considerations of the environment and stating that programs be;

“(a) based on the developmental needs, interests and experiences of each of the children cared for or educated by the service; and
(b) sensitive to individual differences of those children”("Children's Services Regulations 1998," 6.28).

Early Childhood educators freely research and develop programs to serve these regulations. Recently the Reggio Emilia approach from Italy and Gardner's Multiple Intelligences have become popular models for both early childhood settings and primary schools. Steiner and Montessori philosophies now influence not only their private namesake schools, but independent and council run preschools as well. Education settings integrate these philosophies into their programs to improve teaching practice and learning. However, in terms of Australian research and models for education, very little research has been undertaken. And the area of environmental learning or eco-literacy in early childhood is supported by very limited research findings. Jenny Dibley, Principal of a NSW Department of Education and Training (DET) environmental education centre, eloquently summed up the situation when she said, “Early childhood is an area that's really been left out in terms of environmental education. There's a huge void there” (Hamilton, 2003, p. 5).
Primary school programs are often modified to cater for early childhood. A “lack of government and industry support, the fragmentation of the early childhood field and inadequate research and training,” (Hamilton, 2003, p. 2) are seen as contributors to this ad hoc situation.

In Victoria, the document “Outdoor Play - a Guide for Children’s Service Centres” (Jeavons, Boyle, & Tindale, 1995) complements the Children’s Services Regulations and provides information for the design and management of outdoor spaces. The document encourages the designers to understand the range of needs of day-to-day users and while a new guide is currently being developed, the current guide gives very little direction beyond the child’s safety and space allowance. The child’s experience of the outdoors and the impact of play in nature on their development is apparently overlooked.

Recently, the New South Wales Environmental Protection Authority (EPA), now incorporated with the Department of Environment and Conservation, reviewed early childhood environmental education in Australia and produced a document entitled “Patches of Green” (Elliot, 2003a) which describes the early childhood field as a patchwork quilt, with environmental education as an emerging paradigm characterised by patches of green. Sadly, this situation is rather grim for the children of Australia, while a lucky few children find themselves in a preschool centre characterised as a ‘patch of green,’ many others do not. Even worse off are the children who will spend much of their week playing on the plastic grass and in the treeless yard of the ABC Learning Centre recently constructed in my home town.

**Background**

*I wonder…*
Being born into a family of teachers and being an opportunistic sort of person I have found myself visiting and exploring more playgrounds and preschool yards than I can count. While
walking in parks and playgrounds I find myself observing little children and watching their movements. I recall a group of young children in a typical park rambling all over a fallen tree trunk, rather than the climbing frames, I have watched a little girl at a local football match layering her own shadow with that of a tree and calling to her parents “Look! The tree has arms and legs!” and I have been fascinated by the myriad of responses as I’ve watched thousands of preschool and school children who visit the Royal Botanic Gardens Melbourne, and have myself as their teacher for two short hours in nature.

In my research journal I have recorded two such diverse examples:

“I had never seen children behave like this before. They barely opened their eyes, but walked around with vacant expressions… I kept telling the children to ‘be super good nature explorers’, to touch and collect. At the same time the teacher’s were saying, ‘Don’t touch that, don’t pick it up… it’s prickly’” (Research journal, 31/3/04).

“All the children began to sweep the [pine] needles into mounds and swirls with their hands. Some worked in groups to build large nests, big enough for three children, and decorate them with green needles and cones, others worked alone. Three boys, who had begun a needle throwing fight, now lay on the ground, carefully covering each other up to the neck with a thick blanket of needles. Here they lay with only their heads poking out, without speaking, just looking up with happy, peaceful smiles. I sat down next to the boys and looked up too, above our heads tiny slivers of blue sky poked through the drooping needles and the whole dome was spotted with clusters of pointed pine cones.

The children played for nearly 20 minutes before I had to move them on. This one tree had provided the children with varied opportunities for play, observation and discovery, with moments of joy and contented peace” (Research journal, 20/4/2005).

These experiences and the literature I will later discuss have begun a questioning within me…and I wonder… how do young children experience nature?
Statement of research question

_How do young children experience nature?

Guiding questions

- How does the child respond to nature in the preschool program and on an excursion to the Royal Botanic Gardens, Melbourne?
- How does the child interact with and use nature?
- What factors are seen to be significant in the child’s experience of nature? (Both innate and environmental influences)
- How is nature significant in the child’s development?
Definitions

- **Biophilia**: All human beings have an affinity for the natural world. Harvard biologist Edward O. Wilson calls this biophilia (Orr, 2005).
- **Competencies of Ecoliteracy**: Competencies of the Hands, Head, Heart and Spirit are cultivated through education, which focuses on teaching sustainable living and developing children toward becoming citizens capable of designing and maintaining sustainable societies (Barlow, Buckley, & Capra, 2005b).
- **Creationism**: Belief in the literal interpretation of the account of the creation of the universe and of all living things related in the Bible.
- **Ecological literacy/ ecoliteracy**: Understanding the principles of organisation that ecosystems have developed to sustain the web of life (Capra, 1999).
- **Ecophilia**: Literally a love for nature. To combat the fear and other manifestations of ecophobia, Sobel (1996) suggests that fostering ecophilia is “supporting children's biological tendency to bond with the natural world” (p. 6).
- **Ecophobia**: Literally a fear of nature. The fear of ecological problems and the natural world. Ecophobia, for some children, extends to the fear of being outside (Sobel, 1996).
- **Empathy and environmental sensitivity**: Empathy is usually defined as the “identification with or vicarious experiencing of the feelings, thoughts, or attitudes of another, but paradoxically it can also mean the imaginative ascribing to an object of feelings or attitudes present in oneself” (Chawla, 1998). Although Chawla (1998) identifies this ambiguity about the definitions for empathy, I believe that essentially, the child, through empathy is able to create a greater affinity for nature by looking beyond themselves and within themselves at once, feeling through another perspective.
• **Excursion/ field trip**: The American term ‘field trip’ and the Australian term ‘excursion’, will be used interchangeably to refer to organised departures from the school grounds by a group of students and teachers.

• **Loose natural materials**: Naturally occurring living and non living objects which can be moved and manipulated, e.g. leaves, rocks, gumnuts, eggs...

• **Low structure materials**: Play materials which the child can use in a wide variety of ways, opposed to a Thomas the Tank Engine toy, which can only be a train (Jenkinson, 2001). These may or may not be natural materials.

• **Natural environment**: An environment wholly or predominantly composed of non anthropogenic structures, including living and non-living matter. An untouched forest is a wholly natural environment, while a botanic garden is predominantly natural, it has been influenced by humans through the incorporation of roads, gazebos, garden edging etc.

• **Natural settings**: These are the partners to the ‘loose natural materials’ as they are naturally occurring living and non living objects which can be manipulated by the child, but are not loose. These fixed elements include trees, boulders, grassy areas and garden beds. They form the setting on a large scale for the child’s play, while also being the focus of play at times.

• **Nature**: Nature is not merely the natural physical world including plants, animals and landscapes, but encompasses a sense of all that which is natural and belonging to the earth, having to do with existing system of things derived from the Creation. Distinguished from that which is artificial or created by humans.

• **One-off experience**: A unique experience, such as an excursion, family holiday or discovery which is not repeated.
• **Outdoor environment:** Any environment which is not confined by a roof and walls, in reference to this paper, the outdoor environment of the preschool is often referred to as the ‘outdoors,’ ‘the outdoor area’ or the ‘play yard.’

• **Outdoor play:** Play which occurs outside of the preschool class room.

• **Place-based:** Place based education is learning that is rooted in what is local -- the unique history, environment, culture, economy, literature, and art of a particular place.

• **Play:** Play is “behaviour that is intrinsically motivated, freely chosen, process-oriented, and pleasurable” (Johnson & Ershler, 1982, p. 137).

• **Preschool and kindergarten:** In Victoria, Australia, a preschool or kindergarten is a children's service provided to educate children (usually under the age of five) before they are ready to attend primary school.

• **Sense of wonder:** “The sense of wonder is spontaneous, a prerogative of childhood… it is displayed as surprise and joy and is aroused as a response to the mystery of some external stimulus that promises ‘more to come’ or better still, ‘more to do’ – the power of perceptual participation in the known and unknown” (Cobb, 1977p. 27-28 ).
Chapter 2: Positioning the research

The following chapter “Positioning the research” presents a review of literature and ideas influential in this research. While background research guides and feeds into the structure and analysis of the case study investigations, the literature review also presents the position where this case study research can makes its home. Essentially, this chapter cushions the reader as a journey through “The Child in Nature” is travelled. The road which the reader travels on is well sign posted as the review of literature is presented in defined sections with clear sub-headings and encapsulating quotes. The sections follow each other in a logical sequence, similar to that of human growth, beginning with birth and development in the early years of life and progressing onwards in complexity; through discussions on what influences are present in childhood and how childhood influences the rest of the human life span.

The significance of the early years

The child is not a pilgrim, detached and self contained, but very much influencing and being influenced (Bowes & Hayes, 2001, p. 63).

Childhood is the most powerful period of our lives (Greenman, 1988, p 30). From infancy to age five, children pass through amazing and rapid stages of development. Never again in the human life is so much learnt in such a brief period (Hendrick, 1988, reprinted 2001). The early years of life, specifically children aged 4 and 5, have been selected as the focus of this research. This is a precious and important time for the child’s learning. The child’s development is both influenced by the world around them and by the biological course genetics has set before them. Throughout this text, the importance of acknowledging both inborn abilities and environmental influences in the child’s experience is discussed in terms of the child’s innate sense of wonder and connection to the natural environment alongside the effects of the
surrounding physical, social and cultural environments. It is this ability to be malleable and changed by what is around us which gives us a sense of power and possibility in choosing our destiny. Cobb (1977) goes so far as to state, “the ability to maintain plasticity of perception and thought is the gift of childhood…” (p. 35) This is a sentiment supported by Barlow, Buckley and Capra (2005) who write, “the values, habits, and worldviews of individuals are often set, and hard to change, by the time that people become adults” (para 1). It has also been said that the very early years of life provide the greatest opportunity for developing environmental attitudes and values (Stapp, 1978; Tilbury, 1994).

Bronfenbrenner’s Social Ecology Model (Figure 1) illustrates the child as both the centre of their own world and being influenced by being in the world (Bowes & Hayes, 2001, p. 8-9). The model makes visible the ways which children, families and the community influence one another on varying levels from individual interaction in a play area to the filtered down attitudes and ideologies of the predominant culture.
Figure 1: Bronfenbrenner’s Social Ecology Model (Bowes & Hayes, 2001, p. 9)
Children in cities

“Spontaneous unregulated play in neighbourhood spaces, particularly in affluent areas of cities, is increasingly becoming an activity of the past” (Malone & Tranter, 2003b, p. 6).

The research study The Child in Nature is carried out in the City of Melbourne, Australia. The children participating in the research, not unlike half the world’s children now, live in urbanised areas (S. Bartlett, 2002, p. 1). There has been much discussion on the changing opportunities of modern children for play outdoors in natural settings. Increases in urbanisation and industrialisation, diminishing open spaces in Melbourne and a fear of safety is isolating young children from the natural world (ARCUE, 1999; BGCI, 2004; Malone & Tranter, 2003a; Nabahan G & Trimble, 1995). Many are alarmed, as they see the valuable outdoor play experiences, which occur in childhood, “evaporating like water in sunshine” (Rivkin, 1995, p. 2). Education has come to be viewed by society as “solely an indoor activity” (Orr, 1992, p. 87) and home-based leisure and organised activities are predominantly indoors, as indicated by the longitudinal research by landscape architect Marc Francis (1995).

Francis (1995) interviewed gardeners in California and Norway, in order to illustrate the meanings people attach to childhood gardens. A sense of longing for childhood gardens and a desire to recreate them was discussed. Francis (1995) reveals that over the last 20 years favourite childhood places have become less naturalistic and more controlled and structured. Francis (1995) quotes Louv’s (1990) statement, that childhood has become more restricted, “with much less time spent outside the home without the direct supervision of adults” (p. 9). This is his reason for identifying the childhood of today as ‘a childhood of imprisonment’ (Francis, 1995).
Similarly, Fjørtoft (2004) notes,

“A generation ago, children had access to wild lands and used them for exploring, challenging and exercising the skills needed to master a challenging landscape and unforeseen situations. Today, children’s physical play environments and facilities for play are changing and the opportunities for free play in stimulating environments seem to be declining” (p. 22).

This is of concern as numerous studies (Bixler, Carlisle, Hammitt, & Floyd, 1994; Disinger & Roth, 1992; Wilson, 1996) demonstrate that predominantly participating in indoor recreation and indoor schooling is putting many young children at risk of never developing positive attitudes and feelings toward the natural environment or achieving a healthy degree of competency on the environmental literacy continuum.

More recently Richard Louv has taken a dramatic stand to suggest that there is a link between alienation from the natural world and today’s childhood maladies of attention-deficit disorder (ADD), attention-deficit/hyperactivity disorder (ADHD), obesity, and depression (Wiser, 2005). Louv (2005) believes that “society has disengaged children from nature and imposed on them an artificial environment for which they have not evolved” (p. 71). In an artificial environment children and adults alike would suffer from what he calls “nature-deficit disorder,” a condition caused by the cumulative effects of human choices (Louv, 2005, p. 70).

Another perspective which describes the negative effects of being isolated from nature is the effect to the human spirit and emotion. Sobel (1996) describes ecophobia as being one of these negative symptoms. Ecophobia is a fear of the natural world and ecological problems in it and it develops early in life. Zena Barlow of the Centre for Ecoliteracy describes the unfounded fear and the violence towards nature which can result. She recalls a research project in a San Francisco preschool where the children were divided into two groups, one which used the
environment for learning, and the other did not. The children in the first group, learnt to change their behaviour to respect nature so that, one day, a bird landed on a child’s hand. “By contrast, children in the non-environmental group often threw rocks at birds” (Jensen, 2002).

Wilson (1994a) also describes children expressing fear, dislike and violence towards aspects of the natural environment. When close to butterflies and baby birds she observed children’s responses to include: “Kill it”, “Grab him and rip him apart”, and “Step on it”.

Wal’s book *Pollution Stinks* (1994) outlines a study on young adolescents’ perceptions of nature. This study also demonstrates that a lack of positive experiences in nature causes young people to view nature as a threatening place. In the study Wals (1994) identified that the students’ perception of nature was based upon “a combination of their own fantasies and the unspeakable acts that occur in local parks, which are often well documented by the media” (p. 132). In their home neighbourhood, the students feared the forest and trees in it. One student remarked that they would prefer forests with “just enough trees to give you shade, but not enough for murderers and rapists to be able to hide behind them” (p. 135). While students also identified nature as a peaceful place to reflect and a place for learning, the social environment surrounding the students created a feeling of a lack of safety in their home city. As a result, even far away from this city the student found it difficult to build a relationship with nature and explore it (Wals, 1994).

In contrast to the masses of negative literature Ross (2004) tells another tale. Her research of Scottish 10-12 year olds found that “the rise in home-based leisure and organised activities ... is not at the expense of children’s general outdoor play” (Ross, 2004, p. 3). The children in this study still played traditional games and had time and space to use their local area in an
'unstructured' way. For many children in this study, making use of natural and unkempt environments was still viewed as an everyday part of growing up (Ross, 2004, p 3). This story is a small ray of sunshine, that in various areas there are still children who are able to play independently and freely in such environments. However, the rarity of such research gives way to concerns that such discoveries may also disappear should the trend of the “childhood of imprisonment” continue.

A sense of wonder

“The most beautiful thing we can experience is the mysterious. It is the source of all true art and science. He to whom this emotion is a stranger, who can longer pause to wonder and stand rapt in awe is as good as dead; his eyes are closed”

Albert Einstein in I Believe: A Personal Philosophy (Greenman, 1988, p. 44).

The writings of Rachel Carson (1956) are central to a philosophical framework for environmental education that is focused on the child’s experience of nature as being full of wonder and delight. Her intent is to allow children to learn from nature in an organic way. To illustrate this, she describes walks in the woods with her nephew Roger,

“I have made no conscious effort to name plants or animals, nor to explain to him, but have just expressed my own pleasure in what we see, calling his attention to this or that but only as I would share discoveries with an older person. Later I have been amazed at the way names stick in his mind… I am sure no amount of drill would have implanted the names so firmly as just going through the woods in the spirit of two friends on an expedition of exciting discovery” (Carson, 1956, p. 18).

Carson (1956) contends that, “it is not half so important to know as to feel” (p. 45). According to David Sobel (1998-1999) this “empathy between the child and the natural world” (p. 3) should be the main objective in early childhood. He believes the feelings that cultivate a sense of
connectedness to nature become the emotional fountain for abstract understandings later in childhood. Rivkin (1995) supported this as she wrote, “When children learn to live harmoniously and caringly with the environment they are learning an important part of living in harmony with other people” (p. 66).

All too soon children are distracted from the wonder of trees along a riverbank and the whispers of wind in the tall grass, to the mechanical buzz of computers and the hustle of shopping complexes. In nature everything is unique, no two shells are ever identical; in a culture of consumerism and television everything is mass produced and distributed world wide. “In our eagerness to expose young children to the wonders of our technological society, we overlook the learning potential of common, ordinary, everyday experiences” (Redleaf, 1983, p. 1).

Capra (1999) reminds us how the ordinary things are extraordinary. He describes how growing, cooking and eating is an ecology that touches children’s hearts and makes it important to them. “For children being in the garden is something magical” (Capra, 1999, p. 8).

Orr (2005) also identifies something ungraspable in the universe which is found only in nature, life and human possibilities, the ‘third thing’ which makes hydrogen two parts (H₂) and oxygen one part (O) into water (H₂O) and “nobody knows what it is”(para 4). He calls it ‘magic,’ the magic children find in trees, water, animals, landscapes and their own places(Orr, 2005). The ‘sense of wonder’, the ‘third thing’, ‘magic’, others may call it ‘the breath of God’, infused in all nature at creation, is how people begin to make sense of their place. “For it is through wonder, rather than books and words, that we come to know the world. In addition to knowing the world, the children also come to know themselves” (Cobb, 1977, p. 27).
Innate senses

*Children must have unstructured interaction with nature and participate in the wonders of natural process.* (Francis, 1995, p. 9)

There is a common idea among researchers of children in the natural environment, that all humanity has an affinity for the natural world. Some examples of flagship research include:

- Edith Cobb (1977) concludes that early school-aged children “seem to have a special intense perceptual engagement with the natural world” (Hart, 2003, p. 18);
- Rachel Carson (Carson, 1956, p. 42) mourns the loss of this ‘clear-eyed vision’ of the world;
- David Sobel (1996) believes this “biological tendency to bond with the natural world” (p. 6) must be supported; and,
- Harvard entomologist Edward O Wilson coined the term ‘biophilia,’ as referring to humans’ love of living things and our innate affinity with nature (Orr, 2005).

While Sobel (1998-1999) believes in a natural tendency to bond with nature, he also implies that this connection will be temporary unless it is supported through ecophilia. *Ecophilia* can broadly be described as the actions of loving nature, from planting a tree to caring for a pet. Rachel Carson (1956) also warns that if neglected and unsupported, this “clear eyed vision, [this] true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood” (p. 42).

Myers and Saunders (2002) coined the term ‘natural care’ to describe an innate connection to the natural world. This resulted from a belief that the behaviour they observed of young children freely caring for animals was an inborn and not a learnt behaviour. They stress the value of
these innate senses to the child’s spiritual development and suggest that this strong ‘caring for animals’ sense is the basis for the formation of values and morals (Myers & Saunders, 2002).

Pioneering educator Maria Montessori wrote of this connection to nature in her famous book *The Montessori Method* (1912). In the chapter “Nature in education” Montessori discusses the case of a ‘wild child’ who had “grown up in the natural state: criminally abandoned in a forest…” (1912, p. 149). Montessori describes how the child had, in his life, “immersed himself in, and unified himself with, nature” (Montessori, 1912, p. 150). His sources of entertainment, delight, companionship and love had been “rains, snows tempests and boundless space” (Montessori, 1912, p. 150). Here, Montessori clearly writes of a ‘sense of wonder’ in nature, which she perceives as enveloping the child with simply joys.

These ideas of ‘natural care’, ‘biophilia’ and human values are discussed further in Chapter 6: "Analysis and discussion", where they form a basis for exploring the ways case-study children experience nature.

**The influence of nature**

“*People murder a child when they tell him to keep out of the dirt. In dirt there is life itself.*”

*George Washington Carver* (Greenman, 1988, p. 184)

“What is the value of preserving and strengthening this sense of awe and wonder, this recognition of something beyond the boundaries of human existence? Is the exploration of the natural world just a pleasant way to pass the golden hours of childhood or is there something deeper?” (Carson, 1956, p. 68). Carson (1956) answers this question herself as she writes how those who dwell among the beauty and mystery of the earth are never weary of living, and
“those who contemplate the beauty of the earth find reserves of strength that will endure as long as life lasts” (p. 68).

While many of the negative consequences for separation from nature have been discussed, there is also much to report on the positive development for the child socially, emotionally, physically, spiritually and cognitively, through optimal interactions in nature.

Research indicates that:

- After contact with nature children with Attention Deficit Hyperactivity Disorder (ADHD) are able to concentrate better (Louv, 2005);
- Children who play regularly in nature show more advanced motor fitness and are sick less often (Fjørtoft, 2004; White, 2004), their play is more diverse, creative and imaginative, fostering language and collaborative skills (Fjørtoft, 2004; R. Moore & Wong, 1997);
- Exposure to nature improves cognitive development, increasing awareness, reasoning and observation skills (Pyle, 2002);
- “Green spaces may enable children to think more clearly and cope more effectively with life stress” (Louv, 2005; Wells & Evans, 2003) and instil a sense of peace (Crain, 2001);
- “Outdoor environments are important to children’s development of independence and autonomy” (White, 2004, Benefits of Naturalized Playgrounds section);
- In school, play in diverse natural environments reduces or eliminates antisocial or violent behaviour (Malone & Tranter, 2003a); and,
- Interactions with nature in the early years of life helps children develop a sense of wonder, an imagination, powers of observation and creativity (Cobb, 1977; Crain, 2001; Louv, 1991).
Nature experiences of childhood influence our whole life. Francis (1995) noted how the adults in his study, were always trying to recreate some of the qualities and images from their early experiences of gardens; as favourite memories of childhood gardens spill over into present. Developing environmental values is also an important part of nature experience and is the driving force behind much research in this area. It is positive childhood experiences out of doors, which represent the single most important factor in developing a personal concern for the environment (Palmer, 1993; Tanner, 1980).

The value in developing ecological literacy extends beyond conservation concerns to developing the child’s hand, head, heart and spirit. Thirty years ago Sava (1975) described how through nature children learn to respect living things, understand relationships and learn processes for observing the world around them. Today, the Centre for Ecoliteracy, Berkley CA, extends this thinking and describes education for sustainable living as cultivating competencies in children of the head, hands, heart and spirit. This enables children to develop towards becoming citizens capable of designing and maintaining sustainable societies. For, “when children learn to live harmoniously and caringly with the environment they are learning an important part of living in harmony with other people” (Rivkin, 1995, p. 66).

**Hand, head, heart and spirit**

*Every subject known to humans has its roots in the natural world; nature is therefore, central to education from birth onwards (Humphryes, 2000, p. 16).*

Montessori (1912) wrote about the ‘modern education’ of her time as being prejudiced against spiritual expression and needs of children. She cautioned that,

"The education which a good mother or a good modern teacher gives today to the child who, for example is running about in a flower garden is the counsel not to touch the
flowers, not to tread on the grass; as if it were sufficient for the child to satisfy the physiological needs of his body by moving his legs and breathing fresh air. But if for the physical life it is necessary to have the child exposed to the vivifying forces of nature, it is also necessary for his psychical life to place the soul of the child in contact with creation, in order that he may lay up for himself treasure from the directly education forces of living nature” (Montessori, 1912, p. 155).

Ideas of ‘modern education’ have changed markedly in the past century, however spirituality seems to be the greatest domain of development left behind, in a curriculum which focuses on body and brain.

Froebel (1782-1852), founder of the “kindergarten”, felt it was important for children to feel spiritually connected to the world around them” (Fraser, 2000, p. 114). Cobb (1977) also felt that these relationships with the systems of nature was essential. She called “direct organic participation... in systems of nature, an event deeply connected with mental and spiritual health” (Rivkin, 1995, p. 2). And this spiritual connection has vast implications for the environment, as environmentally sensitive children and adults begin to understand their own connection to the natural world, the cycles, circles and links between the systems in nature demonstrate an organic way of living on earth (Capra, 1999). Experiencing nature and all its “natural objects can help adjust one’s thoughts about ones place in a greater system” (Myers & Saunders, 2002, p. 166). This “systems thinking” builds into ecological literacy which itself is: “Understanding the principles of organisation that ecosystems have developed to sustain the web of life” (Capra, 1999). The pedagogy surrounding ecoliteracy can simply be described as “a process of organised engagements with living systems and the lives of people who live by the grace of those systems” (Orr, 2005).
In this way ecological literacy is more than ecophilia, it involves the head, hand, heart and spirit.

The Centre for Ecoliteracy lists these four competencies as part of a vision for children, developing them toward becoming “citizens capable of designing and maintaining sustainable societies” (Barlow et al., 2005b, para 2). The four competencies can be summarised in the following way.

- The head is for ecological knowledge, thinking systemically, creatively and critically.
- The hands are for practical skills and the ability to apply ecological knowledge.
- The heart is for empathy, a commitment to equity, justice, inclusivity, and respect for all people and a deeply felt concern for the well-being of the Earth and of all living things.
- The spirit is a sense of wonder, reverence and place. “A feeling of kinship with the natural world, and the ability to invoke that feeling in others” (Barlow et al., 2005b, last para).
Therefore, ecoliteracy can be defined as understanding the principles of ecosystems and "using those principles for creating sustainable human communities" (Capra, 1997, p. 3). In fostering the development of ecoliteracy in children teachers and parents are equipping them with a framework of guiding principles for creating sustainable learning communities (Capra, 1997).

Ecoliteracy is many things; hand, head, heart, spirit. Systems thinking is encouraged among a long list of qualities, but this is only just beginning in early childhood and first children need to make a foundation for what they can learn later. In the following section I discuss what literature has to say about developmentally appropriate ecoliteracy.

**Empathy**

“Our goal as educators is to present a sense of hopefulness to students, and the competence to act on that hope.” David Orr (Janas, 1999, para 19)

Early childhood is the beginning of life and some writers suggest early interactions with nature must begin with empathy and environmental sensitivity in order to maintain biophilia and nurture learning from the surrounding environment.

Sobel (1998-1999) compares ecophobia – fear of ecological problems, with maths phobia. To combat this, in maths children use concrete materials, blocks and counters, and ground their understanding of math into everyday life problems. In environmental education Sobel (1998-1999) asks that teachers steer clear of curricula focused on saving the Earth, rainforest destruction and ozone depletion. Children should not be asked to deal with problems beyond their understanding and control, it is all too abstract, too early. Sobel fears this way of teaching
about nature will “end up distancing children from, rather than connecting them with, the natural world” (1998-1999, para 6).


In *Empathy* children are encouraged to feel for the creatures living in the natural world and form a connection, which serves as the foundation for more abstract ecological concepts. “Stories, songs, moving like animals, celebrating seasons, and fostering Rachel Carson’s ‘sense of wonder’ should be primary activities during this stage” (Sobel, 1998-1999, para 17).

Others in this field write of the entry level for environmental values as *Environmental Sensitivity*, which can be defined as “a set of affective attributes which result in an individual viewing the environment from an empathetic perspective” (Peterson, 1982, p. 5) and also involves no requirement for ‘taking action’.

Although Chawla (1998) identifies ambiguity about the definitions for empathy, it is reasonable to state, that through empathy the child is able to create a greater affinity for nature by looking beyond themselves and within themselves at once, by feeling through another perspective. Environmental sensitivity, according to Tanner (1980), “contribute[s] to the creation of citizens who will work to maintain a varied, beautiful, and resource-rich planet for future generations” (p. 20).
Significant adults

“If an appreciation and love for the outdoor environment is developed in childhood, it will be a lasting one” (Elliot, 2003b, p. 1).

While the roots of environmental concern may lie in young children’s initial fusion of their own feelings with their sensations of the world, thus forming the basis for a sense of the world as a living being to which they are attached, parents or other role models may reinforce this view of the world (Chawla, 1998).

Central to Carson’s (1956) philosophy is the role of adults in fostering environmental values. She writes: “If a child is to keep alive his [or her] inborn sense of wonder... he [or she] needs the companionship of at least one adult who can share it, rediscovering with him [or her] the joy, excitement, and mystery of the world we live in” (Carson, 1956, p. 45).

Many echo of the words of Carson (1956), the recent writings of MacNaughton and Williams (1998) state children must be empowered to investigate, but do this with the support of an adult. And Sobel (1998-1999) similarly states, “No rainforest curriculum, no environmental action, just opportunities to be in the natural world with modelling by a responsible adult” (para 9).

The influence of adult role models on child development is certainly significant. Chawla (2002) writes of a study in which environmental activists were asked the source of their interest in nature, 77% of participants mentioned family members who “simply demonstrated how to be in nature with a secure attentiveness” (p. 213).
The role of the teacher is crucial in supporting and nurturing the child’s relationship with the environment (Malone & Tranter, 2003b) and this is done in many ways. The teacher’s program, physical set up and individual interactions with the children all come into play. Piaget (1896) viewed sensory, ‘hands on’ learning as preferable to adult directed ‘teaching,’ as children use their senses to discover and construct understandings (Elliot, 2003a; Wilson, 1996). However, Bartlett & Sheridan (1993) flag a change in the role of the teacher, claiming that the once quite popular notion of giving children a sufficiently rich environment, and letting their spontaneous interest in learning do the rest, is limited. According to Bartlett & Sheridan (1993), educators must be drawn to a more Vygotskian approach, and to a more active role for the teacher. Vygotsky is famous for his ideas in ‘scaffolding.’ Scaffolding “refers to the support provided by adults in order to assist children as they come to understand, know and to do things that they would not be able to achieve on their own” (Dockett & Fleer, 1998, p. 188). This idea shifts away from teaching strategies where the physical environment was set up and the teacher waited to see what the children would do. Instead, a social constructivist view of learning takes place, which emphasises the belief that learning takes place in social contexts and is socially constructed (Dockett & Fleer, 1998; Rogoff, 1990). However, Myres and Saunders (2002) warn, the environmental educationalist must be cautious when using a social constructivist view, as there is the danger of depreciating the value and meaning of the environment in itself and for the child. Chawla (2002) supports this in her advice that “only those who believe nature to be a living whole with intrinsic meaning find childhood a period of insight” (p. 204). These ideas will be discussed further in the “Chapter 3” section titled “Theoretical Perspective.”

According to Carson (1956), MacNaughton and Williams (1997) and Wilson (1996) the role of the adult, is more than just guiding and breaking down tasks for children to progress through. The adults role also includes a personal element of demonstrating an interest in, and
enjoyment of, the natural world. David Orr (2005) writes that biophilia (that tug towards life) is strongest in early childhood and “properly cultivated and validated by caring and knowledgeable adults, fascination with nature can mature into ecological literacy and eventually into more purposeful lives” (para 2).

**Nature in the preschool program: Excursions and playgrounds**


Early childhood specialists, such as Emily Sedgwick Galvin (1994), often view children as ‘natural naturalists’ with an inbuilt desire for curiosity, joyful exploration and wonder. In such a case, nature study with children is easy, ‘just allow children to discover things for themselves’ (Galvin, 1994, p. 4). However, this is a somewhat simplistic view that assumes all children have retained their inborn sense of wonder and do not experience ecophobia. Galvin (1994) surely needs to ask some pertinent questions before embarking on this ‘easy’ nature study: Are children really interested in nature, why and why not? Has isolation from nature and constant multi-media stimulation affected the child’s response to nature? If the child has lost his/her inbuilt sense of wonder in what way does this affect the child’s experience of nature?


Direct experience involves having physical contact with plants, animals and habitats that function in natural settings independent from human support or control. Kellert (2002) describes this experience as including the spontaneous play in a back yard or nearby forest/bushland.

Indirect experience includes physical contact with nature, which has been restricted or programmed, such as a visit to a botanic gardens, science museums and aquariums. “Nature
in these situations is usually the product of deliberate and extensive human mastery”(Kellert, 2002, p. 119).

Vicarious experience of nature is through books, videos or a window and children restricted to these experiences have limited understandings, as fewer senses have been used to create a view of the world. This is why playgrounds and play experiences need to be set up with “as many as possible of the sensory experiences to be found in the world included in it” (Greenman, 1988, p. 177). The more varied children’s exposure to first hand experiences are, the richer their understanding becomes (Redleaf, 1983).

Tangible, ‘real world’ experiences stimulate the senses and feed the mind. Malone and Tranter (2003a) describe the child’s way of knowing the natural world as ‘unique,’ ‘direct’ and experiential.’

An excursion into the ‘real world’ is one way of providing ‘hands on’ experience. Teachers and principals who were recently interviewed for the Victorian Education Times commented on their reasoning for using excursions and what elements they considered when selecting a destination. These teachers looked for excursions which allowed students to tap into experts in the field of study, allowed students to experience learning in different ways not possible in a classroom and provided an opportunity to extend ideas, drawing the threads together to create a big picture (Butler, Kelly, & Penson, 2005).

One study addressing the value of excursions declared them educationally good based on their memorability. The studies indicated that 98% of 130 teenagers and college students surveyed could remember trips attended in junior school (Falk & Dierking, 1992; Kneebone, 2002).
Christine Joy of the Royal Botanic Gardens, Melbourne, has discussed with me, how memory and feelings are an important part of the values and philosophy surrounding their early childhood programs. She believes that botanic garden excursions can form one-off powerful experiences which can have a lasting effect on the child's perception of the outdoors.

However, in contrast, Malone (2004) questions the use of a ‘one-off’ educational experience. She writes, “The one off ‘educational’ experience provides a certain type of learning but does little towards the nurturance of the child’s connection and appreciation of nature” (p 14). Malone (2004) states that while botanic gardens play a critical role in the battle over land use in a rapidly urbanising world, their value is greater for children who can access them regularly and in a free and emergent way, aligned with the way children naturally learn.

Nature in the preschool program: Play spaces

“It is possible to compile extensive lists of creatures seen and identified without ever once having caught a breathtaking glimpse at the wonder of life” (Carson, 1956, p. 83).

Children participating in my study spend from 10 to 32.5 hours a week in preschool programs. It is therefore important to consider the physical environment of the preschool and in what ways it influences the preschool program, interactions of children and the atmosphere of the centre. The Reggio Emilia philosophy calls the physical environment, the Third Teacher, because of its power to communicate values (e.g. space, aesthetics), attitudes and ideas (Fraser, 2000).

“Space communicates with people, in a very real sense it tells us how to act and how not to act... If a play space is interesting to children, they are likely to play in an interesting way” (Kritchevsky, Prescott, & Walling, 1977, p. 9). Malone and Tranter (2003a) observed this link
between behaviour and the physical environment in their national study on school grounds. They noted, in the schools where little or limited access to natural elements were provided, children were more likely to engage in anti-social or destructive behaviour and felt less able to engage in imaginative or creative play activities (Malone & Tranter, 2003a).

Cobb (1977) writes that “nature for the child is sheer sensory experience” (p. 29) and therefore, the preschool must be set up as “a rich multi-sensory learning environment – the shapes and textures, the colours, smells and sounds of the real world- is essential for the full cognitive and emotional development of the child”(Capra, 1999, p. 8).

Ross (2004) records how one girl remembers a tree at her school:

“You play hide and seek, some people climb up trees and hide in the trees, and then before the storm came there was a massive tree and that used to always be our den, but I don’t know what it’s going to be like this year, cause that tree used to be everything to us, cause when we were playing rounders that used to be our main base, and when we were playing hide and seek, and when we were playing football, that used to be like the goals, so it’s not there any more.” (Ross, 2004, p. 2)

This demonstrates a positive situation for a child, where trees and the surrounding environment form a basis for play. The following stories from Dockett and Fleer (1998) report of two children in an environment which does not provide opportunities for play in the environment:

“We can’t play football, 'cause there's no grass. And we can’t play on the asphalt 'cause we might fall over.” Boy aged 8 (Dockett & Fleer, 1998, p. 276)

“…we’re not allowed to play any game that has running – no running games at all! Then they say we can play them on the grass, but we haven’t got any grass! Or they say we can play it at the bottom of the playground – but we’re not allowed to go down there!” Girl aged 12 (Dockett & Fleer, 1998, p. 268)
Francis (1995) has already been quoted above as identifying how childhood places have a powerful influence throughout the lifespan; in his research he recorded adults recreating the gardens of their childhood (Francis, 1995). Fraser (2000) asserts teachers must take these ideas into consideration when planning an environment where children will spend long periods of time, “[teachers] need to think of the effect this environment may have on [the children’s] adult lives” (Fraser, 2000, p. 52).

**Botanic gardens**

“And the Lord God planted a garden in Eden.” *Genesis 2:8*

The garden is not merely that strip of plants and grass out in the backyard, if the individual’s concept of the garden can be expanded, there can be a jumping over the fence; to the schools, vacant blocks, waterfronts, shopping centres and football ovals scattered across neighbourhoods. “As children and adults populate and become more comfortable with the garden, our public landscape- neighbourhoods, parks, natural areas, and public spaces- can then become gardens, transformed into accessible and healthy childhood places” (Francis, 1995, p. 13).

The children in this study were observed in a botanic garden and the preschool outdoor area, so it is helpful to view the role of botanic gardens and ideas for education surrounding them. Botanic gardens serve as some of the last accessible green spaces for urban and suburban children, as cities are becoming increasingly overcrowded and dominated by anthropogenic concrete structures both above and below the earth. Malone (2004) describes these oasis gardens as ‘holding environments’ and “key places for children and their families to fully
experience and engage in living with nature (albeit a human constructed and designed nature)” (p. 1).

Children and gardens together are becoming more popular, particularly in the City of Melbourne, where this research is based. The recent development of the Ian Potter Foundation Children’s Garden has generated a huge interest, due to its novelty, availability and the constant media attention it hosts. Similarly, new books, such as television personality Jamie Durie’s “Outdoor Kids” (Durie, 2005) are aimed to capture a mainstream market.

Botanic gardens are amazing environments where human intervention has used the natural building blocks of this planet to designed spaces which “advance the knowledge and enjoyment of plants, and to foster their conservation” (Royal Botanic Gardens, 2004, para 4). The Royal Botanic Gardens, Melbourne (RBG) excursion programs aim to educate children by and through nature, and the simulation of the senses in a real and accessible garden. During 2003, the education service at the RBG involved 22,144 students in journey’s into the world of plants, 2,395 of these were pre-school children.

However, only recently have botanic gardens recognised the value in “designing specific spaces for young children below eight years of age” (Hart, 2003, p. 16). ‘Children’s gardens’ are being developed around the world, such as Ithaca Children’s Garden, USA; Midway Plaisance Children’s Garden, Chicago, USA and the Ian Potter Foundation Children’s Garden, Melbourne, Australia.
Recently Dawn Sanders (2004) and Sarah Kneebone (2002) both independently conducted research within the Chelsea Physic Garden, London and Eden Project Gardens, Cornwall, UK, respectively. Both researchers investigated children between the ages of seven and eleven. Kneebone (2002) evaluates the effectiveness of the interpretation and education programs at the Eden Project in passing on environmental awareness to children. Her aim was to assess whether the ‘take home’ message of the garden’s programs was being taken home. Kneebone (2002) discovered that children were taking in new information and increasing their understanding of plants and particularly their uses. However, in some areas, such as understanding some plants are endangered, the children became even more confused than before their trip. However, 92% of children who attended the program and completed the survey questionnaires had an increased interest and a more positive attitude toward plants which were initially viewed as ‘boring’ or ‘for old people’ (Kneebone, 2002).

Botanic gardens hold great potential for environmental learning; however there is little research in the area of early childhood. My research study will extend recent research in botanic gardens and children’s experiences into the early years of life, in particular children aged four and five.

**Reciprocation for the planet and the people**

*Learning in the school garden is learning in the real world at its very best and one of “the best ways to become ecologically literate* (Capra, 1999, p. 8).

Why should the health and needs of children be discussed in relation to the physical environment? Capra (1999) explains, “Throughout the living world, we find systems nesting within other systems” (p. 3). Every animal, plant or person is a living system, within these organisms there are cells or leaves and these are also living systems. All these systems and cycles of life work together to create the “web of life” (Capra, 1999, p. 4).
E. O. Wilson and others suggest that a belief that human kind evolved in a natural environment means “technology cannot replace, but only atrophy the development of our links to nature. If this is the case children reared apart from nature are necessarily limited” (Rivkin, 1995).

The human connection to the natural environment is innate from creationism, which has been documented throughout time in religious texts. The Bible states that “the LORD God formed man of dust from the ground, and breathed into his nostrils the breath of life; and man became a living being” (Genesis 2:7, Revised Standard Version). In Genesis 2:15, the connection between people and plants is illustrated; “the LORD God took the man and put him in the garden of Eden to till it and keep it” (Revised Standard Version). Nature is receiving guardianship by people, who are put on earth to tend and “keep it” (Genesis 2:15, Revised Standard Version). Montessori writes that it is also necessary for the child’s spiritual development for the teacher to “place the soul of the child in contact with creation, in order that he may lay up for himself treasure from the direct education forces of living nature” (Montessori, 1912, p. 155).

In this way environmental education and sustainable living creates a reciprocation between humans and the environment, made essential to us, through our “very real biological connection with the natural world” (Elliot, 2004, p. 1).

Children are growing up in a different world to their parents and grandparents and education must now address the new needs of children, which are no longer ‘naturally’ being catered for in the community. “Children along with the rest of society are losing the chance of ever knowing certain things” (Rivkin, 1995, p. 7), such as hearing traditional stories, harvesting plants and
raising animals. Kahn and Kellert (2002) propose that; “with each successive generation we become more removed from the natural environment” (Elliot, 2004, p. 4). They call this ‘environmental generational amnesia.’ This occurs when the environment which individuals are in contact with is taken to be the norm, and is then used as a benchmark to measure the environmental degradation seen in their life against it. Each generation that follows, in its childhood, then takes that new degraded situation as the normal situation (Kahn, 2002). In this way individuals become complacent with the gradual destruction of the environment, and the knowledge, understanding and experience of a truly natural and unpolluted environment is confused or lost.

Orr (2005) believes that to “help open young minds to the awareness of the forgotten connections between people, places and nature... we need a transformed curriculum and schools as the start of a large process of change” (p. 1). He believes that starting in schools the connection process will filter into our ‘communities and culture beyond.’ It will begin with everyday things; “the trees along the banks of streams, the lives of ordinary people, the stories we tell and the excitement of children” (Orr, p. 1).

**Early childhood education**

*Wonder, the beginning of knowledge...* (Sava, 1975, p. 117)

Fifty years ago Carson (1956) sought to remind human kind that childhood experience in nature has a “crucial and irreplaceable effect on physical cognitive and emotional development” (Kahn & Kellert, 2002, p viii). As mentioned in the section entitled “Australia: Current support in the early years, p. 11,” very little research in Australian early childhood centres has gone beyond anecdote and assumption. Eco-literacy in early childhood is new and an area which
has “really been left out in terms of environmental education. There’s a huge void there” (Hamilton, 2003, p. 5).

Malone (2004) also believes that the provision of child/garden interactions must be situated within an understanding of children’s needs and preferred learning styles, based on contemporary research. Chawla (2002) notes a significant gap in research, in the area of environmental education. She writes, “Up to this time… research is dominated by attempts to understand children’s knowledge and attitudes about nature and their reasoning about environmental problems” (Chawla, 2002, p. 221), rather than the human experience of nature. Although caring for the environment is important and a vital part of environmental learning, the child, as well as the environment, needs protection simultaneously. My research study aims to beginning filling this void by studying the emotional response of children, their attitudes and abilities. The following, theoretical perspective describes the frame within which this research lives.
Chapter 3: Methodology and methods

When researching children, adults need to be alert to little things, often taken for granted, which children are taking in (Redleaf, 1983, p. 3).

Theoretical perspective

The theoretical perspective provides a lens through which to analyse and interpret the data. In researching the child in nature, I have sought at all times to be qualitative; striving to describe individual childhood experiences, allowing the children’s actions to reveal insights into the quality of their play and interaction with nature. Therefore, I have used an epistemology that is primarily concerned with “understanding humans acting and interacting” (Crotty, 1998, p. 67). Crotty (1998) describes Interpretivism in that way. Furthermore, “interpretivist epistemologies can, in one sense, be characterised as hermeneutic,” (Schwandt, 2000, p. 193) because they emphasise that one must grasp the whole, in order to understand the part or particular action.

Although hermeneutics historically searches for meaning within texts and language, it can be extended to a search for meaning within the ‘texts humans write’ (Crotty, 1998). Crotty (1998) extends this scope to the art humans create and the actions they perform as these “are all expressions of meaning. Inquiring into that meaning is much more like interpreting a discourse or a poem” (p. 94), than investigation through experimentation as one would in physics or chemistry. In such a way, the child becomes the author and their actions and character the text. In following through with this symbology the results of children are reported in vignette style. As the stories are told, the reader is encouraged to connect to them personally. Rather than quantifying and graphing behaviour, the world of the whole child is seen at once and a search for meaning in their actions takes place.
In Chawla’s (2002) article *Spots of time, manifold ways of being in childhood*, she weaves poetry and pose in and out of the text to explore the magical connections some children find in nature, which form high points in their childhood and go on to affect adult life. This eloquent approach also inspires a rather descriptive theoretical perspective. The research study *The Child in Nature* began, as described on pages 12 and 13, from my own sense of wonder at the interactions of children in nature. Armed with a beautiful copy of *The Sense of Wonder* (Carson, 1956) I carefully created a project which would answer the question “How do young children experience nature?” As the research developed the theoretical perspective developed alongside it, fuelled by literature which reflected the literary beginnings of the study. Like the children in the case studies the thesis itself is like a story, introducing many interesting characters (the children) and essentially leading the reader to the final climactic chapter (Chapter 6: Conclusion) where the characters individual stories play a supporting role in an examination of the quality of play and interactions, and answering the thesis question. The following discussion on developing a theoretical perspective debates literature on hermeneutics, selected because of its literary origins.

In Chawla’s (2002) article, described above, she (2002) uses a *hermeneutics of recollection*, which “seeks to uncover a plenitude of coexisting meanings”(p. 204). She reminds us that the central question of hermeneutics is: How do I know and interpret the voice of another? And refers to the 18th Century German theologian, Friedrich Schleiermacher, and to his contemporary William Wordsworth, the famous Lake District poet. Both, Schleiermacher and Wordsworth concluded that a question of hermeneutics could be answered through the method of imaginatively projecting ourselves into another and sympathetically knowing the other, ‘from the inside.’
I find these ideas comparable to those surrounding ecoliteracy today. This idea of sympathy is quite reminiscent of Sobel's ideas of empathy, understanding nature by projecting ourselves into it.

Chawla (2002) also writes that Schleiemacher and Wordsworth's beliefs gave way to a social constructivist way of thought; as they believed that this 'projection of ourselves' is made possible through a very real bond which connects us to other people in the universe. It is indeed, now a common idea that nature, or anything, matters only in our social and cultural construction of it as a symbol in a meaningless world. Saunders and Myres (2002) identify the danger here; "If the meaning of nature boils down to nothing more that what our cultures make it out to be. This undercuts the ways that nature is compelling in its own right" (p. 153). And so I cannot fully grasp Schleiemacher and Wordsworth's hermeneutics. However, I see their idea of a bond between people and "the things in the universe, past as well as present" (Chawla, 2002, p. 205) as being unexpectedly close to E. O. Wilson's idea of biophilia and Capra's writing on systems and our connection to all things living, despite their difference of opinion on a 'meaningless world'.

Other theoretical frameworks ask the researcher to understand by putting aside our usual understandings, such as phenomenology or, as in the case of hermeneutics of suspicion; the researcher immediately assumes the research proposition as false. I fear that in using these other perspectives, the important meaning ever present in all living things may be dismissed. Moreover, by acknowledging the surrounding wisdom, I can better ponder on the purpose of childhood experience, both in the moment and in its impact throughout the lifespan.
Like Chawla, I have used hermeneutics in a traditional sense, combining cornerstone texts, such as Rachel Carson's, “The Sense of Wonder” (1956) with Crotty’s more modern way of searching the ‘texts humans write’ (Crotty, 1998). The hermeneutics of recollection allows this research to share in Carson’s (1956) ‘words and pictures’ as both a theoretical perspective and an analysis tool. In this way hermeneutics retains its literary heritage.

The theoretical framework draws primarily from the following aspects of Carson’s writing.

*The sense of wonder:* The child’s sense of connectedness and awe in the natural world.

*The sympathetic adult:* The role of adults in childhood experience of nature.

David Sobel’s (1998-1999) writing is also very supportive of Carson’s ideas and it is in his work that the philosophy of ‘empathy’ is derived as referred to above. Both these perspectives have been outlined in the previous literature review.

The use of hermeneutics, within the understandings of Carson’s philosophy, allows the researcher to construct understandings and to interpret the child’s interactions with nature, not as a blank slate, but as an empathetic adult. In essence, I will be using my own understandings developed from an interpretation of literature, observations and ‘the sense of wonder,’ to deconstruct and interpret the stories of the seven children and encourage the reader to do likewise.

**Building blocks**

The research methods utilised in this study focus entirely on the individual children. Much previous research which highlights the importance of early childhood interactions with nature is supported by methods where the recollection of wonderful childhood experiences are
remembered by literate adults. The work of Mark Francis (1995), Rachel Sebba (1991) and Edith Cobb (1977) are examples of this style of research, partly or wholly based on adult’s memories of childhood. Cobb (1977) analysed autobiographical recollections of highly creative adults while Francis (1995) conducted interviews where he asked adults to recall and draw their favourite childhood places. Such an approach reminds me of Hart (1979) stating, “it is a popular notion that poetry and good literature more accurately capture childhood experience than behavioural science” (p. 155).

However, it is pertinent to ask if time has had a romanticising effect on childhood, as adults fondly share “rich memories from childhood, when the world to me was a marvellous place for adventure and exploration, for discovering beauty and mystery, and for stirring the imagination” (Ruth A. Wilson, 2002, para 1).

In L. M. Montgomery’s 1926 novel, “The Blue Castle,” she writes of an adult woman who found her present happiness in nature “staining backwards” (Montgomery, 1989, p. 157) flooding her whole previous drab existence with “rose-colour,” that she found it hard to believe she had ever been lonely, unhappy or afraid. This romantic concept inspires me to compare the adult recollections of precious childhood moments as being most effective at ‘staining forward’ through the child’s life. As the most memorable experiences work their way through the mind, like a spreading stain, and form an underlying feeling of how childhood was experienced.

Understanding what was seen as important from the adult’s perspective, can help form a basis for understanding what children need in terms of creating the most memorable childhood nature interactions. My research builds on this by focusing solely on the individual children’s experience of a childhood in nature, not as a memory, but in the moment, as memories are (or
are not) being made. For along with the good, memorable experiences of nature, I may also see insufficient, frustrating experiences of nature in children’s experiences. Even if these were ‘forgotten’ by the time adulthood is reached, these experiences have still played a part in forming that person’s character and environmental values, they may leave a “stain”, and therefore must be part of my view of a childhood in nature.

In observing children as case studies, as deeply as time allows, I aim to add another dimension; to build on previous research on the understanding of childhood experience of the natural environment and the elements in it.

**Teacher researcher or outside observer**

The seed of an idea for this research study began to grow as I taught and observed the children who visited the Royal Botanic Gardens, Melbourne. As an education officer in the gardens I found myself faced with the option of being a teacher researcher or an outside observer. My familiarity with the Royal Botanic Gardens and its programs allowed me to bypass the awkward and time consuming period of getting to know staff and procedures within the organisation.

I also considered the option to research my own practice or the response of children to my own teaching. This is reminiscent of Dawn Sanders (2004) research in the Chelsea Physic Gardens. Her integral part of the education program meant that she was unable to stand back and observe children interacting with plants, yet she still chose to evaluate the child’s experience and not her own practice. In order to do this and teach simultaneously, she asked the 8 – 10 year olds “to evaluate their experiences after their ‘in the garden’ learning had taken place”
Sanders (2004, p. 27) using impression sheets and drawings. In this way she gained a survey of the children's experience.

Sarah Kneebone (2002) of the Botanic Gardens Conservation International (BGCI) also recently examined the educational outcomes for children (aged between 8 – 11 years old) when taking part in organised school visits to the Eden Project in Cornwall, U.K. In a similar way to Sanders (2004), Kneebone (2002) has used written response from children in the form of questionnaires and drawings. This survey style form of data collection is possible with older children; however, my research is concerned with 4 and 5 year olds who are unable to write responses. In this case, observation and casual discussions (conversational interviews) were deemed more appropriate, as they are able to provide more depth of understanding.

In the spirit of the work by Loris Malaguzzi (Fraser, 2000) who encouraged teachers to step aside for a while and observe carefully what children do, I endeavoured to develop my research design. Malaguzzi believed that teaching would change, if the teacher could step aside, and so I decided to stand back from my teaching role with open eyes, ears and mind.

I chose not to teach the children I was observing, but to observe them interacting with another teacher of the RBG and with their own preschool setting. In this way, I gained a fuller picture of what was happening for the child in each moment, taking the wholeness of the environment and the intricate motions of the child in, without the distractions of being the responsible teacher of the entire group. This style of observation worked quite well, and is discussed at length in the later sections.
A variety of settings

In selecting the boundaries for the research I chose to observe children within the confines of the preschool program. Within these programs I chose preschools which were providing children with a visit to a new setting, that is the Royal Botanic Gardens, Melbourne.

The two settings for the research data collection included:

- The preschool: indoor and outdoor environments
- The Royal Botanic Gardens (RBG): an outdoor environment

Viewing the children in two diverse settings allowed me to see the same children responding to different environments. This added another dimension to the study which created a more accurate illustration of the child’s personality and way of experiencing the world.

Children certainly behave differently in different physical and social situations, based on what they understand as acceptable behaviour for that situation. By viewing the children in an every day situation (the preschool) and a new and unique situation (the excursion), aspects of the children’s behaviour and interactions with nature which might have been overlooked in just one of the settings were magnified. Examples from the research include:

- Sam’s close relationship with his mum and their sharing of nature discovery. Sam’s mother attended the excursion. However this would have been missed had I only observed in the preschool setting.
- Matt’s disinterest in environments where he is not free to manipulate. I could have assumed that Matt would have responded to the RBG with fascination and a sense of discovery, based on my observations of his abundant play in nature at preschool, but instead
I see him often demonstrating frustration and boredom within the physical and social situation he is involved in at the RBG.

These examples demonstrate how the diverse settings for the research created a more accurate and deeper description of the children's nature interactions.

**Selecting sites**

All research occurred within preschool centres in Melbourne, Victoria and within the Royal Botanic Gardens (RBG) Melbourne. A collection of three pre-schools were selected within certain constraints, including (1) timing, (2) the teacher's willingness to participate and (3) the inclusion of an excursion to the Royal Botanic Gardens in the preschool program.

The data collection took place from October to December 2004, during a three week period in each setting. The selection of preschools was restricted to preschools which had booked an excursion to the RBG between these dates. Due to the accidental quality of the selection procedure (being dependent of centres booking themselves in to the RBG) all the children's centres just happened to be situated in the eastern suburbs of metropolitan Melbourne.

Once established as potential research sites, preschools were then selected on their willingness to participate in the research and the clearance provided by the children's parents. At preschools where several groups of children attended, only one of the groups was selected.

All preschools participating in this study were:

1. Booked into an Early Childhood Program excursion, at the RBG prior to be approached.
2. Visiting in the Spring during the study period.
3. Willing to participate in research.
Where possible, cases were selected to represent a range of educational philosophies to allow a greater range of children’s experience to be described. The three preschools and the factors which influenced their selection are described below.

- **Preschool 1:** Waratah Preschool, a council run 4 year old preschool. Two groups of children operate during the week. In this case only one group was selected. The preschool planned to visit the RBG late October 2004.

- **Preschool 2:** Banksia Rd Preschool, a council run transitional preschool (children attending their second year of preschool). The preschool visited the RBG on the mid November 2004.

- **Preschool 3:** Kanooka Christian College, a private Christian college with a 4 year old preschool following the Reggio Emilia approach to Early Childhood. The preschool visited the RBG early December 2004.

In selecting a range of preschools and children I aimed at collecting a diversity of information on childhood interaction which would have a greater likelihood of illustrating the many ways children interact with nature.

The common setting for each preschool was the Royal Botanic Gardens (RBG) Melbourne. In choosing to select two settings within the preschool program, I aimed to provide a wider range of opportunities to observe the child in their response to different circumstances and occasions. The ‘one off’ character of the visit to the RBG did not limit the research, instead the response of children to the public garden, was established as a plausible ‘significant life experience,’ which much research has documented. These are by character ‘one-off’ or ‘rare’.
Selecting children

The description of the experiences of six children is the focus of this research. Three boys and three girls were selected based on parental willingness for the child to participate in the study. Initially, the choices within the group were based on parental permission to interview and observe the child at play, and the child’s attendance on the excursion and regularity of attendance to preschool. The children were also selected in consultation with the preschool teacher to provide a diversity of socio-cultural background. Naturally, there was a large element of ‘arbitrariness’ in selection, and in retrospect it seemed that each preschool teacher selected one child who they knew to be interested in nature and one child which was not. However, the focus on the cases is not to construct generalisable results but to provide an insight into the individual children’s experience. In this case it serves the researcher better to have selected cases which offer the greatest opportunity to maximise what is learnt in the limited time (Stake, 1995).

These intrinsic cases discussed alongside other recent research in the literature review, allow broader ideas and themes to develop which may be applied in different settings.

The children selected were then given pseudonyms: Anna, Brett, Chris, Sally, Jemima and Sam. However, Sally’s play and interaction with nature was so intertwined with her best friend Matt, that as a result, Matt was also selected and permission from his parents was obtained to include him in the case study with Sally. However, as Matt only attended preschool two days a week, his absence is obvious in some of the observations of Sally. This is why the six case studies list seven children, Sally and Matt forming one case together.
Pseudonyms were also used for participating adults and preschool centres in the study to ensure anonymity.

**Description of research methods**

I have asked myself, a broad question: “How do children experience nature?” and this allowed the children's stories to flag issues and factors influencing on this experience, in this way the case studies are somewhat exploratory (Yin, 1993); exploring the ways children experience nature and allowing insights to emerge over the six cases. As I seek to understand and gain a deeper understanding of each case I will view them individually as Intrinsic case studies (Stake, 2000), yet as I use all six cases to explore the issue of childhood interaction with nature, together the six cases become an Instrumental case study, facilitating our understanding of the issue under examination (Stake, 2000). In this Instrumental examination, the children play a supportive role in the discussion and interpretation of patterns and themes that will guide the analysis process.

To intrinsically know each child in nature it became evident that in-depth observations and participating in conversations with the children would be essential. As the researcher, I arrived at the preschool before the children and departed after them, observing and recording and getting to know each child. Alongside these observations I formally recorded data in the following ways (see Figure 3):
The research used two clear formal data collection methods in creating a descriptive picture of the child in their preschool program. These included structured observations and conversational interviews with the children. For the rest of the time I was present, I formally recorded my stay in the preschool by note taking, collecting children's drawings and taking photographs of play areas, this was organised as a research journal. I aimed to record and create a rich picture of the place and context the children interacted in. Keeping in mind that “the use of multiple data collection methods is one way to lessen the likelihood that a researcher will jump to conclusions based on insubstantial evidence” (McEwan & McEwan, 2003, p. 80), and allowed greater depth to description of the children's stories.
These multiple methods provided me with a range of data including, the child's drawings, records of conversations, running records of the child's activity linked to maps of the outdoors and anecdotal observations. With minimal disruption to the child I recorded what I saw and heard, aiming to allow the child's true voice and individual character to show foremost in the case.

Darbyshire, MacDougall, and Shiller (2005) in their research paper on multiple methods note that “research with children demands flexibility and creativity on the part of both the researchers and their ‘data collection’ approaches” (p. 428). In the case studies, using such broad methods allowed for the flexibility to follow the child's interests and natural flow of conversations and activity. Darbyshire, MacDougall, & Shiller (2005) state that this is not “methodologically sloppy”, but “an important element of a research” (p. 428). In their research study on childhood obesity and physical activity, elements of the study were constantly modified and adapted in light of the children's responses. Essential to such a plastic methodology is a researcher who understands research, preschools and children (Darbyshire, MacDougall, & Shiller, 2005).

**Making changes**

Before beginning official data collection I was invited to visit a child care centre, kindergarten room, where I was able to practice using the Behaviour Mapping Schedule (see Appendix 1.1) and exercise my record taking skills. My visit only lasted one afternoon, but I was glad to find children at one Melbourne education setting, at least, were involving themselves in nature play. The children I observed spent much of the afternoon collecting bugs in old cereal boxes and at
the time I had no idea how this particular play behaviour would be an important part of my thesis.

The first real evaluation of the case study methods occurred during the initial two case studies at Preschool 1. Here, it became clear that the Behaviour Mapping Schedule was too structured and did not allow for all of the nature interactions to be recorded.

The coded system of behaviour mapping recorded and categorised behaviour and social interaction of children during outdoor play time (Malone & Tranter, 2003b), these codes were designed for primary school outdoor play time, although adjusted for the preschool setting, did not allow for enough depth in the young children's interactions.

One category which was particularly restrictive was the “Moving between activities” option. Children spent time wandering and not engaged in a particular activity, but they were not aimless and this in itself was a type of activity and allowed the child to scout out the area, watch other children, input into games as they were passing and develop a sense of belonging.

Moreover, this coding and mapping seemed less valuable when I considered that the data would not be statistically analysed with hundreds of other children, as in the case with Malone and Tranter (2003b), but looked at individually and intimately by one researcher. I decided in order to create a thicker description, it would be far more rigorous to write down everything I saw and look at the social interactions and categories of play later.

In the practical sense, the grid simply was not able to contain the written record of the depth of behaviour and experience the young children exhibited. To allow for this depth without
developing a whole new method, I simply altered my system of recording. I use the same framework from Malone and Tranter (2003b), but adopted a running record style of observing in a relaxed time sampling fashion. Children’s interactions were recorded at flexible time intervals. And times when the child was involved in complex nature interaction this was recorded by running records in its entirety. In retrospect, I feel this gave a more accurate picture of the children’s play and interactions. The behaviour mapping became merely a support to remind me of the time of day and length of games the children played, rather than a formal “snapshot of behaviour occurring within a pre-set time frame at regular intervals” (Fraser, 2000, p. 84).

**Structured observations and incidental observations**

“Development in childhood is a visible process that can be captured either in photographs, written observations or examples of children’s work” (Fraser, 2000, p. 79-80).

Two observation techniques will be used in this study:

- **Structured observations (Appendix 1.2 and 1.3)**
- **Incidental observations: Recorded in a research journal.**

The play behaviours and actions of the six children were observed individually over a two week period, using the structures outlined in Appendix 1.2 and 1.3. The main observation structure (1.2) records the child’s outdoor play and the following observation structure (1.3) recorded anecdotes of play and interaction at other times, such as indoors and before preschool.

After initially meeting with the children and their parents and participating in indoor play activities I stood back to observe and record the children’s interactions. I recorded everything
that the child did and participated in, including extra depth for times when the child was interacting obviously in nature.

I observed each child for the entire time spent outdoors during the preschool session.

At preschools 1 and 2, the children attended for half days. At preschool 3 the children attended full days, and so full days were recorded.

See below for record of amount of formal observation records:

- Anna (4 days of observations over 2 weeks )
- Brett (4 days of observations over 2 weeks )
- Chris (8 days of observation over 3 weeks)
- Sally and Matt (8 days of observation over 3 weeks)
- Sam (6 days over 2 weeks)
- Jemima (6 days over 2 weeks)

Although I chose to observe the children for at least three days before the excursion and at least three days after the excursion this was impossible for Anna, Brett, Sam and Jemima. In the case study for Anna and Brett their excursion was cancelled due to a storm and then re-booked on the same day of Preschool 2’s excursion making it impossible to record children both at the same time. In the case of Sam and Jemima, I began recording their sessions prior to the excursion and continued recording session right up to the last day of term 4. While this only allowed for 6 days, the days were full days, rather than the half days of observation completed at the council preschools.

With Rachel Carson’s ‘sense of wonder’ in mind the challenge was to identify the true nature of the child’s play and interactions. This is an abstract concept and multiple actions could be used to express a sense of wonder. A list of key words, foremost in the literature surrounding wonder
and empathy for nature, were selected which could be referred to during observations. These guiding key words and concept, taken from the literature review above, were made visible in the section above the running record space:

- Joy;
- Curiosity;
- Wonder;
- Observation;
- Empathy;
- Connection;
- Care; and
- Relations with others.

A smile on a face, a giggle, a quiet moment of observation, all were important in painting an accurate picture of the child’s experience. Most important was the continuous recording of the child’s behaviour, interactions and experience which were handwritten on a running sheet and made as detailed as time allowed.

As the child moved through the play area a map of the outdoor space was also filled in to indicate the time spent in the play area. In the situation of an indoor/outdoor program, only time spent outdoors was marked down on the map. During the excursion I observed the children from within the group. This created a challenge when observing two or three children at once, especially when the children were walking at different ends of the group. In this case I split my time between them, walking sometimes with one child and then with other, at short intervals. In order to absorb the whole feel of the excursion and to intently observe the two children and record their interactions with the environment and other children, parents and teachers present, I only engaged in conversation when the children initiated it.
During the excursion it was impossible to place the child's movements on a map due the size of the Royal Botanic Gardens and it is not necessary, as the places the group visited were chosen by the RBG staff member and not the child. A running record was taken of the entire excursion with times noted during intervals of stopping and changing activities. The running record was then supported by a cover sheet outlining basic information, such as the date, start time, mode of transport and weather conditions. An example of the observation cover sheet for the excursion is provided in Appendix 2.

Conversations and interviews

The children in the case study were aged four and five years old, they were unable to write written responses to questionnaires as used in the Sanders (2004) and Kneebone (2002) research and for such a small number of students it was easy to use one-on-one interviews. Ellis (1998) describes a personal narrative-styled interview as producing a collection of anecdotes and descriptions, the connections among them can be used to arrive at a more complete sense of the child as a whole person. Using principles of a narrative-styled interview, I planned to interview the children in the form of a play conversation. According to Ellis (1998) “most children clearly enjoy the attention of the interview”(p. 39). However, I had much greater success merely talking to the children as they played or ate a snack.

I had selected some questions which I had used a few years earlier in a kindergarten as provoking questions for group discussion. One of these questions was “Close your eyes and think about the perfect, happiest day.” In the group situation children had peppered me with days they went bike riding, and had their grandparents visit, or went to KFC. During the data collection of this investigation, the interview sheet (see Appendix 3) proved constraining and
unlike what Ellis (1998) wrote, about older children enjoying an interview, the young children were uninterested, bored or clearly did not understand how an interview works or what the questions meant. It is also possible they simply did not like being singled out, during the active kindergarten play curriculum. The interview sheet served much better as a guide to informal conversations with children, which I struck up during snack times and outdoor play. While the proforma was not changed my use of it became more open. The conversations with children were either, recorded on an audio devise and later transcribed; or at that moment, handwritten into running records, which were later typed. Eventually, most of the questions on the interview sheet were answered, through these casual conversations, and the interview sheet was filled in at a later time.

My invitation for the child to take me on a guided walk their favourite places at preschool was politely refused, but children were certainly ready to talk about and draw their favourite places and frequently discussed favourite places and memories with each other in my hearing, which I gladly recorded.

I gained a much deeper insight to the children’s feelings and particularly their memories by listening in and allowing them to talk at their own pace, rather than asking too many questions in the conversations.

I found the children to be friendly and eagerly sought out adults to converse with, much of Chris’ and Anna’s play involved talking directly to me, involving me as a participant, rather than a silent observer. The other children also did this but not to such a great extent. I have recorded the difference in response between Anna and Brett below:

With Anna, I am constantly involved in what she is doing. With Brett I observe but am never involved in play and feel as though Brett doesn’t even notice I am watching as I discretely
All the children, but Anna, seemed to completely ignore my presence and continue playing and talking as though I was not there, allowing me to listen in to their play conversations. Darbyshire, MacDougall, & Shiller (2005) note how the presence of a researcher affects the results which are collected, as they describe children in a focus group treating the researchers with the polite manners reserved for visitors, rather than reacting in their natural manner (Darbyshire et al., 2005).

Although I aimed to remain inconspicuous and did not make eye contact with the girls I observed Anna and her friend Carrie altering their behaviour around me, for example the girls chose to walk over and show me certain items in their collection, such as a centipede. While this behaviour may have been affected by my presence it also supported my ideas on children and adults as it demonstrates how children freely seek out adults to share discoveries with and to seek approval.

At other times I felt my observations were not at all altered by my presence as the children often exhibited play in front of me, which they would not have exhibited in front of the teacher, such as fighting and talking crudely. Sometimes I felt quite invisible as children would come and stand very near me or around me and continue conversations before wandering off. I believe this is because I never interfered or offered help unless asked or the situation was dangerous.
Very quickly, the children completely accepted me as part of the centre. Children who were not even being observed gave me presents of art work and craft and offered to play with me. I politely refused and soon became part of the background.

Anna was the only exception to the rule she soon became acutely aware I was watching her, no matter how far away I sat or avoided looking at her. On the last days she began playing in areas which were difficult to see in, such as behind a screen. The record below describes a conversation between Anna and myself during indoor play time:

“Anna and some girls are making a play dough balls in the home corner. I go over. She looks at me and tells me the party is not ready yet.
“The party is eloping” she says, “The door is locked.”
She looks grumpy and aloof. I guess I am not welcome. This is the last day of my observations and I think Anna could be tired of my watching, although I never interrupt and only sit nearby.
One of the girls explains, “We are making little balls...”
“No” Anna intercedes “Tell her we are not.”
She tries to cover up what they are doing with the kitchen items and shields the game away from me. It is clear I am being disruptive to the play and enjoyment of it, so I leave the area” (Research journal, 25/10/04).

Background: Adult interviews and anecdotal records

Accurate analyses of observations are best made when viewed within the context of the setting. To paint a picture of the context of the child, I wrote in-depth backgrounds for each case based on interviews with the preschool teacher and written programming records. This background included in the “Background to cases” section includes a description of each preschool program, policies on play and outdoor play and the teacher’s guiding philosophy. The interview schedule used is included in Appendix 4.
Interviews with the three pre-school teachers not only allowed the teacher to describe her own philosophy, but also a description and justification for the preschool program and the inclusion of the excursion in it. The other adult interview occurred at the setting common to each preschool, the Royal Botanic Gardens, (RBG) Melbourne. My discussions with Christine Joy, coordinator at the RBG Education Service and Ian Potter Foundation Children’s Garden (IPFCG) enabled me to better describe the garden and position the excursion within the mission and objectives of the RBG educational philosophy.

**Analysis: Interpreting observations.**

Throughout history stories have been passed on through generations to teach and to learn from. Through stories the reader is able to empathise and connect part of themselves with the lives of those they read about. This is a more *naturalistic* approach to communicating understandings through case studies where in order to ‘grasp the whole’ it is important that the reader view the case in context and more importantly that the data generated by case studies resonates with the readers, and therefore facilitates a greater understanding of the children’s behaviour (Stake, 1995).

To create this in-depth understanding of the children I compiled the data into six case study stories. Naturally, the whole intricate and complex character of the child can not be told in a vignette and so for each story I selected elements of the child’s experience which were *typical* and *relevant* to the study. *Typical* experiences were those which occurred daily or more than once for the child and therefore became an important part of any day. *Relevant* experiences refer to those which were connected to nature, plants or outdoor settings. This included experiences ranging from reading a book about plants to digging in a corner of the playground. While not everything the children did could be recorded, absolutely no *relevant*, that is ‘nature,’
experiences were discarded and those not present in the vignette are presented in the data collection tables or in the background to case studies sections.

Once an exhaustive story for each child was written, these were refined and condensed and combed through to identify the ‘telling moments’ which open for us a little window into the child’s experience of nature. These stories are followed by brief summaries of the nature play and interactions of children and their pictures of their favourite places.

The final section of the statement of results is seven tables describing all of the children’s nature interactions, the children involved themselves in, many of which could not have fitted into the short stories.

During the observations I changed my recording technique to be very broad, allowing the children to figuratively take me to the place they wanted to be. Analysis was the time to take all these running records and informal/anecdotal records to both create an accurate picture of the child and to flag the philosophical points and relationships to theory. The recorded experiences of the children were the placed into a table of approximately 15 categories, which arose from the results as I worked through the children’s experiences and decided how this could best be described in a few words. For example, all of the children’s experiences of collecting bugs were placed along side each other in a “collecting” category and all of the children’s interactions with adults/ parents or teachers were put into a category titled “adult interaction”.

Finally, the 15 categories were narrowed down to just seven, based on themes which literature and other research had uncovered. These categories which accommodate all of the children’s nature experiences are:
1. **Loose natural materials**: Natural materials used as tools and materials for imaginary play or for a practical purpose.

2. **Nature as a setting**: Natural objects and environment as the setting for play and activity.

3. **Collecting, hunting, gathering**: Children made collections and participating in hunting/gathering.

4. **Recalling memorable experiences**: Children spoke about, drew and had conversations with other children about unique experiences.

5. **Unrestricted, free exploration**: Children explored for its own sake: Because of a like, love or curiosity in nature.

6. **Exploring power: Control over nature and social power**: Nature used in powerful ways e.g. to benefit social situations or to provide the holder with some prestige. Children exploring their power, e.g. to find, collect or destroy little creatures.

7. **Children and adults**: The child invited the adult into the experience or the adult involves themselves in the experience.

These groupings are discussed at length in the ‘Analysis and Discussion’ section and will be used as a framework for further discussion.

**Limitations**

All research is bound by certain limitation and obstacles. Three key limitations restricted my research project, these included:

1. **Size of the study**;

2. **Various site-specific obstacles encountered**; and

3. **Influence of preschool teacher in child selection**.
Firstly, due to the time and size of this study, I could only hope to look at that child ‘in the moment’ of their nature interaction and hope that this would open a few windows into their experience. I wanted to better learn from each child how they individually understand and experience the encircling world. However, I found the amount of field research adequate to provide more than enough data to open up many questions, answers and ideas.

Secondly, site specific limitations included the following:

**Preschool 1: Waratah Preschool**

- The preschool teacher was absent every day except one, during my two week visiting period, which meant the children were interacting with two different teachers, one of which they had never met before.
- Anna sometimes felt uncomfortable with my presence during indoor time. She did not avoid me outdoors, but often sought me out. However, indoors on several occasions she played out of my view or told me to come back later.

  *To empower Anna in this situation, I avoided moving around the room to watch her, but sat in open areas, where I could view as much of room and the teacher without moving from my seat.*

- Most noticeably there is no record of the excursion for Waratah Preschool as it was cancelled due to poor weather and re-organised for the same time which I was observing Banksia Rd Preschool. This meant the children were observed for only 4 days over 2 weeks instead of the expected 6–8 over 3 weeks.
Preschool 2: Banksia Rd Preschool

- I chose to observe Sally and Matt together, as their close friendship could only be explored at its best when both children were part of the one case study.

Preschool 3: Kanooka Christian College

- During the two weeks I attended this preschool, directly after Banksia Rd Preschool, the end of term was just two weeks away and the children finished preschool and broke for Christmas holidays. Therefore only two weeks of observations were made.

- The observations were made for full days, rather than the half days of the first two preschools which are council run preschools.

Thirdly, I encountered coincidences or patterns in each preschool which demonstrate the limitations of my selection process at randomly selecting children. I allowed the preschool teachers to select children based on parental willingness. I informed the teachers that they could choose any children, especially children who would be willing to participate in the conversational interviews. By chance, at the time of selection, each of the three teachers informed me that one of the children, they were particularly interested in having observed and the other they thought would be interesting for me to observe.

I do not believe it can be a coincidence or pattern that at each centre one of the two case-study children was seen as the nature expert by teachers and children alike. Naturally the teachers were influenced by knowing my topic for research, which was presented to them in the plain language statement.

Examples of these children (Anna, Sally, Matt and Sam) as being viewed as nature experts:
Anna: I asked a girl in Anna’s group who can help her with the guinea pigs. She immediately responded with, “Anna!”

Sally: When Sally finds a centipede or worm, she calls out and all the children come running.

Matt: On excursion Matt tells the teacher, “We’re very good with worms. Sally and me.”

Sam: On the excursion a girl in Sam’s group suggests the teacher should ask Sam what the herb they are trying to guess is.

These three limitations only limit the generalisability of the study and not the authenticity of the children’s experiences, which is what my research is concerned with. The deeply, descriptive case studies, will illustrate the *Intrinsic* meaning which nature has for the child and then serve as an *Instrumental* case study through which philosophical ideas of a natural and organic childhood can be explored. The following chapters describe the background to the children’s stories, illustrating the preschool and botanic garden’s environment, and then follow on with statements of the actual experiences of the seven children, in six case studies.
Chapter 4: Case studies

The following two sections: ‘Background to cases’ and ‘The children’s stories,’ present the results of each case-study child. The first section ‘Background to cases’ sets the scene for the following six chapters which includes the descriptive stories and experiences of each individual child. After all the cases have been stated the three records of excursions for the children stated. Each record contains information for two cases.

This is supported and followed by the Nature Interaction Tables (Tables 1-7) recording all of the children’s interaction in nature arranged into seven categories to be better able to identify types of interaction and influences on interaction including both preschool and botanic garden experiences.
Background to cases:

Setting the scene

It is important to view the child within the context of the surrounding world. The predominate influences I have explored are the preschool environment and the public park environment; the former being a familiar place to the child with daily influence and the latter, a less familiar, or new environment, with a one-off opportunity to influence the child. Within these systems are many different people such as; parents, teachers, other children and members of the public. Each of these filter down their own attitudes and ideologies to the child and surround the child in the place where I took my snapshot of their experience in nature.

As I only observed children at preschool and not at home, the description is bound by these limitations and only attempts to describe the child in the moment and not exhaustively. Taking these limitations into consideration, the preschool teacher can certainly be seen as the most influential person in this story. She interacts with the child each day at preschool and it is her choices in planning and programming which surround the child. In each of the three preschools, the following aspects will be reviewed:

1. The preschool teacher and their program

In describing the preschool philosophy and program, I will create a deeper picture of the child and will be better placed to identify influences on the child experience.
2. Describing the setting
Before exploring the experience of the child the scene is set. The environment and layout of the preschool play yard provides the setting for play and impacts on the type and length of play, as has been discussed in the literature review.
Each of the three preschools are described below, providing written details and pictures of the physical set up.

3. The Royal Botanic Gardens
As part of the preschool program the Royal Botanic Gardens becomes another setting experienced by the child. A description of the philosophy and program of the RBG and the individual preschool teacher's perspectives on using the RBG concludes this section.

Preschool 1: Waratah Preschool
The preschool teacher and their program
Waratah Preschool is a sessional preschool in the outer-eastern suburbs of Melbourne. The preschool is directed by Dawn, who develops the weekly programs entitled “Emergent Curriculum Programming,” which aims to foster independence and self-esteem in the attending children. During the two weeks I attended the preschool Dawn was present for only one day, due to personal reasons. The children were directed by two different relieving preschool teachers during that time. The daily routine was divided into blocks of mat time, indoor play time, outdoor play time, lunch and story time. Samples of the daily routine are in Appendix 5.

Dawn's program used seed planting to introduce the Spring theme and link to the excursion. Dawn planned to use the visit to the Royal Botanic Gardens to provide the children with the time to appreciate the ‘simple things of life,’ which modern children are often denied, as Dawn
says, “It is good to be in nature”. In Dawn’s opinion the excursion will allow the children to relax and just be; to take a quiet walk and appreciate nature.

Perhaps due to the absence of their usual teacher, the children were not ‘prepared’ for the excursion to a great extent. They knew they were going on a bus, but had not talked about what they would do or see.

Describing the setting:
Waratah Preschool runs two four year old groups of three sessions a week, for a total of 10 hours for each group. Children spend the first portion of the day indoors and the second portion outdoors, depending on the weather. On some days the children were allowed to play inside during the outdoor play time.

Waratah Preschool outdoor play space consisted of a square space boarded by a road, a car park, a residential house and the preschool building. Tan bark had recently replaced grass and a concrete path and concrete area ran along the side of the preschool. The playground was very shady, under a canopy of two large deciduous trees (Figure 4). Although, there were no well established gardens a large amount of wilting pot plants filled a space besides the cubby house. The yard was divided into well defined zones, including a large sandpit area, cubby house area, swing section and a multi-levelled slide house (Figure 5). The pet guinea pigs, table activities and blocks lined the verandah (Figure 6) and A-frames and mats were dotted around.

Although the space was not large and contained a great deal of large equipment it did not feel cluttered or over crowded.
Figure 4: The yard is shaded by large deciduous trees.

Figure 5: The multi-levelled slide house.
In addition to fixed structures (sandpit, slide house, swings, large tyres and cubby) children were provided with a variety of materials and access to the storage shed, with permission. For example on Thursday, the 21st October, 2004, the outdoors was set up in the following way.

- Baby bathing: tubs of water, soap, baby dolls and towels;
- Drawing with shaving cream: Large perspex easel etc;
- Moveable A frames, wooden planks, monkey bars;
- Water play: Shell pool, lots of tubs, waterwheels, jugs;
- Gym mats and trampolines;
- Sandpit trucks, spades, wheel barrows, pots of water;
- Big blocks;
- Wood work: hammers, nails, caps, spongy bits; and
- Permitted loose materials: old neck ties, bowls, breakfast cereal boxes, pot plants, tan bark, cup and lots of bugs, snails etc.

Figure 6: The veranda housed guinea pigs, big blocks and a wood work table.
**Preschool 2: Banksia Rd Preschool**

*The preschool teacher and their program*

Banksia Rd Preschool is a transition preschool run by the local council, which only enrolls children who are having a second year of preschool, instead of starting Primary School. The 21 children attend from 9am-1pm Tuesday to Thursday, 12 hours per week.

Pam is the directress and teacher of the program. Her aim is for the child to learn social skills and responsibility through play and through all social interactions. Therefore, she structures the program to provide challenges for the child in all their developmental areas: social, emotional, physical, cognitive, language, self care, gross motor, fine motor, science and the arts.

The structure of the program is based on the children’s interest, and “the stuff within that structure is based on their interests” (Teacher Interview P2). Pam and her assistant work from observations of the children, their interests, what sort of play they are doing, what they are playing and then provide equipment and tools for them to use in order to extend that interest. Pam structures the environment to challenge the behaviour and provide motivation, and does not attempt to move the child on from their interest. At Banksia Rd Preschool it is important to play even for ‘the sake of it’ as intrinsic learning goes on when you are driven to do it yourself.

Samples of the programs are in Appendix 6.

*Describing the setting:*

Banksia Rd Preschool provided a complex play environment for children’s outdoor play. The yard, which wraps itself around the building and verandah is full of corners. Many well established trees, shrubs and garden beds are at home in the yard and create large areas of shade. As Pam says, ‘grass is too hard to grow’ the yard is mostly chip bark. It can be divided into many play areas: open verandas, bamboo, garden beds, sandpit, concrete, gazebo, obstacle course/large fixed and loose equipment (Figure 7), treed areas, plant tunnels and
vegetable patches. Pam, made no discrepancy between indoor and outdoor activities and many traditionally indoor activities, such as painting and collage, were set up outside too. Children were given access to a variety of materials including blocks, paint, gardening tools, mechanical tools, plastic sheets, boxes, sticky tape, paper, collage materials and building games (such as Duplo and blocks).

The yard originally had a patch set aside as a digging patch, but this has been removed and children are encouraged to dig anywhere in the yard, in order to provide them with a much better chance of finding creatures and making new discoveries (Figures 8 and 9).

In addition to fixed structures (sandpit, slide structure with ladders and bridge, large tyres, logs, swings, tyre bridge and cubby) children were provided with a wide variety of materials, to access, use and put away. Garden tools and the storage shed could be accessed with permission. For example on Wednesday 10th November 2004, the outdoors was set up in the following way.
In the yard:

- Pirate ship: the slide and bridge structure is set up with sails, ropes, a "Jolly Roger";
- Sink and kitchen tools in bamboo (Figure 10);
- Obstacle course: A frames, wooden planks, rope ladders, Tarzan rope, hurdles, balancing on a twisted plastic beam, stilts and tunnels are added to the usual tyres, tree tunnels and fixed climbing apparatus (Figure 11);
- Plastic shell pools full of water and fresh kelp (Figure 12);
- Pattern making with scrapers;
- A special tea set;
- Drawing on a table with paper and pencils;
- Sandpit: PVC pipes, plastic sheeting (Figure 13), tubs, spades, trucks;
- Pull apart table: old radios and computers, tool boxes including such as screw drivers;
- Spades and wheelbarrows;
- An old oven is near the sandpit: trays, bowls and pots in sandpit;
- Student teacher in gazebo running a pirate hat making activity;
- Totem tennis;
- Basketball/ balls; and
- Permitted loose materials: tan bark, leaves, sticks, cardboard boxes, pirate hats, pots, pans, logs, rocks, sand and lots of bugs and spiders.

On the verandah:

- Sand tray: tweezers, buried pearls and jewels;
- Painting with shaving brushes; and
- Making dolls house furniture with little boxes, glue, fabric and collage materials.
Figure 8: A corner of the yard favoured for digging.

Figure 9: Children often dug in and behind this garden bed.
Figure 10: The Bamboo Kitchen.

Figure 11: The fixed equipment set up as a Pirate Ship.
Figure 12: Kelp in a shell pool for children to explore.

Figure 13: Using PVC pipes and plastic in the sandpit.
Preschool 3 : Kanooka Christian College

The preschool teacher and their program

Kanooka Christian College is part of a leading co-educational Christian college which caters for students from 3 year old kinder to Year 12. The children attend preschool five days a week, from 9am to 3:30pm, 32.5 hours per week. Case-study child, Jemima also attended after school programs.

Miss Elliot is the director of the 4 year old kinder. She uses a combination of a Reggio Emilia philosophy and Active play theories. She describes children as being powerful and able to construct their own learning and their own knowledge through play experiences. The program is designed around observations of the children’s interests and skills, as well as the teacher’s plan for particular developmental areas. “For example,” Miss Elliot describes, “we might have a focus from one of the children or something might just pop up, like once we found mushrooms and that started off a whole thing about finding out about mushrooms.”

The aim is to actively engage children in things that they want learn, in finding out their own information and in developing their skills. Miss Elliot uses the catchcry 'active agents finding out about their own world!'

Samples of the programs for Kanooka College are in Appendix 7.

Describing the setting:

There are 18 children in the preschool, 10 are boys. The children wear a school uniform including a hat. There is outside time and inside time; no children inside during outside time and no children outside during inside time.

The college is on a farm and every week the children are taken for a walk around the property.
The preschool program is developed using the Reggio Emilia philosophy of education and the room is set to reflect these elements. During my observations the children only played indoors for around one hour each day and outside for around two hours each day. Other time spent indoors involved playing games, watching television and participating in concert rehearsals. The indoors were set up with a wide variety of activities, accessible materials and aesthetic displays.

The outdoors is shared by 3 and 4 year olds, who often play outside at the same time, while teachers share the supervision responsibilities. The yard was wide and spacious with a few small shrubs, a reasonably large sandpit and a tanbark area with a fixed climbing structure and a swing frame. A small flock of chickens also share the yard.

Very few materials were put out for the children to play with, often materials did not appear until a long time after children had been let outdoors. Children were asked not to play in or behind garden beds or use sticks.

In addition to fixed structures; sandpit (Figure 14), hen house (Figure 15), stone boat (Figure 16), cubby house, a few small tyres, and sometimes swings (Figure 17), on Monday, the 6th of December 2004, the outdoors was set up in the following way.
In the morning:

- Two connected A-frames, with a ramp and wiggly steel ladder;
- A couple of balls and small basketball backboard, next to sandpit;
- Sandpit: no tools, 4 big black rubber slabs (size of a small table); and
- Big rubber sponge shapes, cubes, wedges and mats.
In the afternoon:

- A group of children work with the teacher on a project on the table and benches outside;
- Sandpit: Buckets and spades were added (Figure 14); and
- Permitted loose materials: chickens, sand, dustpan and brush (from indoors) and water (only one bucketful per child. No buckets in morning).

Figure 14: The sandpit with the black slabs
Figure 15: Children collected eggs from this hen house.

Figure 16: The shrubby area and the stone boat in background.
Figure 17: The tan bark area and cubby house structure.
Overview of the three settings

The three settings have been described above, using lists, written descriptions and photographs. The following three tables provide an overview of the equipment and activities which were set up in the three preschools in a way which shows at a glance the materials available to each child.

The children were able to access the materials and equipment present at their own preschool:

- Anna and Brett at Waratah Preschool.
- Christ, Sally and Matt at Banksia Rd Preschool.
- Jemima and Sam at Kanooka Christian College.

The physical environment at each preschool is described in table 8, below:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Waratah PS</th>
<th>Banksia Rd PS</th>
<th>Kanooka C C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slide</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Sandpit</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Swings</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Large Tyres</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Small Tyres</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Cubby</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Climbing frames</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Logs</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tyre Bridge</td>
<td>yes</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Concrete boat</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Ladders</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Old oven</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Climbing trees</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Pot plants</td>
<td>yes</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Vegetable patch</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Digging patch</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Shrubs to play behind</td>
<td>yes</td>
<td></td>
<td>a small area</td>
</tr>
<tr>
<td>Access to garden beds</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Access to garden tools</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Access to storage shed</td>
<td>yes</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Access to animals</td>
<td>yes – guinea pigs</td>
<td></td>
<td>yes – chickens</td>
</tr>
</tbody>
</table>

Table 8: Comparison of permanent fixed equipment/ play experiences

In addition to the permanent equipment described in table 8, children were also provided with different loose materials to use in the environment. Table 9 provides a snapshot of materials
provided for the children on a typical day at the preschool. The dates these records were taken are shown in the heading row of table 9 which continues over the following page.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Waratah PS 21/10/2004 Morning only</th>
<th>Banksia Rd PS 10/11/2004 Morning only</th>
<th>Kanooka C C 6/12/2004 All day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby doll bathing</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drawing with shaving cream</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water play with jugs and water wheels</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water play with seaweed in shell pool</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Gym mats or foam wedges</td>
<td>yes</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Trampoline</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood work</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheelbarrows</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Garden spades</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garden tools for harvesting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balls (not basket ball)</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Sand tray (tweezers, jewels)</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Pirate Ship (flags, sails, rope)</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Group project</td>
<td>yes - hat making</td>
<td></td>
<td>yes – fairy home</td>
</tr>
<tr>
<td>Box construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bamboo Kitchen</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Obstacle course (tree tunnels, logs, stilts, ropes, hurdles, tunnels etc)</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Tree climbing</td>
<td>yes</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Paint (pattern making)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint (using a shaving brush)</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Tea set for a tea party</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drawing</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Pull apart table (tools and old radios)</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Totem tennis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big blocks</td>
<td>yes</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Basket ball</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>Sandpit:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spades and buckets</td>
<td>yes</td>
<td>yes</td>
<td>afteroon only</td>
</tr>
<tr>
<td>baking items, bowls, pots</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>water</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>plastic sheets and pipes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>trucks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>big black slabs</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
</tbody>
</table>

*Table 9: Comparison of activities set up in three preschools on the given dates.*
While table 9 shows an exhaustive list of all loose materials present in the preschool outdoor playground, table 10 refines the information provided in table 9. Table 10 shows only movable equipment and loose materials which are natural or are used predominately for playing in nature. Some of these items are tools for playing in nature, such as a wheelbarrow or water wheel. Although these items are not natural in themselves (in fact they are factory made) they did involve children in nature play and the children actively involved these tools in exploring the natural environment.

Table 10, a focus on equipment and materials with natural elements is listed below:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Waratah PS 21/10/2004 Morning only</th>
<th>Banksia Rd PS 10/11/2004 Morning only</th>
<th>Kanooka C C 6/12/2004 All day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permitted loose materials</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>old neck ties/dress ups</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>bowls or pots and pans</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>breakfast cereal boxes</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>pot plants</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>tan bark</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>leaves</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>rocks</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sticks</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>logs</td>
<td>yes</td>
<td></td>
<td>present</td>
</tr>
<tr>
<td>earth</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>water</td>
<td>yes</td>
<td>yes</td>
<td>afternoon only</td>
</tr>
<tr>
<td>sand</td>
<td>yes</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>dustpan and brush</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bugs and snails</td>
<td>yes</td>
<td>yes – and spiders</td>
<td></td>
</tr>
<tr>
<td>chickens</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
</tbody>
</table>

Table 9b: Comparison of activities set up in three preschools on the given dates.
<table>
<thead>
<tr>
<th>Equipment and materials with natural elements</th>
<th>Waratah PS 21/10/2004 Morning only</th>
<th>Banksia Rd PS 10/11/2004 Morning only</th>
<th>Kanooka C C 6/12/2004 All day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water play with lots of jugs and water wheels</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water play with seaweed in shell pool</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Wheelbarrows</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Garden spades</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garden tools for harvesting</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bamboo Kitchen</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree climbing</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstacle course (tree tunnels, logs, stilts, ropes, hurdles, tunnels etc)</td>
<td></td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Sandpit:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>water</td>
<td>yes</td>
<td>yes</td>
<td>one bucket full per child</td>
</tr>
<tr>
<td>Permitted loose materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>breakfast cereal boxes</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>pot plants</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tan bark</td>
<td>yes</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>leaves</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rocks</td>
<td>yes</td>
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<td>sticks</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>logs</td>
<td>yes</td>
<td>present</td>
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<td>yes</td>
<td>yes</td>
<td>afternoon only</td>
</tr>
<tr>
<td>sand</td>
<td>yes</td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td>bugs and snails</td>
<td>yes</td>
<td>yes – and spiders</td>
<td></td>
</tr>
<tr>
<td>chickens</td>
<td></td>
<td>yes</td>
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Table 10: Nature experiences and materials provided for children.
The Royal Botanic Gardens

The philosophy and their program

The Royal Botanic Gardens (RBG), Melbourne has been providing the community with a garden, structured for the use of scientists, gardeners and leisure visitors, for over 150 years. The RBG organisation aims to advance the knowledge and enjoyment of plants, and to foster their conservation in order to give people a better understanding of the essential part that plants play in all life on earth.

Within this setting is an education service and the newly developed Ian Potter Foundation Children’s Garden (IPFCG), opened 2004. The vision for the IPFCG, is that it will be a place where “children can delight in nature and discover a passion for plants. It will be a garden that celebrates the imagination and curiosity of children and fosters the creative nature of play” (Royal Botanic Gardens, 2004).

Christine Joy is one of the coordinators, who develops the philosophy and programs of the education service. She believes that the unique, garden experience for the child should be a delightful and memorable experience, with a great capacity to learn with the head, hands and heart. This involves linking gardening and the role of plants in our lives with real work, play, sensory immersion and imagination. The programs are designed to support integrated curriculums as, “plants connect to everything about being human” (Joy, IPFCG booklet for teachers).

Describing the setting

The excursions the children attended involved time spent in the IPFCG and time in the wider RBG. Although the environments are similar and are both constructed and maintained gardens,
they are distinctly different. The RBG gives a sense of space containing wide lawns, many and varied garden beds, enormous trees, copses of palms and the many curving paths all give a sense of space, quietness and awe. The IPFCG is much smaller, but the well defined spaces, plant tunnels, kitchen gardens, lavender labyrinths, pine forest, wetland, rainforest ruin and bamboo forest give the impression that there are many places to discover and play in, if the time is taken to peer around the next alluring corner (Figure 18).

![Landscape Plan](image)

Figure 18: Landscape plan of the Ian Potter Foundation Children’s Garden (Landscape Plan, 2005)

The case-study children attended a “Minibeasts” program. According to the RBG teacher’s program notes, on a typical excursion, the children are provided with a selection from the following list of experiences:
• Worm Farm: Meet the worm model, discover how worm babies are made, see how a worm farm works, touch and watch worms, see how to make one;
• Minibeast hunt: Search through leaf litter with a hand lenses;
• Ponding at wet lands: Using buckets, nets, magnifiers, posters;
• Imagine being a minibeast: Hide under leaves, creep between bamboo stalks;
• Poems;
• Discovery Walk: May include, glasshouse, ferns and lakes;
• Children use treasure bags to collect plant treasures;
• Plant a seedling to take home; and
• Make a bundle of insect repelling herbs, in the herb garden.

The key pedagogies Royal Botanic Garden teachers are asked to apply are:

• Invite the child’s imagination;
• Invite the child's natural curiosity;
• Provide opportunities that are sensory and hands on;
• Provide opportunities that allow for discovery/play;
• Care and respect for resources and living things/ecoliteracy; and
• Provide a balance of exploration types (Elliot, 2003b).

Many factors, such as weather, time, the RBG teacher’s own interests, the interests of the children all alter the program.
Using the excursions: Three teachers’ perspectives

A visit outside of preschool is merely extending the program and is still part of the child’s preschool experience of nature. The three teachers each included the excursion in their program, because they believed that in some way the visit would be beneficial to the child and their development. Below is recorded the perspectives of the three preschool teachers.

Dawn believed that the staff/guides at the RBG were an important influence on the child. She felt that mothers and preschool teachers, lacked the intimate knowledge of nature which a guide could impart. Dawn had participated in RBG programs previously. She felt it was important that the children would hear botanic knowledge, presented at their own level and be given time to wander and walk, ask questions and go off on different tangents. It was important to Dawn that the excursion program have no pres sets, but be flexible. Only the planting need be structured as it linked to the kindergarten program.

When Pam, of Banksia Rd Preschool was asked why she continued to book excursions with the RBG she replied, “Because it has been so good.” Pam views the excursion as extending the children’s understanding of their environment. She says, “It is important for children to see the world, see the world from the bus and be in a different place”.

Pam describes so eloquently what she expects from the excursions and how the journey and RBG staff contribute to this view of the world. In her interview she says:

“*We knew how far it was to the river cause we could see the river from the bus. And to see swans pooping in front of [the children] and having it talked about in a most normal way: “Why is it green?” “Oh, because of what they eat.” And it was very valuable in that it came from somebody other than me, who the children respected. My expectations for the excursion this year were that we would have a lovely exploratory time. Hands on,*
discovering minibeasts by actually finding them ourselves and not having them put on the table in front of us. Fishing things out of the pond ourselves with nets. Just doing all that exploratory stuff with a grown up who could say “Hey I think you’ve found one of these” and having a picture of one and saying, “If we had a magnifier” and getting a magnifier and saying, and can you see... And getting really grotty and looking and exploring plants that smell, walking in between plants and how tall they were, what different sort of leaves they are...” (Teacher Interview P2)

Kanooka College Preschool children visited the RBG, on the second last day of term, and although the excursion was organised by the three year old preschool teacher, Miss Elliot also described her aims and expectations for the program. “I think [the excursion] is more of a children-centred thing [than nature and science] in that it’s a different experience and it links well to our program and philosophy here. To have a garden that’s specifically made for children is just fantastic, and so whatever comes out of it, whether it is knowledge of nature or learning stuff... discovering scientific things, that’s good its all bonuses.” She says, “It is a child-centred experience, to be able to explore an environment that is built for them.”
The children’s stories

Much of The Child in Nature research study and much research in early childhood in general is ‘research on’ children looking from the outside, interpreted by adults; however, I aim to involve the voice of the child through the telling of their individual stories. By presenting the children’s cases in a narrative form I aim to present each child as an active, independent individual with ideas and abilities worth acknowledging and listening to.

Although children were observed both indoors and outdoors, limitations of time and space have refined the research to predominantly describing outdoor behaviour and interactions. The researcher’s own knowledge of the child’s indoor behaviour, may add to a better understanding and analysis of the child, and will be referred to if necessary. The following stories accurately describe each child’s experience in the preschool program, describing the child’s whole experience and including additional observations, which focus on interactions with nature, thus creating a more vivid picture of The Child in Nature.
Anna

Anna attends Waratah Preschool. She is four years old and lives in the outer-eastern suburbs of Melbourne with both her parents and her younger brother. Anna spends most of her time with one friend in particular, Carrie. Anna is confident in showing others how to take care of the preschool guineapigs and brings vegetable scraps from home for them. Anna often talks about visiting ‘the farm’ and spends most of her time collecting bugs and snails, often with a group, but also by herself.

Anna’s story

It is 9 o’clock Thursday morning. Children huddle around a casual relief teacher, who sits on a chair at the front of the mat. Anna stands next to her, she wears rings on her fingers and clutches a take-away container behind her back.

“I got some snails.” She brings the container to her front out and reveals the four tiny snails and one rather large one. The teacher says, “Thanks for that,” and Anna sits down, then leaves the room to put the snails in her bag. When she returns, the teacher is showing the plants that Anna’s family brought in to plant in the preschool garden.

“I don’t want to do planting. Booo!” A boy shouts. Two other boys say, “Well that’s what I’m going to do.”

Anna paints this morning. She paints a blue sky, yellow sun and a smiling green flower. Rachel stands next to her and asks, “Is that a flower?” Anna ignores her. Rachel asks five more times, but Anna ignores the question and continues painting. She paints a rainbow in dots with all the colours in order.

It is almost 10 o’clock. Anna asks the teacher when will it be time to go outside.

“Soon,” she replies. A few minutes later Anna goes and gets the teacher and stands by the back door holding a rice-bubble box. As soon as the rest of the children see her doing this, they
drop what they are doing and run to the door in a flurry to get their hats. The door is opened. Only five boys stay inside to build with Duplo.

Anna goes straight to the pot plants. They lift the plants up and peer underneath. Carrie is with her. They look closely between the leaves and talk together.

“Awh! Look! Look Anna, I found some… “

“A centipede. A centipede just here,” Anna cries and they squeal. Anna picks up a snail with a small millipede crawling over it.

Carrie shouts, “Look Anna, I found butchie boys!”

“Get them!” Anna replies.

Girls continue looking under plants. “Under this one, it might be under this one”

While they look a boy touches their boxes.

Carrie and Anna both say, “Don’t tip it over, James. Don’t tip it over.”

James mumbles something.

Anna flashes her eyes, “No it’s mine, James. These are mine. Leave ‘em all”

The girls return to the pot plants. “Keep looking,” Anna instructs, “anywhere.”

“What?” Carrie asks

“Keep looking.”

Another girl comes over carrying a plastic bag full of liquid amber spike balls. She gives Anna a handful. Anna holds them, drops one. Carrie picks it up for her and asks, “If you give me some bombs, I can have another 2 snails?” Carrie explains this a few times. Finally, Anna understands, a look of confusion flashes on her face, “What? I give you some bombs and another two snails?” She looks incredulous. Carrie goes on to say that Anna can also come over to her house. Carrie then asks to swap boxes. Anna does not want to. Carrie holds a centipede in her hand. Both girls watch it wriggle in between her fingers. Without a word Carrie
breaks it in half and drops it on the ground. Anna bends down and says something quietly, looking at the two pieces. Then stands up and goes to get the guineapigs.

Anna spends time holding the Rhett and Scarlett, the guineapigs and showing other children how to hold them. After a while she sees a big black beetle under a chair. Carrie appears.

“That beetle bites and it bit my arm,” she states. Ignoring her, Anna takes the beetle and goes to show the teacher. They find a yellow tub to put it in. Anna settles down with Rhett and Scarlett, placing the tub nearby.

After a minute she turns around to check the beetle.

“Where’s my beetle?” She cries. The beetle is gone.

Anna looks at a visiting adult and looks over to Carrie. Carrie has the beetle, she knows without seeing it. Anna runs over and grabs the whole box back, some little weeny snails fall out, she picks through the tan bark and puts them back. She snatches the lid from Carrie’s hand and scolds her. As she walks back to the guineapigs she bangs the box with the lid, shaking the bugs around roughly.

Anna settles herself by the hutch. She turns back to check on her box and sees a snail half way over the edge, escaping. She squeals, a happy, ‘oh you naughty snail’ sort of squeal, and puts it back. Anna and another girl try and catch the guineapigs. Anna is obviously in charge.

A bell rings. It is snack time. The children sit at tables and eat.

After a story, the children’s parents come into the room. Anna’s mum and brother arrive. She carries him around, even though he is a big toddler and they pack her bag to go home.

Summary of nature observations

Anna’s interactions with her environment and the natural materials in it include:
• Bug hunting and collecting play:

Outdoors: Bug collecting occurs most often in a corner of the yard where a cluster of wilting pot plants stand (Figure 19).

![Image of a yard with potted plants](image)

Figure 19: Anna and other children search for minibeasts in and under these pots.

Indoors: Anna also involves minibeasts in indoor interaction, bringing snails for show and tell and bringing collected bugs from outside with her into the indoor play spaces.

• Guineapig responsibilities: Anna is often in charge of the pet guineapigs.

• Moving around the yard: Anna uses the climbing frame, walks and hops around yard.

• Talking to adults: Anna mostly talks to adults about the farm.

Conversation with Anna

Anna tells me her perfect day was in Queensland, but goes on to draw a farm. Her picture shows a lady farmer, a flower, a heart, a cross, a pig, the words ‘Rebecca, love Anna’ a dog, a heart and a sheep. She sticks sticker rainbows and a silver sparkle on it. She tells me “It is decoration.”

“Is that what the farm is like? All rainbows and sparkles?” I ask...
“Yes.”

“What is this silver bit?” I wonder.

“A lolly for the dog, cause its near the dog. A dog on a leash.”

She leaves the picture with me and goes to ask the teacher when is it time to go outside (20/10/04, 9:45 am).

Anna’s drawings

Anna talked about the farm on several occasions, including when she told me that they had had pet chicks, until they were taken to the farm. She also told me she was going to the farm on the weekend and after the weekend told me how she fed “kangaroos, frogs, mice, koalas.” Anna’s mother, informed me that when Anna was three they had spent the day at Chesterfield Farm, a family farm in the eastern suburbs.

Figure 20: The farm
Anna’s second picture (Figure 21) was drawn at home and given to me at preschool. It shows a person in green having a picnic.

Figure 21: A picnic
**Brett**

Brett attends Waratah Preschool. He is four years old. In Brett’s outdoor play he often calls to other children and asks them to be on his team. However, his calls are largely ignored by the children, no one joins him and he does not join anyone else. Instead he continues his own games which involves a lot of gross motor activity and has imaginary elements.

**Brett’s story**

Brett stands by the seed planting activity table. When it is his turn he wets the paper towel, puts it in the clear plastic cup and drops the bean in. He places this on the window sill with a growing row of seed cups, and runs to play with the wooden train set.

A girl is there and together they build a train track with bridges and switches. Noisily they crash the trains about and stir the box of trains with their arms creating a clatter. The assistant teacher, Mary, speaks to them and Brett returns to the train track, rolling a little train along the curves. He crashes his train into another child’s and the child screams and bursts into tears. Soon they are both pushing each other and Mary intervenes once more.

Brett wanders around the room, he stops to speak to the casual relief teacher and shows her a huge spider tattoo on his arm.

Brett sits the Tap Taps and calls out to some boys.

“Come on guys, this is fun, you can make anything you like.”

Fred sits down next to him, “How did you get so tough?” he asks.

“I’m not that tough, am I?” Brett gasps.

“Yes, remember when we tried to fight you?”

Brett is thoughtful. “Cause I had that sticky tape around me,” he suggests thinking of the masking tape he had wrapped around his arms while playing Spiderman.
“When we go outside, I’ll get the strongest thing ever,” Fred insists.

“I don’t have it on today… I’ll put some more on,” says Brett.

The day for Brett is a series of activities; just a moment at each, as he cruises around the playground. Outside in the dappled shade Brett first runs to the swings, but now, he is climbing the slide house, a fixed structure comprising of a ladder, slide, tunnel, pitched roof and two steering wheels on a second floor. He climbs to the top level and jumps off. A big thick gym mat catches him below. Next, he is climbing a rope over the A-frame up and running back to the slide house, up one side, down the other and crawling under the lowest platform, into the tan bark below.

Another child is underneath too. They pretend to sleep, until some one unseen, calls out “It’s morning.”

Brett jumps up and is met with one of his classmates asking, “Do you want me to fight you?”

“No” Brett replies and runs to the A-frame. He grabs a nearby ball, runs around. He runs up and down the yard yelling, “Are you on our team?” No one answers, but Brett continues his path across tan bark and shouts “Good job team.” He crawls back under the slide house and someone crawls under with him, but leaves soon after.

Brett asks the teacher for a frisbee. He runs over to the monkey bars with it and throws it. It hits Kelly. She drops off, screams, and runs to the teacher saying “Brett’s throwing things at me.”

Teacher says “Brett, listen to Taylor, I think you are scaring her.”

Brett climbs up the slide house with the frisbee and jumps off. He goes inside and serves tan bark to Alice, who comes to the counter with a bowl. He climbs out the side and up onto the top level again.
“Excuse me, I’m going to jump now,” he yells down to the girls sitting on the gym mat with some snails. He jumps across to the mat, then dashes into the slide house.

Today the children have lunch at preschool. Brett sits with John. They eat their sandwiches and shoot Spiderman hand signals at each other.

“I killed you.”

“I killed you.” They tell each other.

One of the children has a Ninja Turtle lunch box, they all look at it and point to their favourites.

“How about after lunch we play Ninja Turtles,” suggests Brett.

John says “No, lets play Power Rangers.”

Brett shrugs his shoulders and runs inside to return lunch box, then runs back to John. “Do you want to play Spiderman instead?” he asks.

“No lets play Power Rangers,” John insists.

“Alright, alright, whatever you say.” Brett leaves John and swings across the monkey bars, slides down a wooden plank and walks back up before checking out the water play. He watches in the background.

“That looks like fun,” he says to himself. He doesn’t join in, but runs around the yard shouting “Power Rangers” and chasing Sue.

Brett stops running and walks towards to slide house. Sue is back, she chases him. Immediately they are engaged in a Spiderman game. They both make sound effects and shoot imaginary web from their hands. Brett scrambles up the slide house, Sue screams, Brett turns and yells at the top of his lungs. Sue runs away.

Left alone, he stands on top of the house and looks around. Unconcerned he turns toward the steering wheels and turns one. But another boy is watching him. He looks him in the face and asks “Why are you hurting a girl?”
Brett stands up and holding himself steady with each hand on the side rails of the house he lifts his right leg and kicks the boy in the tummy. Both children run off without another word.

Brett jumps across to the mat, then dashes into the bottom of the slide house and leans on the counter. The teacher comes over to buy some chocolate cake. Brett and another girl, Sam, serve her. She suggests the children build a shop by the sandpit with the big blocks and sell sand food.

Brett and Sam run over to the sandpit and are joined by another boy. Together they sweep the sandy area. Brett fills the trolley with five big blocks and wheels them to the sandpit and he leaves the there and runs over to another group of children to watch the Anna's snails.

After a moment he is back up the top of the slide house. The teacher and Mary chat below. He watches them while he plays, climbing up and down and jumping on the mats, talking to himself in some imaginary voice. Jumping from trampoline to mat he calls “Teacher, there's a birdy on the wire. There's a birdy on the wire” She comes to him and suggest that the bird is looking for worms where the children have moved the pots.

“I'm ready” sings a girl. It is Sam.

“OK. Lets make the shop!” Brett shouts joyfully, but on his way to the sandpit his teacher reminds him it is nearly time to pack up, so instead Brett walks down to the swings. He drifts inside and outside during pack up time until all the children settle down for a story. The teacher asks, “Where are we going next time we come to kinder?”

Brett knows, he is the first to call out “Botanical Gardens.”

The children's parents arrive and the group disperses.
Summary of nature observations

Brett's interactions with his environment and the natural materials in it include:

- **Pet play:** Sue is a kitten, Brett is a farmer. They play for 10 minutes, the longest time Brett plays with another child. It involves using fixed equipment and a tie, stick, jar of bark, paper fans.

- **Brief experiences:** Brett occasionally watches other children with bugs and touches a pelargonium plant once.

- **Talking to adults and teacher directed activities:** Brett tells the teacher about seeing a bird and about the botanic gardens. He also participates in a seed planting activity indoors.

**Conversation with Brett**

Brett tells me all about his favourite places to play. He tells me about the thing in the playground with the blue roof. He doesn't know what it is called (I refer to it as “the slide house”).

Below is a record of a conversation:

We sit at snack table in the sun near the cubby, where we can see the whole yard.

We talk about his favourite places to play at kinder.

*I ask Brett. What’s your favourite place in the playground today?*

“Going around on the swings.” He replies.

*Ah, and who were you on the swing with.*

“John...That’s John... him.” He points to the boy eating his snack next to him.

*So you’re having your snack now. But what are you going to do after snack.*

“Climb the rope.” He replies.

*Which one? That one over there. (Indicating to rope A-frame)*

Both Brett and John reply together, “Yeah, that one, Mark’s on.”

I ask if that is one of his favourite things to do and he nods, but cannot tell me why.

“... and I like to play on the monkey bars.” He says.

“I saw you on the monkey bars yesterday, you were running around so much.” I comment and John adds, “He likes jumping off, like jumping off the playground thing. (He indicates jumping from the top of the slide house to the mat.)”
“They’re all my favourite things.” Brett finishes the conversation (21/10/04, 10:35 am).

Brett’s drawings: The slide house and sandpit

Brett draws a picture of the edge of the sandpit (Figure 22), because he says he is not able to draw the slide house, his real favourite place to play.

Figure 22: The edge of the sandpit
Chris

Chris attends Banksia Road Preschool. He is 5 years old, born in Vietnam. He lives with his parents and brother. He speaks at least two languages, Vietnamese and English. Chris often chooses to spend time inside, where it is quiet and work on his own or cruise around. Everyday Chris spends a large portion of his time with adults. He tends to ‘hang’ off adults, and lean on them. He appears very weak and floppy and he will not stand up or sit on his own if there is someone he can lean on.

Chris’ story

**PART 1:**

Chris arrives with his mother. He stays inside with her for a little while, all the other children are outside completing circuits of the obstacle course. Sometimes on arrival, Chris walks slowly through the room, looking or talking to children and other grown ups. Today he shows me some spider webs.

“See these spider webs?... I found some spider webs.”

“Where did it come from” I question. Chris tells me that it came from a spider. The spider lives in it and catches flies and then comes back and eats them for breakfast, lunch and tea. He stands with his mum until she leaves.

Every day the children divide into three groups for story time. After story time the children play freely indoors or outdoors. Chris spends a lot of time indoors today, threading beads and being read to. Eventually he makes his way outside to the sandpit. A small group of boys dig a pit in the soft sand. The sandpit is huge and roomy, but all the boys stick together. Chris digs too.
He jumps up and holds his spade out above a boy's head. The boy jumps up and stands with his spade raised ready to hit. They take a few swings at each other and grow disinterested in the game.

The boys settle down to the digging work and discuss who is whose friend.

Chris spends most of the morning in the sandpit, watching other children and going about his own business pouring water into PVC pipes. When he stops he feels the gritty sand in his fingers and runs, arms waving up the ramp to the bathroom. He asks a mum to help him, but she says she is busy. He asks another adult to help him turn the tap on in the bathroom. With the water running he washes his hands slowly, rubbing them together and watching the drops run over his palm.

The following day when Chris enters the sandpit he approaches the little group and talks to them, working out who is doing what in the play. He collects a spade and joins in.

“No, Chris. You're not helping me”, one of the girls states. Chris ignores her and continues to dig in the sand. He digs by himself and talks out loud, “I am going to dig all the way to the bottom.”

As I wander past I hear a shout.

“Watch out!” A spadeful of sand comes flying my way and Chris grins at me.

I frown, “Please don’t do that.”

“Ok” Chris says and adds “I’m building a hole for Joanna… Joanna, it's done!” He shouts.

Chris spends the rest of the morning drifting through the outdoor play space. He hits the totem tennis ball back and forward for a while, he jumps on the ‘Pirate ship’ saying “I’m a Blackbeard” but doesn’t join in with the other children there. He stands by the table tapping it with a screwdriver, he taps and stabs and looks around, but doesn’t attempt to pull anything apart.
When it is time to pack up he picks up a hurdle bar and uses it to whack a branch hanging from the paperbark tree. Lucy reminds him that they are packing up and a moment later Pam calls all the children to a circle to play ‘Duck, duck, goose.’

PART 2:

After we visited the Royal Botanic Gardens a tarpaulin of natural treasures the children have collected is spread out on the mat. Chris sits by the tarpaulin and picks them up and drops them from above his head. “Autumn leaves” he says to himself, then looking at Pam he does it again. He asks Pam to watch him, twice, but she is busy talking to another child and does not respond.

When most of the children have arrived and are outside on the obstacle course, Pam joins them. Chris goes too. He stands in front of Sarah, completing star jumps. When he finished the jumps he stands next to her and pokes tan bark into her pocket. Then he runs and climbs a tree and calls out to a mum, “Look at me! Look at me!” He jumps down, climbs high into another tree and then jumps down out of that one.

During outside play time today Chris stays in the gazebo with the student teacher and makes a pirate hat. He talks to her about his family and his brother. When he has finished two eye patches he walks outside the gazebo and comes over to me. He talks to me and Pam about a ringtail possum which fell out of a tree, because its enemy, a bird, was fighting it. “You have to take care of pets” He tells us, “Mine ran away. It was a dog.” He tells us how he liked it when the dog licked his face and goes back into the gazebo to do more pirate craft. He gets very gluey and washes his hands inside then returns to the craft. He has created his own game of getting gluey and going inside to wash his hands, then getting gluey again and washing his hands again.
At pack up time Chris helps to pack the sandpit up, although today is the first time I’ve not seen him playing in it. Pam asks the children to collect rubbish and put it in the bin.

Chris collects a leaf and Pam says “That’s not rubbish!”

Summary of nature observations

Chris’ interactions with his environment and the natural materials in it include:

- **Sandpit**: Chris digs and carries water, but often plays parallel to other children.

- **Water play/hand washing**: Chris frequently washes his hands and spends time watching the water run over them. It is done freely, with interest, he takes his time and repeats the action and experiments.

- **Adult interaction**: Most of Chris’ time spent doing activities is done where an adult is present and interaction with them takes place. Few of these involved natural materials, but most of the time was spent outdoors, as this is where most of the children were. He spent most of the time interacting with the student teacher. Sometimes his conversation would include talking about nature, his pets and the things he was observing, such as spider webs in the branches.

- **Chris at the RBG**: On the excursion Chris makes a collection, enjoys looking at worms and leaves, chasing swans and tries to pull their tails. After the excursion, Chris plays with the treasures the group collected.

Conversation with Chris

Chris asks me about the maps which I use to plot the children’s play on. After he has had a good look I ask him to point out his favourite things. He points to the three trees along the car park fence and says, “Climb trees… walking… and climbing on tyres and rope ladder.”

*I ask if I have missed drawing anything on my map of kinder.*

“The school and inside the school”, “the wind” and “the leaves, branches for leaves to go on” He also adds, “We are not allowed to break branches.” He replies
Chris tells me what we need in the sandpit: shovels, to dig a hole right to the bottom to go all the way to China; another hole for Andrew, ‘so he doesn't bother me…my hole is bigger.’

If we were outside now, what would you do?

“Sandpit,” he replies, “but I don't want to go outside in the rain and get rain on my face. I don't like being wet.”

Chris tells me that at home he plays video games, Playstation, a new racing game.

“It's silly,” he says “the man says, “Number 1 unplugged, Number 2 unplugged.”

Do you have a garden? “I play outside at the park on the bikes... I have a garden with a trampoline and a slide. It's a bit small.”

He asks me if he can draw a picture.

It is of his backyard. First he draws the trampoline and the slide. Then he draws the grass, he talks as he draws:

“My garden is a little bit big and a little bit small. Its round. There's the trampoline and slide and grass. Grass under the trampoline and grass under the slide. And there’s another bit, (he draws a box on the side) with a mountain, a rock mountain. My brother and I put them on something and catapult it. And there’s the spiky thing (he draws a straight line and round circle with little lines coming out of it) to catapult it and there’s little trees (he draws some faint squiggles along the edge of the circle).”

Earlier today Chris told me he has 100 Yugio cards and a game with a catapult in it called ‘Age of Empires’.

Chris asks me if he can keep his picture. So I make a photocopy and he puts it in his bag.

After snack, Chris plays in the sandpit, digging (11/11/04, 10:30 am).

Figure 23 shows Chris’ grey lead picture of his backyard.
Figure 23: Chris’ backyard

Figure 24: Chris draws the green house from a story as his favourite place.
Sally and Matt

Sally is a five year old girl, her best friend Matt is also five, together they attend Banksia Rd Preschool. However, Matt attends primary school on Tuesday and only spends Wednesday and Thursday mornings at preschool. Sally attends all three mornings. I began to observe Sally as a single case study, but found her interactions so inseparable from her best friend Matt that this story would only be half told if I did not include observations and drawings from Matt also.

This story outlines two main activities of the children, hunting for bugs and playing in a bamboo kitchen. The reason these two activities were chosen is because the re-occurrence of the play over multiple days and the length and complexity of the experience, which involved multiple children and loose materials. Other similarly complex games which only occurred once are included in later descriptions.

Sally and Matt's story

On Tuesday, Sally mostly plays by herself. Outside, she pokes around in the garden beds and under rocks. She uses a cardboard box or milk carton to collect bugs and stands inside the garden bed, eyes fixed on the tiny bush flies in the air and clapping her hands over them. Often she misses, but she keeps clapping until she catches one and puts it in her carton. She moves all over the yard and on the other side she pops into the small cubby house.

When she comes out I am standing nearby, beside a massive pot with a citrus tree and some strawberry plants in it. She tells me that pot isn't supposed to be there, it should be here. She draws a circle in the earth with her finger a meter away in a rather inconvenient spot right near the cubby door. I say “I think Patti wants it here and it is too big to move.” She says she wants to find if there’s any bugs under there.
This seems OK to me so I do move the pot. Oh relief, it is not heavy.

She bends over the spot and looks.

“Ants!” she cries and “A worm!” She picks it up, then bends over and flicks sandy dirt all over the bugs and stirs up the neatly arranged ‘under the pot world’. She says “Spider” and gets a lid to scrape it.

“You can put it back now” she tells me “we’ve got what’s under it… a worm”

(I put the pot back)

On Wednesday, Matt comes to preschool. Sally and Matt greet each other with joy and sit next to each other in circle time. After story groups the children can play outdoors or indoors. Matt and Sally run outdoors and collect the big spades from their storage place. They dig along the fence, try to catch flies, talking the whole time.

“Maybe they know we’re going to catch em” Sally refers to the evasive flies, “There’s one…” Sally turns over log. “A town of butchie boys” she cries and then calls out “I’m squashing the people.” She reaches down and destroys the neat paths and tunnels made by the creatures and pushes dirt all over ‘the town.’

Sally and Matt play all over the yard. They play and converse and prowl about. They have a bucket of green bamboo shoots which range in size from 20 cm to 50 cm in length. They stir them into a tray of water. Carrying the bamboo with them, they creep into the dense bamboo forest in the corner of the play yard and search for more shoots, which they snap off at the base.

“I found a better one.” Matt calls and leans into the bamboo to pick it.

Sally also bends over and picks another shoot. Inside the bamboo forest is a kitchen. It has an old sink, plastic containers and a make shift table.
Matt dips the end of the bamboo into a bowl of sandy water and continues checking the base of the shoots to see which ones have been done.

“I found this beauty,” he says.

Sally joins him and together they place the dozen or so shoots on a little table and use a bowl to make some food. They put in smaller (20 cm) shoots into the bowl and mix in sand and what Sally calls “mixing product” (which is also sand). They call this “Wet stew sand”.

Sally and Matt climb up the tree, in the bamboo kitchen. They are very high. They talk to each other about seeing the blue tongue lizard from up here. Sally found one at kinder once.

Jake comes into the cubby, “I found a bamboo stick.” A boy runs in from a different side saying “Sally look what I found.” He holds up a photo of her.

Matt is out of the tree now and he picks up a very long bamboo shoot. “And look what we’ve got to get you!” he replies brandishing the bamboo like a weapon.

The boy and the photo leave quickly.

Sally and Matt seem to dismiss the interlude, they hold the bamboo and say “First we need to pull the leaves off.”

Sally leaves Matt and Jake in the kitchen and returns with some little shoots. Matt and Jake are discussing whose bamboo is whose.

“Matty, I found these to put in.” Sally says and adds some more shoots to the pot.

“We found the most.” Matt says, he sorts out the bamboo belonging to the other boy (four small shoots) implying he should leave now.

Jackie arrives. “Can I play?” she asks.

“Don’t touch,” says Matt. Sally is busy cooking and doesn’t look up.

“What are they?” says Jackie.
"We don't know," says Matt.

"They're bamboo," replies Jackie.

"We know," says Matt.

Jackie leaves and the photo boy returns. Matt and Sally suggest they fight. Nothing happens and he leaves.

Another boy named comes into the bamboo and stirs the pot, ignoring Matt and Sally's pleas to stop. He spills all the stew and steals some bamboo shoots and rushes out of the kitchen banging into this and that, on his way. Matt and Sally decide to hide the bamboo. They choose an upside down rubbish bin. "Andrew will never find it here" they say.

Sally goes out and calls "ANDREW!" across the playground.

"Don't call him!" Matt admonishes. He sorts though the shoots, "Andrew broke one of our beauties," he mourns "I am going to find some more beauties...Sally, I'm going to find some more beauties." They both leave the bamboo kitchen and do not return.

After snack time Sally returns to bamboo kitchen and gets a bamboo shoot from the bin, then runs across the yard to walk through the bushes. She finds Matt at the gazebo, he is at the pull apart table doing robot making. She joins in.

At lunch time the children sit around tables and eat scones made by a group of children. The children are thanked by the teacher and all the children. Sally tells one of the "cooks", "I was cooking today."

"No you weren't," he replies.

"Yes. I was outside," Sally insists.

"Did they have cooking outside today?" The boy asks.
Summary of nature observations

Sally and Matt’s interactions with their environment and the natural materials in it include:

- **Bug hunting and Digging:**
  - Using real tools, to dig, collecting, touching worms, spiders, bugs and witchetty grubs.
  - Climbing trees, lifting up logs;
  - Touching, squeezing and slapping little creatures;
  - Conversations about minibeasts, killing them and protecting them;
  - Observing bugs: Searching the whole yard, looking under ground, on the fence cloth, under pots, pausing to watch; and
  - Talking to adults in order to help find more bugs.

- **Using loose nature materials and gardens:** Looking in the veggie patch, digging up potatoes and pirate game with Matt using little nuts as cannon balls, Sally uses a liquidambar seed pod.

- **Bamboo play:** Collecting, harvesting and hiding bamboo. The children peeled bamboo, using it for ‘cooking’ and as weapons. See Appendix 8.3 for full record.

- **Leaf game:** Social team game, imaginary play and using loose materials as capital. See Appendix 8.2 for full record.

- **The blue tongue lizard:** Sally and Matt often talked about the blue tongue lizard and looked for it in their play.

  *The children often find little skinks, that throw their tails, but one day Sally made a rare find. She was playing outside in the preschool garden when she found a blue tongue lizard. It was only a small one, but she was very excited. Pam was away sick, but Sally showed the other staff and they said it was a blue tongue. They caught it and looked at it and were told to leave it.*

  *No one had ever found anything like that before.*
Months later, I visited. Every day children told me about the blue tongue. When Sally and Matt were climbing the tree, during their bamboo play, they pretended they were looking for the blue tongue below. When the children drew their favourite places, Jake drew himself and Sally and the blue tongue (Research journal, 14/11/04).

A picture of the blue tongue lizard (Figure 25), “Sally and me catching lizards at kinder: Me in the bushes and I almost found a lizard and Pam is in the kinder. It is sunny and warm.”

![The blue tongue lizard is found at Banksia Rd Preschool](image)

- **Various brief activities**: Pull apart table, water play in and out of sandpit and water trough; fighting with hurdle bars and throwing them (only for a minute); playing totem tennis; playing hide and seek all over the yard.

- **Conversations with other children**: Sally and Matt make jokes about nature, talking about finding creatures, share information about nature, recall past experiences in nature. Conversations about hurting and loving nature are recorded in Appendix 9.
Conversation with Sally

Sally tells me, “At home we go bug hunting in the garden. We caught a baby blue tongue here. I go hunting with Matt.”
I sit down with Sally at the snack table.
“We are going to the botanical gardens,” I say. “Have you been there before?”
“No” is her brief reply.
“What do you think you might see there?”
“Beautiful flowers,” she is brief.
Then Sally leaves the snack table and goes to her bag, she returns to show me something. It is a yabby in a bug viewer. She tells me they found it in the backyard, “His hole was flooded. He is dead. . .At first I thought it was a scorpion”
I ask what will she do with it? She says, “Keep it at kinder until it’s dead… no it is dead, till it stinks and then throw it out” (9/11/04, 10:40am)

Sally’s drawing: The Beach

Sally explains, “[My picture is] at the beach looking for sea shells and crabs. I’ve been there and we saw a ginormous crab with only one nッper!” (see Figure 26)
Matt's picture: My dog on the beach

Matt explains, “My dog loves to run on the beach. Sometimes I grab her leash and run her round the beach. We go for big walks together. We see crabs and ships parts... a pirate ship. Once we found some treasure on the beach we’ve only been to the beach once. It was really pirate treasure, real money and we gave it to our friend. My dog, Lady, is a mischief at the beach. Sometimes she runs and we can’t see her, then we see her (Matt is laughing). It’s (the picture) got waves. Lady doesn’t like wavy water.”

Matt also draws a picture of the beach, with the sea and a big white crab on the bag he is decorating (see Figure 27).

![Figure 27: Matt's drawing of his dog on the beach.](image)
Jemima

Jemima attends Kanooka Christian College. She is 5 years old. Jemima is interested in Hi 5 and Lizzi Maguire. She often talks about her pets, her dog and especially her cat Coco.

At preschool, Jemima spends a noticeable amount of time in the sandpit engaging in a variety of activities. Let us get to know her, through her story.

Jemima's story

Every morning in the Early Learning Centre the children sit inside and do puzzles on the mat. Jemima sits with some friends and tells them about her Lizzi Maguire headband. After circle time Jemima paints with inks. She does several pictures and is very careful with the paint. She leans over to concentrate. Her picture looks like a little person above a sea of stripes. I wonder if this is a field or a sea. Jemima doesn’t know, but she does know that the person is herself.

Outside, Jemima heads straight to the tap and turns it on. “Look guys water!” She waits for a group to gather. “Is everyone here?” She asks, “Watch out it will splash!” She turns it on hard. All the children squeal!

In the sandpit are huge black plastic slabs. Jemima and Verity flip the slabs over to play on top. Jemima tells Verity they need watering cans. They go and turn the tap on and off again. There are no watering cans or bucket around, the playground is very sparse. They go back to the sand.

“We’re being mermaids do you want to play?” Jemima invites another girl. The three girls sit in the sand and pour sand in their hats. They talks about who is the mum and sister and then just sit and fill their hats with sand until Jemima says, “It’s filled.”
Once a week, after lunch, the children are taken on a walk around the school property, through paddocks, past farm animals and the lake. On other days of my visit they watched videos. On one day the movie ‘James and the Giant Peach’ ran all afternoon and the children did not go outside again. Today the children watch a video of Hairy McClarey and then return to outdoor play around 2 hours after having broken for lunch.

Jemima returns slowly to the sandpit. She crawls in and asks her friend Julie to help her. Together they kneel down and dig with their hands. The assistant teacher, Mrs Stuart puts some buckets and spades by the sandpit. Jemima is the first to grab a bucket. She runs to the tap and fills it up.

“I’m making a waterfall,” she sings.

She puts it on one of the black slabs and kneels and pours sand, then continues collecting water. Miss Elliot walks past. “Jemima, how many buckets of water are you allowed to have?”

“Two.” She answers.

“How many do you have?” asks Miss Elliot.

“Three.”

Jemima does not collect any more water, but together with four other girls she digs out the wet sloppy sand in a trench. Jemima then uses the wet sand to form balls and mount these on top of each other in a dribbly castle. One of the girls tries to add some sand to it, but Jemima shouts, “No!” The castle breaks, “No!” she cries again and falls on top of it. It is gone. Jemima cries and cries and walks away. The girl follows her saying sorry again and again. But Jemima just walks to Miss Elliot and stands by her side.

After she has stopped crying Jemima returns to the flattened castle, smooths it over and begins again, before long Jemima is in charge of four girls all building and digging.

Jemima shouts “Ready everyone?”
“Yeah!” They shout and dance on top of a black slabs. One of the girls stamps all over the castle before leaving it. Jemima returns and builds it up again. She tries to protect it this time and shouts, “No more water,” to a boy who passes by.

Once again, the castle is trampled on by one of the girls, when Jemima is not there. Jemima runs over and shouts, “No!” She rebuilds it, using her chest to push the sand against, piling it up and scraping around its base.

The girls run inside to get the clothes brushes. At the end of play time each day the children use dustpan brushes to clean their clothes and feet. Sometimes Jemima takes charge of the brushing, but today when she gets the dustpan and brush she plays with it, using it to scrape sand along the pit edge.

Jemima is called to the swings, but misses out on a turn. Instead, she climbs on the A-frame until the children are called inside for a story and then it is home time. Jemima stays for after school care.

Summary of nature observations

Jemima’s interactions with her environment and the natural materials in it include:

- **The sandpit**: Jemima digs, pours water, brushes sandy clothes and builds castles.
- **Talking to adults**: On the excursion Jemima walks with the teacher Jill and talks to her about the things they have seen in the garden.

**Conversation with Jemima**

Jemima is drawing some pictures when I sit down and chat with her.

I ask, “Where is the perfect place to play?”

“The park.” She responds.

*Where do you play?*
“At birthday parties.”

*What do you play?*

“Everything!” She eloquently states.

“Well,” I am thoughtful, “what would you like to play but aren’t allow to or don’t have the chance to?”

“What do you play at home?”

“I have friends over sometimes. We go outside, only sometimes and sometimes take out toys and I have a cubby house outside.” Jemima tells me there are no trees or rocks in her garden, but there is grass. She could hide in the dog kennel, if there were no spiders. She tells me that one day Coco the cat went into the kennel to sleep!

We talk about nature. Jemima is not sure how to tell me what it is, but when I ask her where to find it she tells me about an excursion they took to the aquarium, to look at fish. I ask if she uses nature when she is playing at kinder.

“I use everything in kinder… beads.” She replies.

*Is there anywhere you are not allowed to play?*

“A long time ago we had dress-ups, for the Peter Pan project.” She points to the costumes on display, pinned high up on the walls and describes them to me, “At the end of the year we can take them home, but we are not allowed to pull them off and play with them.”

*Would you like to play outside more? I ask.*

Jemima replies, “Not at my home, but here at kinder.”

**Jemima’s drawings: Coco the cat**

Jemima draws her favourite thing and her favourite place. “I’m drawing my cat Coco and he is black all over. When I went to Sea World we looked out the window and there was a park! But we only went once… It’s [the picture] my favourite place cause it’s at the park, but I don’t take me cat. I take my dog. This is Coco walking up some stairs to get down the slide and you have to go down the slide” (see Figure 28).
Figure 28: Jemima draws her cat.

Jemima also draws, “A rainbow and clouds, cause Coco is just beside the rainbow, but you can’t see it” (see Figure 29)

Figure 29: Jemima draws her cat behind a rainbow.
Sam

Sam attends Kanooka Christian College Early Learning Centre. He is a 5 year old boy, who lives with his brothers and his two veterinarian parents. Sam’s mother often stays for morning group time and all the children accept her as a friend. Sam’s story shows him interacting with children, talking about and hunting for bugs, caring for chickens. Sam loves to catch them and stroke their feathers and is always the first to collect the eggs.

Sam’s story

At preschool Sam plays with lots of children but mostly with Thomas. As it is the last week of preschool for the year the children spend time rehearsing for their Christmas concert. But this does not impinge on the hours of outdoor play time set aside for the children.

On arrival the children sit inside and do puzzles on the mat. This morning, Sam is not. He is standing, holding a stick and Mrs Stuart, the assistant teacher, is telling him off.

Everyday, Sam is the first child outside at outdoor play time, both in the morning and afternoon. He always runs straight to the hen house to collect and count the eggs. He holds them carefully in his upturned shirt front and delivers them to the kitchen. On the way he shows some children, “Look!”

They ask him a question and he replies “No, they are just for me.”

There are lots of eggs, more than usual Sam and a girl count them, seven. They are very excited and shout out to everyone the good news “Seven eggs today.”

The outdoor play area is wide and spacious. There is a cubby, a swing frame with no swings in it, some bushes with a play boat behind them and some movable A-frames on the grassy area.
During the morning, the teachers put out some plastic foam shapes for the children to play on, but Sam was more interested in bug hunting and running and jumping in the sandpit. Putting his hat and shoes aside he sits and runs the sand through his fingers. He runs and invites a boy to come and play in the sand, but his calls are ignored and returns to the sand alone.

Sam organised a group of children to search for a Christmas beetle, saying, “You go that way… you go that way.” Three of these boys chase Sam around until he hits them with his hat and the teacher intervenes. Only one boy follows Sam’s instructions and 6 minutes later he calls, “Sam, I think I’ve found a Christmas beetle.”

Sam comes running and climbs into the garden bed where his friend is peering. A voice floats across the playground. It is one of the teachers, “Sam, where are you going?” Sam climbs out of the garden and goes and sits on an empty wooden shelf with a few other children. They talk about beetles. One boy says he has one at his home. Sam’s ears prick up. “Bring it tomorrow and put it in that box.” He insists. He opens his mouth as wide as he can in excitement.

This afternoon, Sam is joining in the outdoor play later. First, he finishes his group project with other children in the kindergarten, together they have sculpted a clay fairy toadstool. Once the sculpture is finished Sam runs straight to the hen house. One egg! He shows his teacher and runs inside.

Buckets and spades have been placed in the sandpit this afternoon. Sam sits in the sandpit absorbed in making a smooth ball of wet sand, the size of his palm. He pats the sand and watches a group of other children splashing muddy, sandy cakes around. Sam’s friend sits with
him and also makes a round ball of damp sand. He calls it ‘an egg.’ Sam doesn't call it anything. He holds his ball in a precious way and watches the other children making sand eggs/balls and smashing them.

Sam walks on the wet sloppy black slabs, he stamps and splashes the water, he has very wet sandals. He sings “Bum, bum, bum, bum…” Sam and five other children dip their arms into sloppy buckets and decide to make a mud castle.

“All the mud is Thomas’ and mine,” he says.

Jemima comes over. “What are you doing?” she asks. “Making a mud castle,” they reply. “We were doing something else,” Jemima frowns, but Mrs Stuart comes and tells her to play somewhere else.

Sam sees another boy taking a handful of mud from the slop. “He's stealing our mud!” Sam cries. “I'm not” retorts the boy and the children begin a conversation about who owns the mud and who can have some. But Sam doesn't want to give any away. Sam settles down and begins to scrape the shape of a castle. “We need to scrape it just like this,” he tells Thomas.

“Hey look there's water!” Thomas cries. “We don't need any,” replies Sam as he continues to sculpt the sand. Thomas pours the water onto a black slab and all the children come over to see. Sam watches as one child rakes patterns through the wet sand. Thomas throws down some more water. The children are called inside, but Thomas continues delivering water.

Sam's castle is a round mound now. He puts a sand ball on top of the castle and runs inside.
Summary of nature observations

Sam's interactions with his environment and the natural materials in it include:

- **Sand balls**: Sam makes balls of sand while he sits with his friend. He also participated in digging one day around a big rock near the stone boat.

- **Chickens and collecting the eggs**: Sam holds the chickens and strokes them. He collects their eggs twice a day and shows other children.

- **Christmas beetle**: Sam likes to talk about bugs and spiders with his friends and does this on several occasions. He goes bug hunting until told not to go into the garden beds. He holds and touches a Christmas beetle from home and talks to other children about bugs.

- **Sam and his mum**: Sam's mum comes to kinder most mornings and stays for a while, she also attended the excursion with him, where they shared many conversations and discoveries.

Conversation with Sam

Sam is drawing a picture of an apple tree, a butterfly, a mushroom, a dragonfly and a little house. I ask him about the perfect day, the best place to play.

“In the block corner” he says.

*Where do you play?*

“In the communication table/block corner, outside in the cubby house and space ship.”

*Do you care for nature?*

“Yes. I care for them [the] most in my class.”

*Do you use nature when you play?*

“Sometimes we play with them, but mostly nature is not play, it is just looking.”

*Where would you like to play but don’t have the chance?*

“In the storeroom.”

*Would you like to play outside more?*

“Yes. I would rather play outside.”
**Do you play outside at home?**

“Yes. Yes, I have a tree, a big garden, a lemon tree, but it's dead. I'm drawing an apple tree, but I don't have an apple tree at home."

**Where is your favourite place to play outside?**

“The spaceship.”

**What did you think of the Botanic Gardens yesterday?**

“Good. We looked at flowers.”

**I saw you playing Goblins, did you see them on TV?**

“No. I saw a real one at my house. Hundreds, millions in my house. They’re green and they live around toadstools, but not mushrooms. They hate mushrooms. When they catch us, we’ll shoot them with our guns. When they catch us, they’ll kill us with their guns.”

**Sam's drawings: Beetle and Flower**

Sam draws a Christmas beetle, copying a real beetle which has died and is being kept in a container. He then draws a flower and sticky tapes the two pictures together to form one picture (See Figure 30a and 30b).

![Figure 30a: The beetle from Sam's picture](image)
Figure 30b: Sam used sticky tape to attach this flower to the Christmas beetle, forming one picture.
The excursions

The following three reports describe the 'out of preschool' nature experiences of the children. However, the children of Preschool 1, Waratah Preschool did not experience the excursion, due to a wet weather cancellation, this is recorded as another day in preschool.

1. Waratah Preschool's excursion

It is a rainy, overcast day. Hail has been forecast. Children begin to arrive at kinder, bundled up, Anna arrives in her raincoat, the hood tied closely around her face. Her mum clips a name tag to her pocket and she sits on the mat to play Clever Sticks. Brett arrives, “We're not early at all!” he exclaims to his mum as he happily clasps his hands. He joins the children on the mat, and builds a car with his mum.

Dawn, the teacher, is absent again. A casual relief teacher I have not seen before is here. She sits the children on the mat.

“Have you put your snack in the box?” “How do you behave on the bus?” “Do we jump in puddles?”

“No” The children shout.

They begin to discuss the Royal Botanic Gardens.

“What do you think we will see?” The teacher asks.

Anna and Brett hands shoot up first. Brett is chosen and he answers, “Trees.” Other children add a park, a Fairy Tree, flowers, plants, fairies, turtles, ducks!

“Yes,” Brett tells the children they are correct, “I've been there before.”

The teacher steps away from the group, but the children continue to talk about a big park, a little park and will they do planting. The room is full of anticipation and there is a buzz of children’s conversation.
The teacher returns to her seat and tells the children she has decided not to go to the Botanic Gardens. The children laugh, they think this is a joke.

“You’re tricking.” They tell her.

“No” she says, “The bus is leaving”

“We’ll have to walk,” someone cries. Children are standing up and craning their necks to see out the window. The bus departs.

The teacher sits them down, then sends them to take their coats off. As Anna walks past me she stops.

“Why can’t we go?” She asks me. I explain that the rain is too heavy and we wouldn’t be able to play very well in the rain, but we will probably go another day. She looks disappointed. Some children look very upset and are crying. The parents gradually leave, but the mothers of Anna and Brett stay for the rest of the morning.

The teacher declares, “Today we will make a great big garden at kinder.” She spends the morning organising children to paint grass along the bottom of a huge piece of paper and paint in the outline of a trunk, which is later decorated with torn up tissue paper and pasted with flowers from colour-in sheets.

Anna colours a flower first, but she grows bored and continually asks parents and teachers to help her colour and cut. She tries to avoid colouring in the stem by using a stick of green and pink wood. But in the end her paper flower has a green paper stem and two leaves stuck on in the same spot on her stem as everyone else. A boy comes to talk to me. He asks “Are you sad we are not going to the garden?”

“Yes. Are you?” I ask.
“Yes, I’m very sad… I was looking forward to seeing the turtles and eels. My dad used to catch eels in the garden.”

The children are called to the mat and are read a story, “The Wild” by Bob Graham and after this they do indoor activities with bean bags and gym mats until lunch time and finally home time. The excursion day is over.

2. Banksia Rd Preschool’s excursion

It is a pleasant day in late Spring and 21 excited children are eating snacks on the lawn waiting for their excursion to really begin. They are talking about what they could do in the Royal Botanic Gardens. Matt says, “We could shake trees and get all the leaves.”

The class begins 45 minutes late. Rena, is the RBG teacher taking the children today. She asks the children about minibeasts.

Sally calls out, “I know what minibeasts are. They are bugs”

We all walk into the IPFCG. Sally and Matt start to wander off and explore, but are called back.

Matt begins to grumble, “This is boring.”

Rena lines the children up. Some of the children stoop to pick up the tiny stones. The parents say “Don’t pick up the stones.”

All the children, except Matt and Sally, follow Rena through the lavender labyrinth. Rena stops and asks the children what do bees make.

Chris answers, “Honey.”

The children are taken to the edge of the pond. Sally walks away to a different part of the pond. Pam brings her back.

Rena stands the children around an empty table and holds tadpoles in a margarine tub. Only a few children can see in the tub at a time and a disagreement erupts. Matt can not see at all and so he turns backwards and faces the wall. Arms crossed he refuses to look. Sally leans on the
table, she leans a long way over, until her feet don’t touch the ground. She says “I didn’t see!” and the tadpoles are moved away.

Next it is worms, but this time the children are sat in a circle and Matt sits next to her. He looks in her plastic tub and announces “Worms in veggie scraps. We’re very good with worms. Sally and me, because we get them…” He doesn’t finish as other children pipe up, “Me too!” Rena takes a long time picking out worms and passing them around the circle in small tubs. “How about you tip them out on the mat so we can find them,” suggest Sally.

Chris looks at the worms for a long time. He doesn’t play with worms very often at preschool and finds this interesting. But it is not interesting for Matt and Sally, they are frustrated.

In the Kitchen Garden the children Matt and Sally stand apart from the group and touch the kale and cabbages. They are asked to plant a seedling and draw a picture.

After Rena has planted her seedling for her, Sally goes and squats on a low wall and digs her finger in the soil. She jumps up and turns around and picks a bit of string out of the soil. A mum sees her, “Don’t put your hands in the soil after you washed them!” Sally goes and washes her hands, then sits with Matt, Chris and another boy. They have found some trowels and soon they are digging around in the soil. No one has seen them yet, but a few of their preschool friends. Soon ten children are digging. Rena sees them “It is time to go. We don’t need the shovels now.”

It is time for our walk in the wider garden, all the children have collecting bags. Sally and Matt collect treasure as we walk, they pick up smooth stones and hurry ahead with Rena. The group becomes very strung out, down the back the children take time to interact with parents and nature treasures; walking, talking and finding.
Chris is filling his collecting bag, “I found a leaf and something small.” He tells me, holding a feather. He puts the feather in and looks into his bag, “and I found something you don’t like... A bug!” He pokes around inside his bag but cannot find it.

The group reforms under the lillipillies. Chris stands next to me. “Look up,” he whispers. I follow his eyes to see dark, leafy branches above my head. Sally is standing next to a garden bed looking intently, head down. She hops into the garden and walks along it instead of the path. Rena gathers the group in the Herb Garden. It is a hot day. Chris smells the herbs and says “Ugh!” Sally comes and goes from the group. She has seen four gardeners digging in a patch. “I want to see if there are any worms there.” She says. She creeps over to them and clambers around the walled garden beds searching for ‘things.’

The gardeners go. Sally looks where they were digging. “I wonder if they found any worms?” She says aloud and after a quick hunt returns to announce, “I found a butchie!”

Rena lines the children up again and says “Thankyou for coming. Children find your adults.” We leave the herb garden and head back to have lunch.

Pam points out the Bamboo Forest to Matt as we walk past. Seeing that a rope goes all the way along the path, he frowns and mutters to himself, “We’re not even allowed in, that’s no fun.”

Sally and Matt stop and pick up small green nuts along the way.

Matt says “I got em” in a tired way.

They lag behind and sneak onto Oak Lawn. “I found a treasure,” Matt tells Sally. “I found... a bee-you-ta-ful leaf!” She replies, annunciating every syllable of the word. “You want to put it in the bag?” he asks, but she wants to show his mum first.
Matt is tired he complains to his mum that he wants to go home, but Sally doesn’t want to go at all. She points out a dragonfly and seeing a banksia bush covered in banksia cones says, “I want one of those!”

Sally dawdles back, stopping for leaves and flowers. By the time she reaches Rena, all the children are in the toilets. She melts back into the group.

The program is over and Rena leaves. Pam asks the children to collect their lunch packs so they can walk to the main lake for lunch.

On the way they pass the bamboo again, “That bamboo is taller than ours and look… new ones beginning to grown” Sally points to the new shoots.

On the walk over Chris cries the whole way. He wants his mum who is meeting us on the other side and he doesn’t want to walk any more. Nothing anyone says will help, he just sobs and sobbs.

By the lake the children have time, just to eat and play. They explore, watch swans and try to feed eels with grass. Sally and Matt hover around the edge of the pond, watching the swans. Matt pulls up grass and offers it to the swan. Sally shows me a little bug she is holding by the legs with her thumb and forefinger.

Chris and Sally herd a huge black swan up to the lunch rugs. Chris reaches out and touches its tail feather again and again.

Sally and Matt lie on their tummies and look into the lake. Sally tries to grab the eels with her hand. She drops bark into the water and the eels swim over to see it, then she reaches out with her hand to catch them. Often she touches them before they swim away, but doesn’t succeed in picking any up.

“You're a good eel hunter,” a friend tells her.
As we walk to the gate. Sally says goodbye to the swan, “Goodbye swan, I'll give you a kick... what about my hand. It makes very good food” She sticks her palm out, before running up to the bus.

Chris walks next to me, “Excuse me. I got a pine cone at home and two treasures in my bag. I'm going to take them home to my house.”

The following week in preschool I ask the children what their favourite part of the excursion is. Sally tells me, “I touched an eel, but I wanted to pull one out of the water.” Matt adds that he liked ‘watching the eels’ too. Other children at the preschool recall their favourite part in group time. They say “Watching the black swans fighting for food,” “When we're having lunch, cause of the swans and eels,” “Seeing swans and having lunch and trying to catch fish with our hands” and “The bus trip, seeing the towers and the cranes.”

3. Kanooka Christian College's excursion

Today is the last day of preschool for 2004, tomorrow is the Christmas concert. The preschool children are visiting the Royal Botanic Gardens. Sam sits with his mum, she reminds him to use his manners. Jemima is pretending to be a lion. They eat their snack and listen to Miss Eliott describe the excursion. She tells them they will spend some time inside before playing outside. Not realising that the whole excursion takes place in the garden.

Jill is the Royal Botanic Garden's teacher today and she takes the children into the IPFCG. Sam and Thomas spot something and stop “Oh look! Berries...blueberries!” They pick some. “Come on boys, don't pick them,” calls Miss Elliot.
Jill settles the children under a twisted cork oak and reads them, “Bugs, bugs, bugs.” Jemima listens and says, “When I was on holiday, my mum gets me a juice…and a ladybug was in it!”

The children are given collecting bags as we move off. Sam has discovered that his bag is already full of someone else’s treasures. He pulls out the items, leaves and nuts, and drops them on the ground. “OK,” he says.

While Jill tells the children about a 10,000 year old tree trunk Jemima stands at the back and digs grooves into the gravel with her feet,

Jill points out the bees and butterflies to the children. Sam keeps his eyes open for bees. “I’m gonna whack one, when I see one.” He brandishes his bag in his hand.

The children sit on the pond decking and spot dragonflies. Sam creeps forward and peers down into the deep water.

“I see mosquitos in there.” He says.

“Come back, Sam.” Sam goes back to his spot. “It is not safe” The teachers tell him.

“I hear frogs,” someone calls, but the teachers are chatting. Jill soon moves them on, but Sam stops and squats, gazing into some grass. After a moment he follows the rest of the children, rambling across the garden he finds a pinecone.

Jemima is very excited. Jill has the children gathered around a garden plot. They are going to see worms. Not all the children can see. It is just a small pile of worms, on top of the soil. Although some children enjoy holding them, Jill whisks them away after a moment. It is planting time.
Sam uses the potting activity to tell everyone about seedlings. He explains that the white hairs are roots and the leaves get water from the sky and sun.

Jemima just watches, her mouth open and her fingers in the earth. She copies everything Jill does to plant her seedling.

Sam holds the snail. “Look at the snail.” He shows his mum. The other mums join in and talk about it with the children. Sam’s mum takes a photo. The snail is stuck onto Sam’s hand. He pulls it off and goes to wash his hands with mum.

The children leave the IPFCG and walk into the wider RBG. Jemima has mud on her nose, she runs to Jill and holds her hand. Sam inspects his pinecone as we walk.

“Hey, look Mum. A tree star!” Sam points to a tulip tree. He stops, “Look a tree star. That’s a treasure.” He puts the golden leaf in his bag.

Walking along with his mum, Sam points out shady places under the trees as ‘caves,’ he collects a coral tree flower, he thinks looks like a turkey and explains to his mum the different types of trees. He tosses oak leaves at her and into the air.

Jemima is holding Jill’s hand, but she lets go to run under a giant oak tree, Lady Loch, and touch the long branches. Other children climb up the trees roots. Jemima runs smiling past all the children up to Jill and holds her hand again.

Jill tells the story of fairies and magic at the Lightning Tree. Sam and Jemima listen, enraptured. After the story Jemima has a quick look at the tree before starting a tickling-chasey game. Running around she finds a beautiful dewy leaf. She pushes a child away, holding the leaf close to her, before placing it in her collecting bag.

Sam presses his ear to the tree for a long time, listening.
“I heard them when I just got there, Mum.” He looks wide-eyed at the dark lightning scar on the trunk.

All the children spot some toadstools. Sam and Jemima are in the group, squatting down and looking intently at them. Sam lies on his tummy and looks at the toadstools and his mum takes a photograph.

Jill stops at a cycad tree, and hands around some of its fruit as she tells them about it. Sam gets some and looks at it. “Only the aborigines can cook them,” he tells his mum what Jill has explained.

Jemima also gets a piece and puts it straight into her bag and doesn’t look at it again.

As we continue our walk Jemima stays close to Jill. Sam stays with his mum.

In the Herb Garden, Sam smells the lavender bush, “Ahhhh, that is what bees like!” He tells his mum. Jemima rushes ahead to smell the next plant, but stays close enough to Jill and keeps holding her hand. The children sit down and Jill shows the herbs, they crowd in closer. Sam opens his collecting bag and says to Jemima, “Look how much stuff I have in my bag.”

The children have to guess what the dried herbs are. No one can guess the mint. Sam says lavender, but it is wrong. After a while, no one answers, a girl calls out, “Ask Sam!” Sam looks distressed and says, “I don't know!”

The next plant is shown. Jemima guesses correctly, it is rose petals.

The children line up to make a herb bag. Sam is last. He looks to his mum. She smiles and winks at him. Jemima is already finished, and has invented a game where she smells her herbs then coughs deliberately. When Sam finishes he uses the bundle as a microphone and sings several songs.
When it is time to leave Jemima sticks with Jill. She tells her when she needs to let go of her hand, “I wanna get a leaf.” She lets go and picks up a fig leaf, which she puts in her bag. Then she holds it again. As we walk Jemima talks to Jill and points to things she sees. She doesn’t know what bamboo is, so Jill gives her a clue.

“A black and white animal lives in it,” says Jill.

“A zebra?” Jemima asks. She picks up a broken bamboo shoot. “I could be a dolphin with this on my back.” She says as she waves it around in the air.

The program is over and as we walk back, rain drops begin to fall, Jemima talks to Jill about the Lightning tree.

Jemima and another girl both have bamboo shoots. They hold them in the air and chant, “I have fire” again and again. Even when Mrs Stuart starts a Christmas song they only stop for a moment before beginning again with gusto, “I have fire, I have fire…”

It is lunch time. Sam and Thomas finish eating quickly then play an active game, racing around and hiding behind a small tree. They talk about goblins and poisons.

“Goblins are in the tree,” the boys say and put on their most frightened faces.

These games continue and Jemima plays a game of chasey, even though the teacher keeps telling all the children to sit on the mat and not run around.

During lunch I ask the children what their favourite part of the excursion was Jemima tells me it was the Lightning Tree and Sam tells me his was the veggie garden. Other children tell me about ‘the Christmas tree’ and ‘the possum in the tree.’
Seven way of interacting with nature

The following tables (1-7) include an outline of all the nature interactions experienced by children exhaustively. Each table represents one of the seven ways children interacted in nature and categories have been designed to suit the case-study children specifically. The six stories of the children have created a living picture of the child in nature; however, each story only shows part of the child’s experience. The tables, below, show all of each child’s interactions and behaviour at pre-school which occurred during the data collection period. The information in the tables has been taken from the raw data collected on the sites during outdoor play times and is presented authentically as possible to describe each child’s actual actions. Information in the tables will be referred to when identifying specific records of child behaviour.

Table 1: Loose natural materials

<table>
<thead>
<tr>
<th>Name</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna</td>
<td>Each day Anna hunts in garden beds and under the collection of pot plants clustered by the cubby house. The girls used the ‘bombs’ for trading, liquidamber balls = bombs (20/10/04, 10:30 am).</td>
</tr>
<tr>
<td>Brett</td>
<td>Brett picks up 2 handfuls of chip bark, he runs over to the swing and sees Mary and spills the bark through his fingers around on the ground (21/10/04 11:03 am). Brett picks up a stick and runs up the slide. After a while he tosses the stick onto a mat shouting, “Fetch.” A girl joins in the play and pretends to be a cat. Brett orders her to eat, climb, come, using the stick like a whip. Then he discards the stick. Now he is trying to feed the girl cat some tan bark (21/10/04 11:16-25 am). For a moment Brett serves tan bark to Alice as pretend food (25/10/04, 3:00 pm).</td>
</tr>
<tr>
<td>Sam</td>
<td>Everyday Sam makes sand balls out of wet sloppy sand, he does this by himself and with his friend. Other children copy them too. His friends call them ‘eggs.’ Sam doesn’t talk much when he is making them. Sometimes he just holds one cupped in his hand while he plays in another parts of the yard. One the excursion, Sam makes a bundle of dried herbs. When he finishes he uses the bundle as a microphone and sings several songs (13/12/04, 12:19 am).</td>
</tr>
<tr>
<td>Jemima</td>
<td>Jemima and her friends use their hats to scoop sand into, until Jemima says “It is filled” and tips it out (6/12/04, 11:44 am). In the Herb Garden the children line up to make a herb bag. Jemima finishes quickly and invents a game where she smells her herbs then coughs deliberately (13/12/04, 12:27 pm). Jemima and another girl both have bamboo shoots. They hold them in the air and chant, “I have fire” again and again. Even when Mrs Stuart starts a Christmas song they only stop for a moment before beginning again with gusto, “I have fire! I have fire!” (13/12/04, 12:37 pm).</td>
</tr>
<tr>
<td>Chris</td>
<td>Chris pokes tan bark from the ground into the student teacher’s pocket (18/11/04, 9:17 am).</td>
</tr>
</tbody>
</table>
| Sally and Matt | **Sally and Matt use loose materials in games**  
**Bamboo play:** Fighting, cooking, investigating, collecting peeling bamboo, playing in bamboo (9/11/04, 10/11/04, 16/11/04).  
**Leaf Game:** Leaves as desirable possessions (16/11/04, 11:20-11:35 am).  
**Pirate Game:** Using nuts/seedpods as cannon balls and bamboo as a sword (11/11/04, 11:13 am).  
**For practical tasks**  
Using a log to climb a tree. (10/11/04, 10:49 am)  
Using a stick to pull the rope swing down from the tree. (18/11/04, 10:48 am)  
**For sensory exploration**  
“Sally picks up some soil and tricks it down in front of her eyes watching it for 5 minutes” (16/11/04, 11:55 am).  
“Matt holds a bamboo shoot, with which he taps the A-frame rhythmically” (24/11/04, 10:45 am).  
“Matt is pulling some branches on a weeping tree. Sally is standing nearby on some fixed equipment yelling “Yeahhhhhhhhh!” and making a loud noise” (11/11/04, 11:00 am). |
Table 2: Nature as a setting

<table>
<thead>
<tr>
<th>Name</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna</td>
<td>Every day Anna hunts in garden beds and under the collection of pot plants clustered by the cubby house.</td>
</tr>
<tr>
<td>Brett</td>
<td>Brett climbs a tree twice (20/10/04, 10:15 and 11:13 am).</td>
</tr>
<tr>
<td>Sam</td>
<td>Sam sets his Goblin game in nature, hiding behind trees, under bushes (9/12/04, 11:32 am).</td>
</tr>
<tr>
<td></td>
<td>Sam and Thomas play an active game, racing around and hiding behind a small tree. “Goblins are in the tree!” the boys say and put on their most frightened faces (13/12/04, 1:20 pm).</td>
</tr>
<tr>
<td>Jemima</td>
<td>Jemima carries a potpourri bag (from the RBG excursion) she runs and sits on a rock (14/12/04, 9:40 am).</td>
</tr>
<tr>
<td>Chris</td>
<td>No records of Chris using the natural setting.</td>
</tr>
<tr>
<td>Sally and Matt</td>
<td>Sally and Matt use the whole outdoor area (trees, gardens, rocks and bark) as a setting for teacher set up activities and spontaneous play. Specific instances where nature provides the setting for play include: Bamboo, play Leaf Game Pirate game See Appendix 8.</td>
</tr>
</tbody>
</table>

Table 3: Collecting, hunting, gathering

Note: All children make a collection on the excursion as a collecting bag is provided by the Royal Botanic Gardens teacher.

<table>
<thead>
<tr>
<th>Name</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna</td>
<td>Anna and her friend Carrie collect snails and bugs. Anna also brings snails from home. She adds bark to the container and is protective of her snails and bugs (20/10/04, 10:20 am and 25/10/04 2:00pm). Anna provides grass and water for her snail collection (21/10/04, 10:01 am). I ask, “How many have you got there Anna? “I don’t know, too many for me to count though,” she says smiling. What are you going to do with them? I ask “Take em home” (21/10/04, 10:30 am).</td>
</tr>
<tr>
<td>Brett</td>
<td>No record of Brett making a collection of natural items.</td>
</tr>
<tr>
<td>Sam</td>
<td>Everyday, every time we go outside Sam goes straight to the hen house to collect the eggs, he shows other children and then carries them inside. He doesn't share this job. Sam organises a search for a Christmas beetle in the preschool garden (6/12/04, 11:20 am).</td>
</tr>
<tr>
<td>Jemima</td>
<td>In the 'fairy forest' Jemima holds my hand and in her hand is a small rock (9/12/04, 2:15 pm).</td>
</tr>
<tr>
<td>Chris</td>
<td>Chris only collects on the excursion.</td>
</tr>
<tr>
<td>Sally and Matt</td>
<td>Sally and Matt continuously make collections of bamboo, special leaves, bugs, witchetty grubs, butchie boys, worms, slaters, millipedes, grasshoppers. 9/11/04: Catching, watching bugs, in garden, touching worms in the water trough, bamboo, digging in a different spot, bug hunting under the pot. 10/11/04: Bug hunting along fence, fly clapping, talking, picking a flower by climbing a tree, picking bamboo, looking in vegetable garden for sunflowers, caterpillars, white-tail spiders and lady birds. Sally and Matt see the silverbeet, Sally calls it parsley, and they stop to eat some. 11/11/04: Turning over logs, using little nuts as cannon balls. Digging up potatoes with Pam. 16/11/04: Bamboo collection. 17.11.04: (Excursion day) collecting bags, Sally hunts for worms in the herb garden. Sally and Matt collect treasures as we walk including smooth stones, a daisy, a butchie, small green nuts, “a bee-you-ta-ful leaf”, a banksia cone, leaves and loose flowers. 18/11/04: Finding and holding worms. 24/11/04: Digging, finding millipedes, witchetty grubs from Matt's home, collecting bugs and worms, Sally calls herself a snake handler. Sally makes a witchetty grub territory up one end of the wheel barrow. 25/11/04: Matt shows Sally a ladybird which he found in his story group. Digging with hands (pawing through leaves) Sitting on the ‘bridge’ in the bushed and digging with feet, clapping at flies. Full record of Bamboo play, Leaf game and Pirate game involves collecting/hunting See Appendix 8.</td>
</tr>
<tr>
<td>Records of Sally and Matt’s hunting behaviour are included in Appendix 10.</td>
<td></td>
</tr>
</tbody>
</table>
Table 4: Recalling memorable experiences

<table>
<thead>
<tr>
<th>Name</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna</td>
<td>Visiting a children’s farm and feeding the animals (discussed on several occasions).</td>
</tr>
<tr>
<td>Brett</td>
<td>No record of Brett recalling a past experience.</td>
</tr>
<tr>
<td>Sam</td>
<td>No record of Sam recalling a past experience.</td>
</tr>
<tr>
<td>Jemima</td>
<td>Finding a ladybird in her drink while on holidays. “When I went to Sea World we looked out the window and there was a park! But we only went once” (Research journal, 7/12/04). Taking her pet dog to the park and wishing she could take her pet cat.</td>
</tr>
<tr>
<td>Chris</td>
<td>Recalling how a “ringtail fell out of the tree cause its enemy was fighting it. A bird.” and how he liked his dog licking his face before it ran away (10/11/04, 11:13 am). Seeing a worm in the garden at kinder, while he was digging (11/11/04, 9:10 am).</td>
</tr>
<tr>
<td>Sally and Matt</td>
<td>Matt: Going to the beach with his dog lady and having a holiday with Sally where they found crabs and shells. Sally: Finding the blue tongue lizard, visiting the beach with lots of coloured shells and crabs and going to Bermagui.</td>
</tr>
</tbody>
</table>

Table 5: Unrestricted, free exploration

<table>
<thead>
<tr>
<th>Name</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna</td>
<td>Anna freely exploring garden creatures watching them (25/10/04, 2:35 pm), laughing at them (20/10/04, 11:05am), talking about them with her friends (25/10/04, 2:15 pm), caring for them (21/10/04, 10:01 am), collecting them (25/10/04, 2:00 pm). Anna observes what happens when after finding out centipedes do not bite her friend breaks it in two. She watches and says something quietly (20/10/04, 10:33 am).</td>
</tr>
<tr>
<td>Brett</td>
<td>Brett watches Anna's snails (25/10/04, 3:00pm) and watching children at sand and water activities on two brief occasions. Brett touches the pelargonium leaves and his expression changes to a smile (the leaves are soft and fuzzy) “I'm going to help plant this,” he says to himself (20/10/04, 11:55 am). He also uses a tie to thrash at the tree's branches (21/10/04, 10:08 am).</td>
</tr>
<tr>
<td>Sam</td>
<td>Sam intently observes the toadstools at the RBG and his mum takes his photo (13/12/04, 11:36 am). Exploring with conversations Sam and his friend stand by the bookshelf looking in to a plastic tub filled with leaves and flowers. Inside is a pretty Christmas beetle. Sam's friend wants a closer look, and talks to Sam non stop about it” (6/12/04, 2:10 pm). Sam warns his friend about the nippers on the Christmas beetle, hoping that he can hold it (9/12/04, 3:00 pm). On the excursion the children sit on the pond decking and spot dragonflies. Sam creeps forward and peers down into the deep water. “I see mosquitos in there,” he says. Moments later he stops and squats, gazing into some grass. After a moment he follows the rest of the children (13/12/04 11:18 am). Sam discovers some grass growing in the sandpit and shouts “Veggies!” (14/12/04, 9:36 am). Sam wants to “wack” a bee with his collecting bag (13/12/04, 11:14 am). Exploring with digging He tries to dig up a rock experimenting with a piece of wood and then a spade (9/12/04, 2:15 pm). Sam digs along the edge of the sand put and toss sand over bugs, &quot;to stop them getting out&quot; (9/12/04, 11:50 am).</td>
</tr>
<tr>
<td>Jemima</td>
<td>Jemima stops to look at a Christmas beetle two boys are showing me (5/12/04, 11:28 am). She watches a boy put out some chook food (7/12/04, 11:35 am). She stops and watches some little girls squeal when they are feeding the chickens (9/12/04, 11:25 am). Jemima makes balls out of wet sand. Happy that she has found some wet sand (7/12/04, 11:05 am). On the excursion Jemima is very excited she is about to see worms in the vegetable garden (13/12/04, 11:25 am). One day Jemima runs straight to the hen house with 3 boys and Sam, Sam emerges with the eggs and Jemima goes and plays with a black pipe (14/12/04, 9:36 am). Jemima carries a potpourri bag in her hand and sits on a rock in the small sandpit, then looks at a Christmas beetle 2 boys have in a bug catcher (14/12/04, 9:40 pm). Every day Jemima freely explores and plays in the sandpit, building castles, filling hat, pouring water. For example: Jemima is in the sandpit saying, “Now I have clean water and dark water and what will I do with it. I will put the dark water into the clean a little” (6/12/04, 2:14 pm).</td>
</tr>
<tr>
<td>Chris</td>
<td>Chris watches other children playing in nature, digging and washing potatoes (11/11/04, 11:39 am). On the excursion he spends a long time peering in the tub of worms (17/11/04, 10:59 am). Chris uses a plastic hurdle to whack a low branch (21/11/04, 11:58 am). Every day he spends time washing hands and watching the water run over them in the sink. In the herb garden Chris says “Ugh!” (17/11/04, 11:50 am). He plays with the swans on the excursion and tries to touch their tail feathers (17/11/04, 1:00 pm).</td>
</tr>
</tbody>
</table>
### Table 5 continued: Unrestricted, free exploration

<table>
<thead>
<tr>
<th>Sally and Matt</th>
<th>Sally and Matt observing bugs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>They watch a slug (11/11/04 12:15 pm), spot a huntsman spider (18/11/04, 10:45 am), and Sally shows me a little bug she is holding between her thumb and forefinger (17/11/04, 12:00 pm).</td>
</tr>
<tr>
<td></td>
<td><strong>Exploring with conversations</strong></td>
</tr>
<tr>
<td></td>
<td>““Look Matty a sunflower has grown,” says Sally, “Hey look at this yellow one,” says Matt, “A purple spiky caterpillar!” (10/11/04, 12:08 pm). The children talk about tiger slugs and bugs and Matt gets a caterpillar. There is a lot of conversation I can’t record (too fast). Matt leaves the group Sally calls out, “I found a redback and she’s a beauty. Whoa, she’s angry. Look at her” (25/11/04, 10:45 am).</td>
</tr>
<tr>
<td></td>
<td>On the excursion Matt and Sally talk about what they would like to do there “We could shake trees and get all the leaves” says Matt, “We could build a lot of things and the windows could be toffee” (17/11/04, 10:20 am).</td>
</tr>
<tr>
<td></td>
<td>Sally talks to Matt “That bamboo is taller than ours and look… new ones beginning to grow” She points to the new shoots. (17/11/04, 12:00 pm).</td>
</tr>
<tr>
<td></td>
<td><strong>Exploring with digging</strong></td>
</tr>
<tr>
<td></td>
<td>Sally is digging in soil and clay discovering worms (9/11/04, 11:49 am). The children dig for potatoes, Sally builds a mound of soil around her spade (11/11/04, 11:39 am).</td>
</tr>
<tr>
<td></td>
<td>Sally builds a mound around the spade head and pats it down, then keeps on digging (11/11/04, 11:45 am). On the excursion Sally sits with Matt and Chris and another boy, all dig around in the soil. No one has told them to do this. Soon 10 children are digging with some small trowels which were left there (17/11/04, 11:17 am).</td>
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<td>Sally and Matt and a boy are digging. Sally has 5 worms in her hand. They find butchie boys and spiders. They are also digging up bits of the fence and trying to dig up a 4 metre tall tree (18/11/04, 10:48 am).</td>
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<td></td>
<td>Sally buries the head of the spade again. This is a game she does often and seems to enjoy (24/11/04, 11:00 am). Sally and Matt dig with others and alone. They dig in small groups with wheelbarrow (25/11/04, 10:45 am).</td>
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<tr>
<td></td>
<td><strong>Other interactions</strong></td>
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<tr>
<td></td>
<td>Sally picks and rubs an agapanthus bud and searches the garden and along the fence for flies (9/11/04, 11:15 am). On the excursion Sally and Matt often drift away to look at different parts of the garden (17/11/04).</td>
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<td></td>
<td>Sally and Matt wheelbarrow loads of mulch and rake the garden, talking and laughing (18/11/04, 11:26-11:45 am). They both feed the swan on the excursion by pulling up grass (17/11/04, 1:00 pm).</td>
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<td></td>
<td>They engage in water play in and out of the sandpit on two occasions (9/11/04, 10/11/04).</td>
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<tr>
<td></td>
<td><strong>Sally and Matt explore in cruel ways, examples include</strong>. (See full record in Appendix 9.)</td>
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<tr>
<td></td>
<td>Smashing a spider. Sally says she will kick a swan.</td>
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</table>

### Table 6: Exploring power, control over nature and social power

<table>
<thead>
<tr>
<th>Anna</th>
<th>Using nature to encourage friendship</th>
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<tbody>
<tr>
<td></td>
<td>Anna and Carrie find butchie boys for each other. They laugh and give snails to each other (20/10/04, 10:20-49 am). Another girl gives Anna some liquidamber cones and Carrie asks “If you give me some bombs, I can have another 2 snails.” “What?” Anna replies “I give you some bombs and another two snails?” She looks incredulous. Carrie then invites Anna to her house and can they swap boxes. Anna doesn’t want too (20/10/04 10:30 am).</td>
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<td></td>
<td>Anna finds natural items for a girl other than Carrie (20/10/04, 10:33 am). Anna is in charge of the guineapigs and offers them to children and adults. If a child goes to the guineapigs while Anna is absent, she comes over directly (20/10/04, 10:48-55 am).</td>
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<td></td>
<td>Anna finds a beetle and when it disappears she knows that Carrie has taken it and goes and takes it back, angrily banging the box with the lid shaking the bugs around roughly (20/10/04, 11:02 am).</td>
</tr>
<tr>
<td></td>
<td><strong>Ownership of nature</strong></td>
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<tr>
<td></td>
<td>“Where’s my beetle” Anna cries. Carries has taken it (20/10/04, 11:02 am). Anna plans to take her bug collection home and she protects them from another child who is about to tip the box over. “Leave em all” she says protectively (21/10/04, 10:30 am).</td>
</tr>
</tbody>
</table>

| Brett | No record of Brett exploring power over nature |
Table 6 continued: Exploring power, control over nature and social power

<table>
<thead>
<tr>
<th>Sam</th>
<th>Conversations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sam tells the boys about a huntsman that was in his house (6/12/04, 11:51 am).</td>
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<tr>
<td>Sam warns a boy about the nippers on the Christmas beetle so he can hold it (9/12/04, 3:00 pm).</td>
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<tr>
<td>Sam uses the potting activity on the excursion to tell everyone about seedlings. He explains that the white hairs are roots and the leaves get water from the sky and sun (13/12/04, 11:28 am).</td>
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<tr>
<td>Sam opens his collecting bag and says to Jemima, “Look how much stuff I have in my bag” (13/12/04, 12:19 pm).</td>
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</tbody>
</table>

Using nature to encourage friendship

Sam climbs into the garden, a teacher calls out “Sam, where are you going?” Sam climbs out and sit on an empty shelf on the deck. Six children sit there and they talk about beetles. One boy says he has a Christmas beetle at home. Sam asks “Bring it tomorrow and put it in that box.” He is so happy and opens his mouth really wide in excitement (6/12/04, 11:56 am). Other children call on Sam. The children have to guess what the dried herbs are. No one can guess the mint. Sam guesses lavender wrongly. A girl calls out, “Ask Sam!” Sam looks distressed and says, “I don’t know!” (13/12/04, 12:19 pm).

<table>
<thead>
<tr>
<th>Jemima</th>
<th>Using nature to encourage friendship</th>
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</thead>
<tbody>
<tr>
<td>Jemima controls the water in the sandpit. She goes turns the tap on. “Hey look guys, water!” she says, “Is everyone here?” A small group gathers and she says “Watch out it will splash” as she turns it on hard. They all squeal (6/12/04, 11:17 am).</td>
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<tr>
<td>Jemima has a sense of ownership. After the story in the RBG Jemima has a quick look at the tree before starting a tickling-chasey game. Running around she finds a beautiful dewy leaf. She pushes a child away, holding the leaf close to her, before placing it in her collecting bag (13/12/04, 11:52 am).</td>
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<table>
<thead>
<tr>
<th>Chris</th>
<th>Using nature to encourage friendship</th>
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</thead>
<tbody>
<tr>
<td>Chris climbs up a tree, then he climbs down and up another even higher tree. He hops down, a girl climbs up a tree and calls to Chris to look at her, he says „I know…” with his back to her, disinterested. (18/11/04, 9:17 am).</td>
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</table>

<table>
<thead>
<tr>
<th>Sally and Matt</th>
<th>Making Jokes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matt invents a joke, “What do you call a snail in a sandwich?” He answers, “A stick up sandwich, cause look! They are all stuck up” He peers into the wheelbarrow where the snails have been thrown (11/11/04, 11:44 am).</td>
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<tr>
<td>Sally invents a joke, “I’m tying up a worm, I call it lunch tie up” (18/11/04, 11:08 am).</td>
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<tr>
<td>Conversations during digging: Matt tries talks about being bitten by a ‘wild bush’ cockroach. They call them fierce and squeeze them. Matt says “I’ve been bit by one” “A witchetty bit me once” A boy jumps backwards “Ouch! Ah he bit me!” Matt says “There’s a lesson! You always pick up a witchetty by its back.” Sally and Matt and friends discuss very seriously how much poo a witchetty can produce in a day (24/11/04, 10:35 –10:45 am).</td>
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</tbody>
</table>

Using nature to exclude others

Sally and Matt exclude Jackie from nature play. When they let her join in Matt shows her the grub that bites and they give her a worm. She stands up to look at it. “She’s stealing,” yells Matt, “She’s stealing nature!…Put it back, your hurting it” Jackie just stands there holding it and so Sally and Matt decide to teach her how to hold a witchetty grub. She doesn’t want to but says she will hold one on a stick. Eventually she leaves the group and says “I’m not playing with you now.” Matt says “That’s the way we like it” “You’re mean.” She declares. “You need to learn to find your own bugs” Matt retorts (24/11/04, 10:45 am).

“Want to go and guard the wheelbarrow from that trouble maker,” mumbles Matt, “Who wants me to kill a worm?” Three children answer “Me” Matt explains that it would make a new worm. (24/11/04, 11:20 am). The next time Jackie wants to play Matt tells the student teacher that Jackie kills nature (25/11/04, 10:43 am) Jackie goes over to the group. Matt chases her away shouting, “You killed a butchie boy, that’s hurting nature, you’re mean!” Moments later he shouts out “They are killing the butchies!” (18/11/04, 10:59 – 11:08 am).

Using nature to threaten other people

A boy runs over to Matt and Sally and says “Andrew is trying to catch me!” Sally says “Let’s get a witchetty, we’ll squash it up and put it in its ear!” (24.11.04, 10:45 am).

Using nature to get attention from other children

Matt pretends to be stuck in a tree to call Sally to his attention (10/11/04, 10:49 am). Sally tries to catch eels by grabbing their heads, Ed tells her, “You are a good eel hunter” (17/11/04, 12:45 pm). Sally impresses the other children by tying up a worm (18/11/04, 11:08 am). Matt says “Who wants me to kill a worm?” Three children answer “Me” (24/11/04, 11:20 am).

Sally and Matt squeeze witchetty grubs and say “Most witchettys sniff their butts” and “Its going to do poop, I know it… He’s doing poop, poops good.” This forms a little group of children (24/11/04, 11:00 am).

Ed is impressed when Sally kills a white tail spider (15/11/04, 11:20 am).
Table 7: Children and adults

Anna

Child and teacher
Anna's show and tell: "I got some snails." She brings the container to her front out and reveals the four tiny snails and one rather large one which it houses. The teacher says, "Thanks for that," and Anna sits down, then leaves the room to puts the snails in her bag. When she returns the teacher is showing the plants the Anna's family brought to plant in the preschool garden (20/10/04, 9:00 am).

Anna shows her teacher a big black beetle she found and the teacher helps Anna find a yellow tub to put it in (20/10/04, 11:00 am).

The teacher looks in Anna's box and says "Snails don't need much water, I don't think you better give them any more." Anna doesn't reply but looks thoughtful. She puts the box down and puts the guineapigs away with the help of the teacher and at the teacher's suggestion, that they are probably tired" (25/10/04, 2:43 pm).

Child and researcher
Anna offers me a guineapig to hold and tells me their names. She gives me a turn of each. Anna also tells me she has a fish, dogs and had some chicks, but Mary came and took the chicks back to the farm. She tells me the guineapigs can get fresh air through the hutch" (20/10/04, 10:33 am).

Anna tells me about the mosquitos which bit her and come into her room, she looks pained (20/10/04, 11:39 am).

The teacher tells Sam not to go into the garden bed. Sam is looking for a Christmas beetle (6/12/04, 11:56 am).

Sam tells the assistant teacher how yesterday he caught a cabbage moth when he got home. He is so awestruck and excited, he drops his jaw and pauses for effect (7/12/04, 9:00 am).

The teacher tells Sam she has found a spider. Sam comes over for a look. "There's two," he says "plus one there and one there. Perhaps they are practicing to make some webs cause they are just babies... it's a baby white back." He spots a cocoon above his head then returns to the sandpit (7/12/04, 11:55 am).

The teacher says it is outdoor play time, all the children cheer. Sam if first at the door (9/12/04, 11:15 am).

The teacher tells Sam and Thomas not to pick the blueberries they discover in the Ian Potter Foundation Children's Garden (IPFCG) (13/12/04, 10:50 am).

Sam looks deeply into the pond at the IPFCG, "I see mosquitos in there" he says. "Come back, Sam. It is not safe." The teachers tell him. "I hear frogs." Someone calls, but the teachers are chatting. Jill soon moves them on, but Sam stops and squats, gazing into some grass. After a moment he follows the rest of the children, rambling across the garden he finds a pinecone (13/12/04, 11:18 am).

Child and researcher
Sam collects an egg. On his way past me he says "I found this one on the floor with the hen not sitting on it! If the hens are sitting on it we just leave it to lay some more" (9/12/04, 11:20 am).

Child and a parent
Sam shares his experience a the Royal Botanic Gardens with his mum, involving her in many conversations. "Look at the snail" Sam shows his mum the snail he is holding. The other mum’s join in and talk about it with the children. Sam's mum takes a photo. The snail is stuck onto Sam's hand. He pulls it off and goes to wash his hands with mum (13/12/04, 11:28 am).
Table 7 continued: Children and adults

<table>
<thead>
<tr>
<th>Name</th>
<th>Note</th>
<th>Event</th>
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<tbody>
<tr>
<td>Sam</td>
<td>continued</td>
<td>Hey, look Mum. A tree star! Sam points to a tulip tree. He stops, “Look a tree star. That’s a treasure.” He puts the golden leaf in his bag. Walking along with his mum, Sam points out shady places under the trees as ‘caves,’ he collects a coral tree flower, he thinks looks like a turkeys and explains to his mum the different types of trees. He tosses oak leaves at her and into the air. He lies on his tummy and looks for toadstools. Mum takes a photograph (13/12/04, 11:36 – 11:44 am). Jill tells magical story at the Fairy Tree. Sam listen, then presses his ear to the tree for a long time, listening. “I heard them when I just got there, Mum.” He looks wide eyed at the dark lightning scar on the trunk (13/12/04, 11:52 am). Sam stops at a cycad tree, and hands around some of its fruit as she tells them about it. Sam gets some and looks at it. “Only the aborigines can cook them,” he tells his mum (13/12/04, 12:05 am). Sam smells the lavender bush, “Ahhhh, that is what bees like!” he tells his mum (13/12/04, 12:14 am). The children line up to make potpourri. Sam is last. He looks to his mum who smiles and winks at him (13/12/04, 12:19 am).</td>
</tr>
<tr>
<td>Jemima</td>
<td>Child and teacher</td>
<td>Jemima tells the teacher. “When I put sand in, bubbles come up.” The teacher asks “Why is that?” “I don’t know, you tell me,” replies Jemima and the conversation ends (6/12/04, 2:14 pm). After the RBG teacher reads a story about bugs Jemima tells her, “When I was on holiday, my mum gets me a juice…and a ladybug was in it!” (13/12/04, 10:50 am). While Jill tells the children about a 10,000 year old tree trunk Jemima stands at the back and digs grooves into the gravel with her feet (13/12/04, 11:10 am). Jemima just watches Jill at the potting table, her mouth open and her fingers in the earth. She copies everything Jill does to plant her seedling (13/12/04, 11:28 am). Jemima stays with Jill most of the time they walk through the garden. Sometimes she rushes ahead to smell the next plant, but stays close enough to Jill to keep holding her hand. The children sit down and Jill shows the herbs, they crowd in closer. The next plant is shown, Jemima guesses correctly, it is rose petals (13/12/04, 12:19 am). When Jemima needs to let go of Jill’s hand she tells her, “I wanna get a leaf.” She lets go and picks up a fig leaf, which she puts in her bag. Jemima talks to Jill and points to things she sees. She doesn’t know what bamboo is, so Jill gives her a clue. “A black and white animal lives in it,” says Jill. “A zebra?” Jemima asks. She picks up a broken bamboo shoot. “I could be a dolphin with this on my back.” She says as she waves it around in the air. As we walk back, rain drops begin to fall, Jemima talks to Jill about the Lightning tree (13/12/04, 12:30 pm).</td>
</tr>
<tr>
<td>Chris</td>
<td>Child and teacher</td>
<td>Chris pokes tan bark in the student teacher’s pocket (18/11/04, 9:17 am). Chris talks to his teacher about a ringtail possum falling out of a tree. Then he tells her, “You have to take care of pets. Mine ran away. It was a dog, I liked its licking” (10/11/04, 11:13 am). Chris picks up some leaves and drops them from above his head saying “Autumn leaves” He wants his teacher to watch him and asks her to look twice, but she is busy with another child and ignores him (18/11/04, 9:00 am). The children are asked to collect rubbish, Chris brings back a leaf, Pam says “That’s not rubbish!” (18/11/04,12:00 pm). At story time Chris says he saw an acorn in the picture. He talks about winter, “When it is a little bit raining we can go up to the mountain and see the snow” he says. They go for a walk and Chris notices that the leaves are the same on the three maples. He finds another deciduous tree at Pam’s request. “Well done” she says. He notices the new green leaves growing because it is summer. The children hunt for acorns, after the activity is over, Chris finally finds one! And shows Pam (24/11/04,9:45 am). On the excursion Lisa stops and asks the children what do bees make. Chris answers “Honey” (17/11/04, 10:40 am).</td>
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<tr>
<td>Chris</td>
<td>Child and researcher</td>
<td>Chris climbs up a tree and cries, “Look at me, look at me” to a grown up (18/11/04, 9:17 am). Chris shows me a stick, “See the spider webs?… I found some spider webs!” He tells me (10/11/04, 11:30 am). Chris waves a shoelace in my face. “Wiggly worm. Wiggly worm, wiggly worm…” he repeats, “I saw a worm at kinder when your weren’t here…it was in the garden.” “Were you digging?” I ask. “Yes” he replies (11/11/04, 9:10 am). In sandpit Chris tells me to watch the water rush through the tunnel as he pours it in (11/11/04, 11:24 am). The children wait under the lillipillies. Chris says to me “Look up” He is looking up. I look up and see leafy branches above my head (17/11/04, 11:35 am).</td>
</tr>
<tr>
<td>Chris</td>
<td>Child and a parent</td>
<td>When Chris realises his mum has left the excursion group he sobs and sobs, all the way to the lunch spot and cries that he does not want to walk any more (17/11/04,12:00 pm).</td>
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</tbody>
</table>
### Sally and Matt

#### Children and teacher
Sally goes to Pam who is busy. I walk past and she turns to me instead. “Look, I found a cicada shell” I say “Wow!” then Pam is free and she shows her. They talk about the time of year for cicadas and decide whether that shell is from last year. Pam says to put it inside on the table. Sally says “No.” Pam says “Please, for other people to see.” So Sally walks up the ramp into kinder (9/11/04, 11:33 am).

Pam sings nature songs with the children (10/11/04, 9:32 am).

Sally uses a bamboo shoot as a sword. Her teacher says, “Be careful with that sword” (11/11/04, 11:19 am).

Pam has been gardening. Sally looks in the vegetable garden and shouts, “Hey Pam, Look what I found… silver beet!”

Pam shows the children a spider, they listen to her and she talks to them about the garden (11/11/04, 11:22 am).

Pam asks if they have dug up all the potatoes. Sally and Matt keep digging. Sally looks up “There’s a spider on you Pam” She screams and smashes it with her hand. Pam says “Its ok, I was going to blow it off” (11/11/04, 11:39 am).

Pam asks the children to listen to a minibeast song and pretend to be a minibeast (16/11/04, 9:30 am).

The RBG teacher, Lisa asks the children about minibeasts. Sally says, “I know what minibeasts are. They are bugs.” The children have to wait a little while Lisa gets organised. Matt says “This is boring” (17/11/04, 10:40 am).

Matt becomes grumpy because Lisa only has one small container of tadpoles and he cannot see. When Lisa takes them away Sally says, “I didn’t see!” Lisa has some worms in veggie scraps. Matt sees them and tells her, “We’re very good with worms. Sally and me, because we get them…” Other children pipe up, “me too!” Sally cannot see the worms in the tubs, she tells Lisa, “How about you tip them out on the mat so we can find them” (17/11/04, 10:50 am).

At the potting table, Sally asks Lisa, “Now what do I do?” Lisa takes Sally’s pot and finishes it for her. Sally goes and she tells Lisa, “How about you tip them out on the mat so we can find them” (17/11/04, 10:50 am).

During story time Sally watches mosquitos and looks at the garden. Chris says he saw an acorn in the picture. Sally says squirrels eat them. After the story Sally says, “Now I know what it feels like to be in the city… and how noisy it is.” Sally says summer is the hottest season. “I like to do something in summer,” she announces, “Catching lizards at the holiday house. And my mum says… and a red belly black snake!”

They go for a walk. Pam asks the children if they can find an acorn, Sally is the first child to bend down and dig through the leaves. Sally looks under a bush and finds something. “What is it?” she asks. “Fungi,” replies Pam, “better go wash your hands.” Sally goes and takes an oak leaf for the nature table (24/11/04, 9:45 am).

Sally tells Pam she found a yabby in her back yard and brought a yabby to kinder to show everyone until it gets stinky and has to be thrown out (25.11.04, 9:00 am).

Sally and Matt lean on a table near Pam “I just feel like sitting around,” Sally says. Pam looks at me and says “They can’t decide what to do.” They wander around, then Sally tells Pam about a centipede (25/11/04, 11:10 am).

#### Children and researcher
Sally tells me a big pot is in the wrong place, tricking me into moving it so she can look underneath (9/11/04, 12:00 pm).

I ask Sally and Matt, “Why are you collecting these bugs?” Sally answers “Cause we love to do it everyday.”

Matt says “Yes, we love nature. We love to look at it” (24/11/04, 10:45 am).

Matt has brought witchetty grubs to preschool and I want to take a picture of them above the soil. While I think about how to do this Matt sees my expression and says to me “Just stick your hand in and when you feel something soft…” I poke my hand in. Matt warns me “They can bite, hold onto their backs.” I ask, “What will you do with them?” They answer, “Release them.” Then Sally tells me and shows me a ‘fire ant’, it is really a red bug and Matt tells me he saw a crocodile in the lake (Yarra River) when we were riding on the bus (24/11/04, 11:00 am).

#### Children and parent
A visiting mum talks to Sally as she digs. Sally shows her the bugs and the mum warns her to be careful of touching the bugs, because of germs. Sally and Matt say, “He’s coming out” and talk about the creature eating the leaves. The Mum says, “You must wash your hands after that snail… before lunch.” She walks away (9/11/04, 11:30 am).

On the excursion Sally and Matt leave the group and touch and look at the parsley. Matt’s mum calls them back to her. Some of the children stop to pick up stones. Parents say “Don’t pick up the stones” (17/11/04, 10:40 am).

Sally picks up her pot and carried it to the box. Then goes and squats on a low wall and shuffles over and digs her finger in the soil. She jumps up and turns around. And picks up a bit of string out of the soil. A mum tells her, “Don’t put your hands in the soil after you washed them!” Sally goes and washes her hands in the bucket (17/11/05, 11:17 am).

Sally finds a “bee-you-ta-ful leaf!” but she wants to show Matt’s mum before she puts it in the collecting bag. Sally wants a banksia cone. She finds one on the ground around the bush with some help from Matt’s Mum (17/11/04, 12:00 pm).

Sally and Matt leave the excursion group many times to touch and look at plants (17/11/04, 10:40 am, 10:50 am, 11:10 am).

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### Disobeying adult directions
Sally is digging during obstacle course time even though Pam has told her “Not till after story time” (9/11/04, 9:15 am).

Sally and Matt look at bugs in the garden when they should be participating in a group activity (10/11/04, 12:08 am).

Sally and Matt are not helping pack up, they are watching a slug (11/11/04 11:44).

Sally and Matt leave the excursion group many times to touch and look at plants (17/11/04, 10:40 am, 10:50 am, 11:10 am).
Chapter 5: Analysis and discussion

This chapter investigates the children’s experience of nature. The individual children’s behaviours and interactions with nature are described and interpreted through discussions on ‘the seven ways of interacting in nature’. ‘The seven ways of interacting with nature’ are defined by organising the many and varied behaviours presented by these seven children into broad categories. They are listed below.

1. **Loose natural materials**: Natural materials used as tools and materials for imaginary play or for a practical purpose.

2. **Nature as a setting**: Fixed natural objects and environment as the setting for play and activity.

3. **Collecting, hunting, gathering**: Children made collections and participating in hunting/gathering.

4. **Recalling memorable experiences**: Children spoke about, drew and had conversations with other children about unique experiences.

5. **Unrestricted, free exploration**: Children explored for its own sake: Because of a like, love or curiosity in nature.

6. **Exploring power: Control over nature and social power**: Nature used in powerful ways e.g. to benefit social situations or to provide the holder with some prestige. Children exploring their power, e.g. to find, collect or destroy little creatures.

7. **Children and adults**: The child invited the adult into the experience or the adult involves themselves in the experience.

These groups could also be called: Using (1 and 2) Doing (3 and 4) Exploring (5 and 6) and Sharing (7).
These seven ways of being in nature serve to organise the discussion and demonstrate the breadth of experience and activity presented by the seven children. The discussion pinpoints a selection of moments in nature, some which are common and repeated daily and others which are unusual, unique or surprising. The items which have been selected for deeper analysis and discussion aim to present the child in an honest and balanced way, describing the child in nature, their likes and dislikes of nature, in a way which remains true to the child.

As nature, as a learning area, was rarely included in the preschool program by the teacher, the nature interactions were always freely chosen and most often emerge as play interactions. Therefore, the behaviour which is recorded and discussed is often play behaviour. The section below, firstly discusses the types of behaviour which could have been observed by the children in this context, by examining understandings of the word ‘play’.

The following discussion on the case-study children will then centre around the 7 groupings previously discussed, which all of the children’s play and experience of nature is divided into.

Play

_Play allows children to link “the innate inside connection children have with nature and outside link they have with the physical world created for them” (Malone, 2004, p. 12)._ 

Before I begin the formal analysis and discussion of the children, I will first look at the types of behaviour the children presented.

Often I have heard statements such as, “play is the child’s work” and “children learn through play.” But do children only play at preschool or do they participate and learn within other freely chosen actions, which are neither play nor work? In other words, does this research only describe children at play? And is the child in nature a child at play?
Take the following extract from the structured observation where I describe the children in Banksia Rd Preschool. Is this behaviour a type of playing around, useless wandering or something else?

“Sally is leaning on a table outside. She says “I just feel like sitting around” Matt is just ‘floating’ nearby. Pam is present. She looks at me and says “They can’t decide what to do.” Sally and Matt wander around. Sally tells Matt and Pam about a centipede. Sally and Matt walk away” (Structured observation, 25/11/04, 11:10 am).

To begin with I will attempt to define play, a task which has been attempted many times before and caused much controversy. In exasperation some, such as Mitchell and Mason (1948), defined play merely as an attitude of mind, meaning anything undertaken in a playful manner or context could be viewed as play. Others, see such a broad and simple definition as belying the important and intrinsic rules of play, that is, the language of play (Sutton-Smith & Kelly-Byrne, 1984). Froebel (1887) describes play as a “spiritual activity” (Bruce, 1991, p. 45), he writes: “Play… [gives] joy freedom, contentment, inner and outer rest, peace with the world. It holds the source of all that is good” (Fraser, 2000, p. 180). Whereas, Montessori describes play as “something of little importance which [the child] undertakes for the lack of something better to do” (Dockett & Fleer, 1998, p 12).

Truly, Hendrick (1986) sums up the contestation of defining play when she writes, “There are as many differing theories and definitions of play as there are people who write about it” (p. 17). I believe the most accurate and useful definition is by Johnson and Ershler (1982) as they focus on the key elements essential to play. I will use their definition, as follows, to define play behaviour throughout this thesis: Play is “behaviour that is intrinsically motivated, freely chosen, process-oriented, and pleasurable” (Johnson & Ershler, 1982, p. 137).
To a preschool teacher, sometimes play appears to be everything, as it is documented that through play children can develop themselves physically, emotionally, socially, creatively and cognitively. Frost (1979) describes play in such broad terms, saying play is: serious, active, purposeless, learning, development and exploratory and work behaviours, so that it seems all children do, and need to do, is play.

This is why it is important to bear in mind other educational philosophies, which place less emphasis on play. While play is considered an important part of the Reggio Emilia approach, it is not as central to their program, as other early childhood settings, as the focus is on “an exchange of understanding between the teacher and the child; to find in the intuitions of the child the roots of systematic knowledge” (Bruner & Lang, 1996, p. 57). Reggio Emilia educators view play as just “one of the hundred languages used by children in symbolic development” (Fraser, 2000, p. 117).

According to the definition by Johnson and Ershler (1982) play is “intrinsically motivated, freely chosen, process-oriented, and pleasurable”(p. 137), it is also abundant and necessary in childhood, but play is not everything. My research records other interactions, such as those between children and children, children and adults and children and natural materials; I observe children completing a task for the sake of it, and children just sitting around. I also recorded children participating in play, which was not pleasurable, or not process oriented, such as making a collection of bugs, the collection and possession of the collection became the focus.
Below, is the analysis and discussion of these interactions, play behaviours and other behaviours. The variety and abundance of experiences in nature is evident, through the difficulty I have had in labelling the behaviour and interactions of the children.

Using

(1) Loose natural materials and (2) Nature as a setting

“I asked Laurence, he’s always in that tree, the little maple tree, he’s in it almost every day, and I said, ‘You really like climbing don’t you?’ and he said ‘Yes, I haven’t any trees at home.’ From that place he can be…” (Teacher Interview P2)

When Edith Cobb (1977) describes the world of nature for the child, she says, “[it] is not a ‘scene,’ or even a landscape. Nature for the child is sheer sensory experience” (p. 28-29). In this next section I will describe how each of the children used the world of nature in their own way.

Sally and Matt found opportunities for abundant sensory immersion in nature both in an exploration of nature for its own sake and through imaginative or pretend play experiences. While natural materials and settings were used in imaginative play, actual thoughts and conversations they shared about plants and animals occurred at other times, during an exploration of nature, rather than a game or play within it. When using natural materials and landscapes in imaginative play, the focus shifted away from environmental goals to creative, physical and social goals. Sam, of Kanooka College also uses the environment as a setting for imaginative play in his “Goblin Game.”
Unlike Sally, Matt and Sam, Anna did not use the outdoor space to set games, her play focused on collecting nature. Although the girls and Anna called the liquidamber seed pods ‘bombs,’ they did not use them in an imaginary game, instead the ‘bomb’ was used to label the natural material, and not used to represent a ‘bomb’ in play.

In Brett’s use of the outdoors it became an obstacle course, a place for his constant running, walking, climbing and jumping to take place, while he did play the imaginary game of Spiderman often, it did not involve natural materials. Jemima’s uses of nature, apart from the sandpit, comes forward only a little, on the excursion, as she is inspired to invent a chant. Chris uses the outdoors the least. His behaviour focuses on the adults around him or working in the sandpit. Only once at preschool, did he choose to use loose natural material; he picked up some tan bark, while outside, and poked it into the student teacher’s pocket. Chris shows the greatest difference in his behaviour, when on the excursion to the Royal Botanic Gardens.

Firstly, I will look more closely at the imaginary games, by Sally, Matt and Sam. Secondly, I will discuss Jemima and Chris, when in the Royal Botanic Garden’s setting.

**Sally and Matt**

Apart from playing the traditional game of hide and seek, Sally and Matt invented the following three imaginative games, with other children in the preschool:

- **The Pirate Game** (Full record in Appendix 8.1)
- **The Leaf Game** (Full record in Appendix 8.2)
- **The Bamboo Kitchen** (Full record in Appendix 8.3)
The Pirate Game: Sally, Matt and a friend, Ed, use the fixed equipment of the preschool as a pirate ship, which is set among large and medium sized trees. When Matt joins in the Pirate Game the little cones he has been collecting become part of the play, they become “cannon balls” Sally also finds a different type of seed pod, a spiky liquidamber ball and the excitement builds.

During the game, natural elements become part of the play. The wasp becomes a pirate enemy as Sally ‘sword’ fights with it and shouts, “Keep away from me, Matey.” The world of imaginary and real cross, as Sally really does attempt to kill to wasp, which she is afraid of, but does so in character.

Sword fighting also becomes part of the game as Sally uses a bamboo shoot as a sword. She may have seen the bamboo shoot nearby and taken it up as the opportunity arose, or she may have decided to go and access/find one for this purpose, from the Bamboo Kitchen. This raises the point of access, for teachers, and the impact on the set up of the space for children. Good environments will have both materials set out to create opportunities for the imagination and stimulation for play, and also materials which children can go and access, which they know are available and can select to use for a certain purpose.

The Leaf Game

When the boys steal Sally’s leaf from her she is upset, but the unpleasant game of keeping the leaf away from Sally blends into a game of ‘teams’ and ‘ships’, where leaves becomes treasure.
This is one occasion when play is unpleasant (and so may not be ‘play’ at all), this game becomes a fight for Sally to regain her leaf. It is a game with rules, teams and to benefit from it Sally uses an element of deception.

The leaves have some value to Sally who tries to recover her original leaves; firstly, by using other leaves to say she is part of the group, and secondly, offering her ring and a trip to her house in exchange for the leaves which ‘belonged’ to her. It is interesting to note that Sally’s leaves are just as valuable to the team of boys, as to Sally. The bigger boy, refused to return Sally’s leaves even after she offers her ring to him, instead he grabs her and covers her mouth with his hand. The other boys in the group protect the leaves by putting them in their pockets and yelling “Get Sally!” who is seen as a threat to the leaves.

While this appears to be a violent account of stealing and bullying, it is certainly a game. The boys use the terms, ‘team’ and ‘ship’, Sally uses the ‘rules’ of the game to gain entry to it, by saying “I’m allowed to have leaves” and collecting some off one of the team members. Adult intervention is never sought out and fighting is a common element in the play of children at Banksia Rd Preschool. Following this game, Sally and some boys fight with long bamboo shoots.

*The Bamboo Kitchen*

The Bamboo Kitchen is a messy corner of the outdoor space; dark, amidst a stand of bamboo, in the centre of which is: a four metre tree, an old sink, little table, pots, bowls and an old rubbish bin. The children also include sticks, earth, bark, bamboo, sand and water in their interactions here.
In this natural setting, Sally and Matt are quite separate from the other children, when children visit, there is a sense of coming through a door and waiting to be received. Sally and Matt play in many different ways in this unkempt space.

When alone (Matt does not attend preschool on Tuesdays) Sally can sit in here with a bowl and a stick and cook with earth, sand and water. Together, they harvest the new bamboo shoots and cook together. They talk about getting ‘salt’ out of the bamboo, adding ‘mixing product’ (sand) and making ‘a wet, stew sand.’ For Sally, this cooking is very real. During lunch time Sally convinces other children she has been cooking outside. To her this imaginary cooking is as real, or as important as, the real cooking.

In the Bamboo Kitchen, Sally and Matt horde piles of bamboo shoots they have collected, by breaking them from out of the earth, they use them for cooking, sword fighting and hiding from other children. While collecting is often an experience in itself, in these imaginative games the collection becomes part of the game, as the natural materials become symbolic in the play. The materials provide opportunities to represent other items, for example, the cones became ‘cannon balls’ the sand became ‘mixing product’ and the inside of the bamboo became ‘salt’. Jenkinson (2001) calls these ‘low structure’ materials as the child can use the one material in a wide variety of ways, limited only by imagination. Tomorrow the ‘cannon balls’ may be ‘fairy food’, ‘hair brushes’ or part of an ephemeral sculpture.

What I have called ‘loose natural materials’ Rivkin (1995) calls “loose parts” there are many categories of loose parts in the playground, but natural items are “the original loose parts” (p. 30).
Within these games is a sense of adventure and often wonder. Sally’s excitement at finding the spiky ball in the pirate game is a sense of joy, wonder and a provocation for her imagination. What sort of qualities does this pirate cannon ball have in her mind? There is a sense of wonder at the possibilities. Matt also shares this sense of delight in natural materials. Appreciation sounds in his voice as he says, “I found this beauty,” and indicates towards a long shiny bamboo shoot.

The Bamboo Kitchen served such a special purpose because not only did it provide Sally and Matt with materials and setting, but created a defined area, separate, undisturbed… a hiding place.

Access and opportunity
In the bamboo, Sally and Matt climb the tree to see if they can spot the blue tongue lizard, which Sally found at kinder once before. The tree has served an important purpose in this play, without the tree, the children would not be able to gain this sense of being up high, scouting out the land below. Without it, this activity in searching for the blue tongue lizard would either occur in a different way, or not at all. On another tree climbing occasion Matt uses a log, moving it next to the tree, to help him climb up, Sally uses a stick to pull the rope swing out of the tree. Natural materials (the loose parts) and settings (the fixed physical environment) are used to achieve tasks and have many applications in the hands of these two children.

At other times, nature fulfils the needs of children in ways which cannot be fully understood, because as adults, we are viewing from the outside and not the inside of the child. The following incident’s recorded in structured observations illustrate such times:
• “Matt is pulling some branches of a weeping tree. Sally is standing nearby, on top of a wooden railing frame, which holds 4 tyres, yelling “Yeahhhhhhhhhhhhhhhhhhhhh!” and making a loud noise” (11/11/04 11:00 am).

• Sally smells the bamboo... she peels off the outer leaves to the smooth spike inside, but drops this on the ground as she talks to a boy. She just keeps holding onto a small piece of bamboo root or wood (16/11/04 11:35-50 am).

• “Sally picks up some soil and trickles it down in front of her eyes watching it. She does this for five minutes and then it is lunch time” (16/11/04, 11:55 am).

• “Matt holds a bamboo shoot, with which he taps the A-frame rhythmically” (24/11/04, 10:45 am).

Perhaps this is the sensory gratification Sebba (1991) talks of when she suggests that children experience the natural environment “in a deep and direct manner, not as a background for events, but, rather, as a factor and stimulator” (p. 395).

The outdoor world of nature is providing Sally and Matt with a “fine sense of freedom” (Rivkin, 1995, p. 11). Here they are able to use their bodies and voices in less restrictive ways, making noise, lifting, climbing and taking the time to observe in quiet spaces. In this natural setting they are free.

**Sam**

Sam played the ‘Goblin Game’ several times during my visit. It appears to be something the children have played often, as other children know how to play it and there are certain understandings which have been established. Sometimes Sam and his friend, Thomas,
pretend they are cats, they hide under bushes and behind trees, giggling or calling out “Run...run... hide...hide!” “Goblins are in the tree!” they shout and act out very frightened faces.

Such a theme for play can be view in terms of children empowering themselves. “Power can be emulated through children becoming characters that they perceive to be frightening.”(Dockett & Fleer, 1998, p. 136) When they become the scary thing, they have given themselves permission to be in control, if only for a short time. However, Sam and Thomas pretend to hide from goblins, they are not the goblins, in fact they are cats. They are able to act out being frightened and being chased without actually being in danger, in some way this makes them feel safe and powerful. Acting out scary and frightening things may help them deal with conflict later in life; they are demonstrating they are able to take care of themselves. While this play could have occurred inside, it was not observed. Instead, the natural setting provides a venue, which both contains the scary Goblins (“they live around toadstools, but not mushrooms.”) and protects them by making places for them to hide in. A full record of the Goblin game is in Appendix 8.4.

At the Royal Botanic Gardens with Jemima and Chris

Jemima invents a chant.

The bamboo shoots at the Royal Botanic Garden provide Jemima with the opportunity to be inspired and invent a song. Holding the bamboo high, they become ‘flames’ and she chants “I have fire! I have fire!” with a friend.

Rhymes and chants are spontaneous and frequent in childhood. Loud chants like this one are best suited to the outdoors, as it would be far too overwhelming to have such loud chanting in a small room. The song allows Jemima to express her feelings of happiness, power and
sociability, as other children join in and many voices sing as one. This is just another case where nature provides a setting and materials which both allow for the inspiration, and then provide an appropriate setting for the action.

*Chris in the garden*

Chris rarely plays in the outdoors (except for the sandpit) instead he works on craft activities with the student teacher or converses with adults. When visiting the Royal Botanic Gardens Chris becomes more active in the natural environment. He closely observes the worms Rena (the RBG teacher) shows them and independently makes a choice to dig in the garden bed with a group of children, without adult interaction or consent. Perhaps, in this more structured program Chris is able to focus on what is around him and be impressed by nature. Certainly on the return to preschool Chris is one of the few children who showed interest in the ‘treasures’ collected at the RBG. He tosses the leaves into the air and calls “Autumn leaves” several times, while looking to his teacher Pam to respond.

Each of the children’s individual experiences of loose natural materials and natural settings shows us the importance of **opportunity** and **access**. Children need to have the ‘opportunity’ to spontaneously be inspired by natural elements and children need to have ‘access’ to natural elements for a specific purpose, within a place that provides greater freedom and broader boundaries than the indoors.

The natural setting is greatly important to the child. This is evident in their preschool art work and in this research study’s drawing activity. Children often chose to paint and draw natural places at the drawing table, easels and during craft activities. When asked to draw a favourite place, for this research study, the children drew the following:
Anna: The farm with lots of animals

Brett: The edge of the sandpit

Chris: A hothouse with plants

Matt: His dog on the beach

Sally: The beach with lots of coloured shells

Jemima: The park and her pet cat, and a rainbow with her pet cat.

Sam: Flower and Christmas beetle

*Pictures are available in each case study: “The children’s stories” beginning p. 100.*

The importance of nature in the daily activities of the children is illustrated, through their play, conversations and art work. It is interesting to compare these pictures to those drawn by primary school children for Malone and Tranter’s study (2003b). In their case, children drew pictures of their school grounds and how they would like them to be. In the traditional school grounds, where little natural or organic elements were available, the children did not draw as many natural items, compared to the children in more organic settings.

It seems there is an element of forgetfulness, when it comes to being away from natural environments. Children in the forested, natural playground were reminded daily of the pleasures and uses of natural elements in their play and so included them in their pictures. Children in the traditional playgrounds drew less trees and natural elements, because they are less in the forefront of their minds. While a difference is observed between the children of different settings in the research of primary school aged children, Grades 3 and 4 (Malone & Tranter, 2003b), no differences are observed between the preschool aged children within this study. Although there is a vast difference between the settings, Banksia Rd Preschool being the most natural and organic and Kanooka College containing the most barren play yard. Yet,
all of the children in this study drew pictures of outdoor places which contained natural materials.

Perhaps by the time the children reach the middle/later years of primary school the connection to nature is lost, unconscious or unnecessary for the child. However, I suggest it is the first of these, that the connection is lost. When separate from natural environments, children lose knowledge. This is demonstrated in the primary school with a more natural environment in Malone and Tranter’s (2003b) study, where more natural objects and places appeared in the children’s drawings, these children were able to remember that these were good spaces. And while early childhood education usually places importance on outdoor play, primary schools certainly do not include this in the curriculum, unless it is to roster on teachers for yard duty. Therefore, the case-study children’s drawings reflect this importance of outdoor play evident throughout the field of early childhood and also warn that when absent from natural elements for a long enough time they are soon forgotten and absent in the artwork of children.

The seven preschool children show us the error of Shakespeare, who wrote “All the world's a stage, And all the men and women merely players” (from As You Like It, 2/7). Such a philosophy of life abandons us, floating above the earth. The places in it are nothing but a backdrop to life. The preschool children did not see the place as separate from the play. The setting, the materials, the people are all wrapped up in the experience and the experience is more rich because of it; Brett scoops up tan bark from the ground and spills it through his fingers as his runs; Sally and Matt touch and hold onto trees, their arms wrapped around the branches as they climb; Sam and his friend hide behind trees and under bushes giggling, hiding from Goblins. The natural setting and loose natural materials are giving something to the children and the children project themselves back into it. Back and forth the children and nature
adjust each other, changing each other, they give and take. The environment regulates the way they think, feel and act.

In the play and interactions I have discussed, the physical contents of the environment performs an important role in the child’s experience, the following sub-section allows us to digress from individual experience and focus on the play areas and materials provided for the seven children.

**Complex and less complex environments: A comparison**

I was once offered a job involving children in creating a habitat in the playground. I asked the project manager, “Are the children allowed to play in this area?” The answer was “No.” I then questioned, what sort of “habitats” were they creating for the children?

While participating in building and maintaining habitats is valuable for children, in the absence of teacher direction, there is little children can do, and instead the conservation areas can be working against play, restricting space and creating “out of bounds areas.” Participation in conserving habitats can be valuable out of the schoolyard, but on preschool and school property, many of which are small and cramped, every spare square metre must be dedicated to habitats which children can move freely in and out of and make changes too.

The three preschools and their environments have been described and a comparison can be made between them by using tables 8-10. When viewing tables 8 and 9 it is evident that the most complex setting, with the greatest opportunity for different play experiences was at Banksia Rd Preschool (P2). Waratah Preschool (P1) provided fewer opportunities, but still allowed the children in the case study to participate in a variety of activities. Kanooka Christian
College (P3) provided the least opportunities for variety in play, it was often barren and the children in this preschool typically only participated in one or two types of activities outside per day, that sandpit play or running around. However, to refocus these broad generalisations I have included an analysis of the centre environments using a nature interactions lens, demonstrated in table 10. When the preschools are compared in table 10, the chasm between the variety and type of experiences available to the children becomes obvious.

Rivkin (1995) affirms that “playgrounds without loose parts are sterile and uncreative, and they impede children’s social and intellectual development” (p. 52). Not only does the Kanooka Christian College (P3) play area lack loose natural materials, they lack any sort of loose materials! Although there were some moveable logs present, these were never touched and may have been out of bounds. The children from both the three and four year old group were restricted to using only four different types of loose items: balls, foam mats, buckets and spades and chickens. That is not much to work with, especially considering the unlikely cooperation of the chickens. To this, the children added their own loose items, balls of sand and the dustpan and brush from indoors. This is obviously restricting Sam and Jemima’s nature interaction and play. It is not surprising when viewing the “Seven ways of interacting with nature” (Tables 1-7) that very little play and interactions are recorded for Sam and Jemima in this ‘barren’ preschool setting. Conversations became the central activity and children conversed sitting on shelves, or in the sandpit. For example, when Sam was Christmas beetle hunting in the garden, he was made to hop out by the teacher (6/12/2004, 11:56 am), the hunting activity dissolved and Sam joined a group of children who conversed about bugs. Although Sam could not be in the physical action of finding them at least they could talk about them. This group of children worked around the issue of not being allowed to hunt for beetles in the preschool garden, by Sam asking another child to bring a beetle from home.
Kanooka Christian College simply did not provide Sam and Jemima with enough complex materials and settings. It did not encourage them to take spontaneous opportunities in nature or to access natural materials purposefully, such a playground does not support Sam and Jemima's nature interaction, their personal development, enjoyment or play.

Banksia Rd Preschool provides a stark contrast in its nooks and crannies, tools and natural materials. There is a degree of risk: climbing trees, running with long pointy objects, using big spades, touching grubs and soil. Pam's philosophy and priorities at what has been considered and included in the outdoor area are clear; she wants it to appear wild and invite whole body exploration. Nature seems to seep its way though the program here. Even activities, such as the pirate ship, which were not set up as a nature experiences, became involved in nature as children used loose natural materials. Another example is the drawing table; Pam sets up painting/drawing materials outside under the trees where the children can be inspired by what they see.

It is quite noticeable that most of this discussion has centred on Matt and Sally, who were naturally experiencing much greater quantity and quality of nature play due to their environment. Although the rest of the children at their preschool were typically similar in their level of activity, one child was not. While Chris also shared this complex environment his nature interactions are almost as limited as Jemima's. This reminds us that there are other factors influencing the child beyond that which a rich and complex environment can overcome, such as self-esteem, the ability to think creatively and the confidence to leave adults and make friends. Chris demonstrates that any sort of play is limited without certain play skills. Chris' play will be discussed further in the section “Sharing: Children and Adults” p. 203.
Doing

(3) Collecting, hunting, gathering

“Activities that promote physical growth...collecting, distributing, arranging, hiding...”

(Rivkin, 1995, p. 23)

As adults, we love to search things out, accumulate shoes, or thimbles or stamps; we see something we like in a shop and buy it, making it belong to us, and it feels good. I wonder if this is a little bit left over from the desire in childhood to collect treasures from what is around.

In all three centres (and including an additional trial round of data collection I completed at the fourth setting) the children engaged themselves in collecting little living creatures. Anna, Sam, Sally and Matt are the four case-study children which participated in this, by coincidence, one case from each preschool. All four children bring little creatures from home, as well as finding them at preschool. Anna brings snails, Sam brings a Christmas beetle, Sally brings a yabby, Matt brings five witchetty grubs.

Anna’s collecting occurred daily and involved many children, usually girls, but especially one close friend, Carrie. Hunting for garden creatures seems to be the most important activity in Anna’s day as her comment below suggests:

Today Anna does lots of things like hammering and playing with guineapigs, but when I sit down with my snack and say “What did you do today, Anna?” She answers “Looked for snails ... and butchie boys...” (25/10/04, 3:20 pm).

The children used old cereal or icecream boxes to collect the little creatures in, and lifted pot plants and logs to search for butchie boys, worms and snails. There is a strong sense of ownership as Anna views the little creatures as belonging to her and becomes angry when they
are stolen or other children, uninvited, try to touch or look at them. However, on most occasions Anna is more than happy to share her little creatures and find them for other children.

Sam is especially interested in Christmas beetles. He organised a group of boys to help him hunt for a Christmas beetle in the preschool playground, although the teacher soon reminded the children not to go in the garden, as is mentioned in the previous section. Sam does bring a Christmas beetle from home which is kept in a plastic box indoors and he spends a great deal of indoor time looking at this beetle, with other children and touching it, moving it’s legs around and drawing it. Most of Sam’s collection occurs on the excursion with his collecting bag and his mum.

Sally and Matt involve collecting in their imaginative play, they collect little conifer cones as ‘cannon balls’ and harvest bamboo shoots for various purposes. But at other times they hunt and collect for no other purpose. Sally and Matt search for creatures daily, they hunt them, gather them from places and try to catch insects flying through the air by clapping them. They are very successful in this and Sally can catch many flies given enough time. These flies are then collected and kept in a milk carton. When they buzz, Sally becomes excited, but it doesn’t seem to matter to her if the flies are dead or alive.

While Jemima did not collect in the playground, perhaps because there was nothing there to collect, during our trip to a little copse of trees out near the paddocks belonging to the College Jemima does find something to collect and hold onto:

In the ‘fairy forest’ Jemima held my hand and in her hand was a small rock (Research Journal, 9/12/04).
Collecting bags

Sally is the only child who continues to hunt for creatures at the Royal Botanic Gardens, but all the children participate in collecting as this is part of the program.

> Sally comes and goes from the group. She has seen four gardeners digging in a patch. "I want to see if there are any worms there." She says. She creeps over to them and clambers around the walled garden beds searching for ‘things.’

The gardeners go.

Sally looks where they were digging.

> "I wonder if they found any worms?” She says aloud and after a quick hunt returns to announce, “I found a butchie!” (Running record, 17/11/04, 11:50 am).

The RBG program provided each child with a green canvas bag for collecting 'treasures' during their visit. As a result all seven children participated in collecting at the RBG, they collected botanic treasures, rather than insects although I am sure a few insects made their way into bags. Chris certainly says he has a bug in his bag.

Beginning of excursion: Chris is filling his collecting bag, “I found a leaf and something small.” He tells me, holding a feather. He puts the feather in and looks into his bag, “and I found something you don't like… A bug!” He pokes around inside his bag but can't find it (Running record, 17/11/04, 11:32 am).

End of excursion: Chris walks next to me to the bus, “Excuse me. I got a pine cone at home and two treasures in my bag. I’m going to take them home to my house” (Running record, 17/11/04, 1:30 pm).

In the RBG Chris involved himself more deeply in exploring and collecting natural items than he ever did at preschool. Only twice at preschool does he pick up leaves, one occasion was at the teacher's request, the other appears to be a misunderstanding, as the children are asked to pick up rubbish however:

> “Chris brings back a leaf and Pam says “That’s not rubbish!” (Structured observation, 18/11/04, 12:00 pm).
Sally and Matt collect throughout the excursion, although towards the end Matt is tired and less enthusiastic. It seems only Sally is keeping him going, as he often complains to his mum.

Beginning of excursion: Sally and Matt collect treasure as we walk, they pick up smooth stones and hurry ahead with Rena (Running record, 17/11/04, 10:40 am).

End of excursion: Sally and Matt stop and pick up small green nuts along the way. Matt says “I got ‘em” in a tired way. They lag behind and sneak onto oak lawn. “I found a treasure” Matt tells Sally. “I found… a bee-you-ta-ful leaf!” she replies, annunciating every syllable of the word. “You want to put it in the bag?” he asks, but she wants to show his mum first. Matt is tired he complains to his mum that he wants to go home, but Sally doesn’t want to go at all. She points out a dragonfly and seeing a banksia bush covered in banksia cones says, “I want one of those!” Sally dawdles back, stopping for leaves and flowers (and is the last child to return from the walk) (Running record, 17/11/04, 12:00 pm).

Jemima’s collection is not so large. She invents games and chants, and plays chasey. But she does collect items that are special to her, which she is afraid to lose to another child.

After the story, Jemima has a quick look at the tree before starting a tickling-chasey game. Running around she finds a beautiful dewy leaf. She pushes a child away, holding the leaf close to her, before placing it in her collecting bag (Running record, 13/12/04, 11:52 am).

Sam cannot start his collection until his bag is completely empty. His collection is important to him and he realises that he does not want it mixed up with items he did not select himself:

The children are given collecting bags as we move off. Sam has discovered that his bag is already full of someone else’s treasures. He pulls out the items, leaves and nuts, and drops them on the ground. “OK,” he says when he is finished (Running record, 13/12/04, 11:09 am).
When Sam is collecting it becomes a special time to share with his mum and involves dialogue which reflects Sam’s observation of nature:

*Sam inspects his pinecone as we walk.*

“Hey, look Mum. A tree star!” Sam points to a tulip tree. He stops, “Look a tree star. That’s a treasure.” He puts the golden leaf in his bag.

*Walking along with his mum, Sam points out shady places under the trees as ‘caves,’ he collects a coral tree flower, he thinks looks like a turkey and explains to his mum the different types of trees. He tosses oak leaves at her and into the air. He lies on his tummy and looks for toadstools (Running record, 13/12/04, 11:36 am).*

Although, I was unable to attend the preschool excursion with Brett and Anna, I did happen to bump into Anna, Carrie and her mum on their excursion, while I was with Banksia Rd Preschool. Anna called me over to her to show me her treasures in her bag and then we were separated.

Hunting and collecting natural materials is clearly pleasurable for the children. There is a sense of discovery and exploration. There is also a sense of accumulating something of value and making something belong to oneself. As is discussed in latter sections, a sense of power is gained in what the children have claimed to be their own.

At Banksia Rd Preschool the ‘treasures’ were made readily available to the children in the days following the excursion. However there was very little interest. The teacher began the children on a sorting activity, which a few children participated in. Some children came to search for the items they had collected the day before, remembering something significant, like a mushroom. But Sally and Matt showed very little interest and were swept up in outdoor play. Yesterday had served its purpose and today they were on to making new discoveries at preschool. In a small way this demonstrates the immediate nature of childhood, as children live in the ‘moment.’ The
'moment' serves its purpose and while some moments may be re-lived, as is discussed in the following section, most are filed away, lesson's learnt, and new 'moments' come to life.

I believe to sum up, the children must be asked why they are collecting:

I ask, “Why are you collecting these bugs?”
Sally answers, “’Cause we love to do it everyday”
Matt adds, “Yes, we love nature. We love to look at it” (Structured observation, 24/11/04, 10:35 am).

(4) Recalling memorable experiences

“Our garden was the centre of my world, the place above all others where I wished to remain forever.” Esther Hautzig (1985) remembering her childhood.

Thousands of books and poems immortalise childhood places and experience, written by adults immortalising fond memories. Yet adults are not the only ones to reflect on the past. It is fascinating to note how often children re-live a memorable experience in conversation. It adorns their art work and discussions, both with other children and adults, and demonstrates to us the value of a one-off experience. My research demonstrates how memorable, unique experiences can form pinnacles in the mind, which the individual can return to and be inspired by them throughout his/her life, or at least part of his/her life. While Malone argues (2004) that one-off experiences in the natural environment have little effect on overall environmental values, we both agree that ideally a combination of one-off and everyday opportunities work together to achieve positive environmental values.

Anna, of Waratah Preschool, talked about a farm on several occasions. She drew a picture of it for her ‘favourite place’ activity and told me how she visited every weekend. She also told me that the pet chicks they hatched at preschool had been sent to the farm. Anna informed me that
on the weekend she was going to the farm and after the weekend told me how she fed “kangaroos, frogs, mice, koalas.” Naturally, I believed this all to be an accurate description of Anna’s weekend.

By chance I asked her mother how the farm was on the weekend, only to be informed that they had not visited any farms that weekend or any weekend in the last year or so, but that when Anna was three they had spent the day at Chesterfield Farm, a children's farm. I was amazed at the detail of Anna’s construction of a weekend at the farm. This was an imaginary game played out through conversations, which demonstrates the impact of that visit to the farm. For Anna this was one of the most memorable days of her childhood thus far, one which she shared and revisited in her mind, as if it had happened just yesterday.

Sally and Matt are the closest friends and thus, they share memorable moments too. Both children draw the beach as their favourite place. Sally’s picture is peppered with brightly coloured shells and crabs, Matt’s picture is of his dog running along the shore. The children talk together about the time they spent together on the beach, Sally says, “Remember when we found that crab?...” In her picture she recalls how it had one nipper. Matt remembers the crabs too and talks about finding pirate treasure. He laughs when he tells me how his dog, Lady, “is a mischief at the beach” and “…doesn’t like wavy water.” All the children at Banksia Rd Preschool talk about the time Sally found a blue tongue lizard. Some children even continue to draw the event (See “Sally and Matt’s story,” p. 119).

These memorable moments are unusual and unique in character. At the time, they must have created a great sense of wonder, a ‘wow’ factor. And as a result the children love these places
even more, they would love to do it again, but usually cannot. It will not be forgotten. It leaves a lasting impression and a pleasant sense of longing.

These re-lived experiences were repeatedly remembered and discussed, but sometimes the memorable experiences only pop up when something happens to jog the child’s memory. Such as this interruption by Jemima,

On the excursion: Jill settles the children under a twisted cork oak and reads them, “Bugs, bugs, bugs.” Jemima listens and says, “When I was on holiday, my mum gets me a juice…and a ladybug was in it!” (Running record, 13/12/04, 11:05 am).

And this story from Chris who wanted to share this amazing occurrence with me.

Chris comes out of the gazebo with two eye-patches on and tells me. “A ringtail fell out of the tree cause its enemy was fighting it. A bird.” He then tells Pam the same thing. She says “Yes,( this happened at kinder one day).” “You have to take care of pets” He says, “Mine ran away. It was a dog, I liked its licking.” He liked the dog licking his face. Chris returns to the gazebo (Structured observation, 10/11/04, 11:13 am).

I asked each child to draw his/her favourite place and while I expected to receive some ‘invented’ places, most of the children drew a memorable occasion or object which they spent time talking about or playing with on other occasions:

Anna: The farm with lots of animals

Brett: The edge of the sandpit

Chris: A hothouse with plants

Matt: His dog on the beach

Sally: The beach with lots of coloured shells and crabs

Jemima: The park and her pet cat, and a rainbow with her pet cat.

Sam: Flower and Christmas beetle

Pictures are available in each case study: “The Children’s Stories” beginning p. 100.
All of these favourite places and objects are part of or closely linked to nature. Although the cases only represent a very small group, I have often witnessed children drawing rainbows and people with flowers in the many schools I visited. I believe this illustrates how important nature is for children, that if from all the vast experiences of the world these children have encountered, (Sally brought her Yugio Cards to preschool, Brett constantly played Spiderman games, Jemima loved Hi Five and Lizzi Maguire), when asked to draw a really important special place the children selected natural places and things.

Education must start with a discovery of a ‘sense of wonder,’ which is definitely evident in new and unique experiences. Excursions, events and family holidays which take children out of the everyday can play a major role in creating magical moments which lose their power if repeated daily or weekly. These magical moments have been shown through this research to give children a basis for creating play, conversations and artwork. A lasting memory of a place or holiday spot only visited a few times can create a feeling, and have an impact that can affect the rest of the child’s life.

Memorable experiences can take place at any age. Below is an account of a memorable experience by James aged 3 years and 5 months. James visited the Royal Botanic Gardens in January and without any reminding told his story at playgroup in May of the same year. He recalls the story I told him of the Lightning Tree.

“We looked at the tree and it falled down… It was lightning crashed it down. It broke into pieces and a man came and fixed it together with rope. The workers looked at the tree that falled down into pieces. We went to the Botanic Gardens and we saw… and Becky and me looked at the tree and we saw!” (Research journal, 12/5/2004).
It is clear that special places and unique experiences can contribute significantly to the child's sense of wonder and they tend to enhance the child's understanding and appreciation of the natural environment. Such experiences may also contribute to a sense of caring about the natural environment which, I have already indicated, is “an essential prerequisite to environmental action” (Wilson, 1999, p. 30).

**Exploring**

(5) Unrestricted, free exploration and (6) Exploring power

“To encourage the development of caring for nature, we need to build on children’s spontaneous interest in the natural world” (Hart, 2003, p. 17).

The third major group I have divided the children’s nature interactions into is ‘Exploring.’ That is, going beyond just Using nature in play or Doing an activity, such as collecting or talking about nature, to being in nature with a sense of inquiry and discovery. The children explored in many ways with multiple goals.

They explored:

- with a sense of ownership (making their discoveries belong to themselves);
- with a sense of joy (wonder, laughter, satisfaction);
- with a sense of excitement (fear, curiosity);
- with independence (out of sight of the teacher, or exploring boundaries and freedom);
- through imaginative games (play-based discoveries);
- through ‘real work’ (lifting, digging, looking at nature itself);
- in uncaring or destructive ways (hurting little creatures and pulling up plants);
through conversations (talking about aspects of their discoveries and exploring possibilities verbally); and

- with all their senses (touching, smelling, tasting, seeing, hearing, feeling).

At times many of these ways of exploring nature may happen at once. Alongside these were social goals, as children used knowledge of nature to make friends and to exclude others.

This part of Sally and Matt’s day describes several ways of exploring; hunting, pretending, collecting and sharing.

Matt and Sally are standing by a fence... They pace up and down looking at the green shade cloth on the fence and they walk on tip toes, arms raised and scrunched. They are ready to pounce! They every so often grunt as they slap out and try to grab a fly.

“You catch one,” Matt says and looks as though he will leave...

“There’s one, look over there,” Sally says, the continue slapping.

Matt says “I’ll pretend I’m a tree,” and he crouches in the marjoram bush, with arms up and fingers splayed and twisted to look like branches. He sits here for about seven seconds, then when he doesn’t catch anything he gets up and goes to a tree. Then he climbs the tree.

Sally stays on the ground slapping.

“Sally do you want me to get you this red thing?” he asks. She doesn’t answer

“I got you the red thing,” he says as he hops down and holds a small branch with a bottle brush flower on it, out to Sally (Structured observation, 10/11/05, 10:40 am).

Sally and Matt are constantly exploring their environment and testing boundaries of what they can do outside. These boundaries are set by adults in control of these environments and can vary from setting to setting. With changes in these boundaries so too does our view of exploratory behaviour, some may view it as destructive, others as constructive.

In the Royal Botanic Gardens, Melbourne the bamboo is nurtured by the gardeners, who glare at groups of school children who creep through and trample on the tender new shoots. As a result the bamboo is almost constantly fenced off. Matt comments on this, “We’re not even
allowed in, that’s no fun.” In Matt’s preschool the bamboo is a secret place, where the children constantly comb through and pull up bamboo shoots which they play with and horde.

For the RBG horticulture staff this behaviour would be seen as dreadful, and destructive, but to Matt and Sally this is the best idea, of how to make the most from their environment. Their ‘destructive’ forces in the bamboo can either positively or negatively viewed, it is entirely a matter of perspective. Children do not deliberately misuse equipment and places, as adults often view them to, instead they are seeking out challenges and experimenting with risk. Rivkin (1995) describes children running up slides and challenging their environment as learning how to use the outdoors. Moore, Goltsman, and Iacofano (1992) state that a well-designed play setting will “reflect an understanding of children’s behaviour and provide for risk-taking without introducing hazards” (p. xii).

Docket and Fleer (1998) remind us that “young children from Western cultures live in a world in which they have little control over what happens to them” (p. 131). Preschools, the home and public places all set different boundaries with social and safety rules for children to learn and follow. In their wild and complex play yard, Sally and Matt seem to seek out a special corner, out of sight, to explore, unrestricted and freely. Outdoors, out of earshot of Pam they feel free to explore topics and language which adults may not permit and make more decisions about ways of playing. The first example below describes how Sally and a boy fought over a leaf until they became aware I was sitting nearby.

*He grabs her and puts his hand over her mouth. I am sitting very close to them, they almost touch me in the scuffle so I feel I must respond and I say, “Excuse me, I am sitting here.”*

*Sally looks at the boy, “No fighting, a teacher’s here.” They grab at each other and chase each other and run away (Structured observation, 18/11/04, 11:20-11:35 am).*
The second example illustrates a conversation the children held in the RBG in the absence of teachers.

*Sally and Matt talk about being hot* Sally says “I wish it was winter. I would take off my clothes and roll naked in the snow!” This begins a long conversation about all places to be naked, which are cold and all different ways of getting cold, usually when naked. This conversation is peppered with giggles (Running record, 17/11/04, 1:00 pm).

**Ownership**

While homes, preschools and shopping centres are the domain of adults, children seek out and find unoccupied spaces, corners of preschool yards, trees at the back of the park or a messy unused part of the garden. They see these free spaces, as early explorers did, not belonging to anyone and so available for taking for oneself. There is a great struggle to make things one’s own, whether it be the leaves Sally found, Jemima’s dewy leaf, Anna’s little creatures or the bamboo Sally and Matt try to hide from Andrew. Children really see themselves as explorers/conquerors. This is something that might be crucial in the child’s exploration of self and power, but is difficult to fully explore if not in a natural setting, as in other places the items there really do belong to someone else and exploration potential is restricted.

The little creatures and beetles Anna collects have clearly been claimed by Anna as belonging to her. Other children also respect this claim and this is how trading of natural materials occurs, as does stealing.

“Where’s my beetle?” Anna cries. The beetle is gone. Anna looks at me and looks over to Carrie. Carrie has the beetle, she knows without seeing it. Anna runs over and takes the whole box back, some little weeny snails fall out, she picks through the tan bark and puts them back. She snatches the lid from Carrie’s hand and tells her off in an upset voice, as she walks back to me and the guineapigs she bangs the box with the lid shaking the bugs around roughly (Structured observation, 20/10/04 11:02 am).
Social goals

The children’s exploration and knowledge of nature is not separate from their social interactions and play behaviour. In many ways the children used their knowledge of nature and how to use it to attract and exclude other children.

Children, such as Anna, Sally and Matt tended to be leaders of their group, other children came to them for different needs. Even Sam, is drawn upon by other children for his knowledge of plants and animals. This prestige is gained through a perception from other children that these four case-study children were good with nature or had collected something desirable.

The following examples illustrate this:

Anna: A girl asks Anna to help her with the guineapigs because she sees Anna as being good with them (25/10/04 2:34pm). Anna generally leads the bug hunts (25/10/04 2:00pm)

Sally and Matt: Sally and Matt decide who plays and does not play with them and Jackie clearly has to ask permission before holding any little creatures. (24.11.04, 10:45 am and 25/11/04, 10:43 am)

Sam: While at the RBG, none of the children can guess the name of the mint plant leaves. Sam guesses incorrectly, “lavender”. After a while no one answers, a girl calls out, ‘Ask Sam!’ (13/11/04, 12:19 pm). When Sam collects the eggs the children run over and follow him, but he says, “No they are just for me!” (6/12/04, 11:17 am).

These four children have skills, knowledge or natural materials which other children do not have, but admire. These proficiencies are gained by exploring in nature. Below are listed some examples of occasions where these children chose to teach other children about nature:

A boy jumps backwards “Ouch! Ah, he bit me!”

Matt says “There’s a lesson! You always pick up a witchetty by its back” (Structured observation, 24/11/04, 10:35 –10:45 am).

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Sam uses the potting activity to tell everyone about seedlings. He explains that the white hairs are roots and the leaves get water from the sky and sun (Running record, 13/12/04, 11:28 am).

These children also attracted friends by sharing natural items:

Carrie tells Anna, “You find some butchie boys for me.” They begin walking, Anna replies “You find some snails for me” (Structured observation, 20/10/04, 10:20 am).

Sally, Matt and Sam also use their knowledge of nature to achieve personal goals. Sam has spent days talking about and hunting for Christmas beetles. The excerpt below illustrates Sam's personal goal, to hold the Christmas beetle, is attempted as he tells the boy about the beetle's nippers.

A boy has a Christmas beetle on his hand. “Good news!” He says to Sam. “I'd be careful if I was you. It's got nippers” Sam replies. The two walk around. “As long as it doesn't bite you.” Sam worries, “I don't mind if it bites me” (Structured observation, 9/12/04, 2:20 pm).

In a similar way, Sally attempts to have her teacher, Pam, confiscate a bug from another child, in order for Sally to possess it. She does this by telling Pam, that the child was going to be mean to the bug and Pam should give it to her instead.

Other social interactions focus on the children using their knowledge of nature to exclude others from the group. Sally and Matt create a sort of ‘nature clique’, which children can be admitted to or excluded from. They do not want to include Jackie in their nature play. Both children constantly exclude Jackie by telling her she lacks the ‘nature knowledge’ to play with them. They tell her she is hurting nature, that she “need[s] to learn to find [her] own bugs,” and a group member of Sally and Matt's tell her, “No, you gotta learn to do nature” (Structured
observation, 24/11/04, 10:45 am). On another occasion Matt makes up a story that Jackie kills nature, in order to exclude her.

Jackie comes over, the children say “Go away you’re not digging here”  
Jackie tells the student teacher, who says “We all dig together.”  
Matt says, “But she kills nature.”  
Jackie says, “I have nature at my home and I don’t kill em.”  
Student teacher says “What can we do so Jackie can dig?”  
Sally and Matt say “She can dig over there” (Structured observation, 25/11/04, 10:43 am).

Uncaring exploration and expressing fear

The Sally and Matt and their friends, particularly liked to do cruel and uncaring things in a group. This was especially the case when they had an audience to impress.

An analysis of the cruel behaviour would show that it occurred in many ways within different social groups. Sometimes the violence was:

- with carelessness/thoughtlessness;
- to demonstrate power;
- to demonstrate knowledge and show off to friends;
- out of uncaring curiosity; and/or
- a misunderstanding/ lack of knowing boundaries.

Zenobia Barlow of the Centre for Ecoliteracy recalls a research project in a San Francisco preschool where the children were divided into two groups, one which used the environment for learning, and the other did not. The children in the first group, learnt to change their behaviour to respect nature so that, one day, a bird landed on a child’s hand. “By contrast, children in the non-environmental group often threw rocks at birds” (Jensen, 2002). Wilson (1994a) also describes children expressing fear, dislike and violence towards aspects of the natural
environment. Sally and Matt show no clear line between, violence toward nature and ecophilia. At times Sally and Matt say they love nature and at other times they want to destroy it. They love collecting bugs, but they also explore the possibilities, including crushing and killing worms and witchetty grubs (Appendix 9, describes in full the violent behaviour).

No uncaring or violent behaviour towards nature was observed by Brett and Jemima (although Brett was often rough with other children). Chris only attempted to grab some tail feathers from a swan and squeezed a guineapig (a demonstration of a lack of knowledge). However, these three children are also the three who interacted in the nature the least. Children who did explore nature abundantly also became involved in cruel behaviours.

The cruel behaviours exhibited by the children are listed below:

**Anna:** Carelessly banging little creatures and watching Carrie break the centipede in two and then watching it wriggling on the ground.

**Sam:** Tossing sand over bugs, “to stop them getting out” and trying to whack bees.

**Sally and Matt:** Conversations about killing worms and squeezing witchetty grubs, clapping/whacking flying insects (every day), scraping minibeasts and their homes (3 recorded occasions), squeezing worms and witchetty grubs (4 recorded occasions), smashing spiders (2 recorded occasions) and chasing swans (one occasion) e.g. “Sally says, “Good bye swan, Ill give you a kick…”

Dockett and Fleer (1998) describe how children exercise power by discussing how they would hurt another child. Children in this study explored power both by discussing how they would hurt other children; for example, by putting a witchetty in a boy’s ear (24/11/04, 10:45 am).
They also discussed how they would kill or hurt little creatures, and they often followed through with this uncaring behaviour.

What is the reason for this uncaring behaviour? I believe there are two reasons.

Firstly, social goals are achieved; other children are attracted and impressed by this behaviour.

The following examples illustrate various aspects of the cruel behaviour.

The children are impressed by kill little animals:

Matt says “Who wants me to kill a worm?”
Three children answer “Me” (Structured observation, 24/11/04, 11:20 am).

Ed and a boy are saying “Kill the butchie boys.”
Ed says “Every bad spider you should kill.” He says that they found a white tail and Sally killed it (Structured observation, 15/11/04, 11:20 am).

Children exploring topics and language which adults may not permit:

“Pass it here. I know how to make it poo” Matt says.
He holds it upside down and watches it.
“It’s going to do poop, I know it... He’s doing poop, poops good.”
Sally gets out another grub, “Matty, you see if this one’s ready to do poop. Let’s find them and squeeze them.”
Sally finds one, Matt says “That’s a beauty!”
They talk about ‘the doc’ – “I call him Docky, hello Mr Dock” – says Matt.
“Look at that brown stuff. He is going to blast his butt out soon.”
“Look at that poo, that guy’s gonna blast the wee so much... Oooh!”
“Ooooh one of them fell in the poo!”
Sally, Matt and another boy, Lachlan, watch the grubs (Structured observation, 24/11/04, 11:00 am).
Children enjoy watching another child hurting little animals:

A group of children huddle around Sally. She says, “I’m tying up a worm – I call it lunch tie up… Aww poor wormy… I think we should let the worms go like the spider… someone’s hurt this one really bad, it’s bleeding.”

Sally buries the worms in a shallow dusty hole in the tan bark.

The children discuss how safe this spot is – ‘What if children run over this patch of tan bark?’

Ed is back, he wants to dig the worms back up so he can see the one bleeding (Structured observation, 18/11/04, 11:08 am).

The second reason is not gratified by others social, but a personal exploration of power and an exploration for the sake of exploring, boundless and unrestricted. This will be discussed in the following section.

Gaps in nature

In this section I will take our second digression from individual experiences of children and focus on the general exploratory behaviour demonstrated by the children, alongside historical and current ideas of childhood. In doing so the idea of Exploring as being central to childhood interaction is supported.

For a lover of nature and children, it is tempting to believe anything a child needs to learn can be learnt in a garden, I have already quoted “Every subject known to humans has its roots in the natural world…” (Humphryes, 2000, p. 16), but I would also like to address the limitations of nature, and the contradictions between the children in the cases and the writings on children’s moral and cognitive development in nature. I will conclude by discussing how these gaps can be filled by the interaction of sensitive adult role models.
“How do young children experience nature?” is my question, and it is the variety and abundance of ways of interacting with nature, which both impresses me and creates new questions.

When I saw the children's response to nature, particularly the selfish grabbing, cruel uncaring actions and power over little creatures I wondered not only about the development of their environmental values, but on the internal drive to explore in this way. I asked, is this the basis for future moral action? I soon discovered I was not the first to think of this. Myers and Saunders (2002) believe that the ‘natural care’ and the social responsiveness children show to animals has close links with “cognitive, emotional and moral development” (Myers & Saunders, 2002, p. 172). They use the term ‘natural care’ to describe the caring for animals they observed, exhibited in children from the first years of life. They attempt to explain the formation of values and morals as being developed from the strong caring for animals that children exhibit (Myers & Saunders, 2002).

This idea is questioned, when a search through the case studies results in finding much fewer episodes of natural care than rough, thoughtless or cruel interactions with little animals, as previously touched on in the “Social goals” section, p. 188.

This ‘natural care’ is reminiscent of Rousseau’s (1712-1778) early arguments of children as noble savages, whose “built in moral sense and unique ways of thinking and feeling would only be harmed by adult training” (Berk, 1998, p. 12) and is supported by Kagan (1986) who asserts that rather than needing parents to instil a moral sense, a child “can only lose a moral sense”(p. 88). Kagan (1986) also suggests that children are born with the ability to spontaneously
develop moral values, but they are desensitised or inhibited developmentally by external influences.

Despite presuming that the children Myers and Saunders observed had witnessed caring behaviour in adults and children around them from the moment of birth, it is still possible to suggest that ‘natural care’ in children begins innately. But I find it less likely that children have witnessed uncaring and disrespectful behaviour to the same extent, yet they still exhibit this behaviour also. Framed in such a way, I must assume that both behaviours are innate or they are both learnt. But, it is a much happier thought to believe deep down all humanity is good, than to believe we were born with the imagination and ability to be cruel.

I recently chatted about excursions with a woman, who commented that her kindergarten classmates killed two chicks on an excursion to a farm. When the teacher reprimanded the children and asked, “Why would you do such a thing?” she recalls to this day thinking, “Well what did you expect, when we’d never seen them before.” I have also observed many children hurting kittens, chicks, garden creatures and even babies.

To summarise the uncaring behaviour demonstrated by children in this study:

- deliberate crushing of a millipede;
- tying a worm into knots;
- threatening to cut a worm in half;
- squeezing witchetty grubs until they ‘pooh’;
- grabbing eels (eel hunting);
- chasing swans/pretending to kick a swan;
- putting a guineapig on top of the head;
- holding a guineapig tightly and jealously;
• throwing sand over ants;
• taking animals out of their habitats to make collections;
• whacking/clapping flies and wasps; and
• destroying animal habitats on a small scale;

However, children did also demonstrate a caring for animals and garden creatures providing them with shelter, water, leaves and grass in a box and in feeding the swans. Sam is particularly gentle and caring of the preschool's chickens. He holds them and strokes their feather and carefully collects eggs daily. Anna and Sally also cared for guineapigs.

It seems evident that the children learnt these caring principles from teachers and parents who have taught the children how to hold and feed the pets.

Below are listed instances of teachers taking moments to teach children about caring for little creatures and pets or instances where children have retold what they have learnt.

The teacher looks in Anna's box and says “Snails don't need much water, I don't think you better give them any more.” Anna doesn't reply but looks thoughtful. She puts the box down and puts the guineapigs away with the help of the teacher and as the teacher suggested, that they are probably tired (Structured observation, 25/10/04, 2:43 pm).

Pam shows the children a spider, they listen to her and she talks to them about the garden (Structured observation, 11/11/04, 11:22 am).

“There's a spider on you, Pam,” Sally screams and smashes it with her hand. (it is dead) Pam says, “It's ok, I was going to blow it off” (Structured observation, 11/11/04, 11:39 am).

“Chris tells Pam. “You have to take care of pets. Mine ran away. It was a dog, I liked its licking” (Structured observation, 10/11/04, 11:13 am).

Sally tells everyone one of the guineapigs is pregnant, so you can't squeeze it, because it could kill the babies (Structured observation, 24/11/04, 12:00 pm).
There is a vast difference between an animal, such as a cat or guineapig and a little bug. However, I do not believe the children viewed bugs as non-living creatures, and use this to excuse the rough behaviour, as Sally describe the flies as ‘knowing’.

“Sally says, 'Maybe they know were going to catch em,' She refers to the evasive flies, ‘There’s one...’” (Structured observation, 10/11/04, 10:53 am).

Children acted in uncaring and disrespectful ways almost always in the absence of adults, but either with or without peers. Most of the caring behaviour involved children and adults together, sharing how to care for animals. This is at odds with the idea that morals cannot be taught and only lost by Kagan, Myers and Saunders. Morals and values and respect for the environment must really be learnt in a social environment. Not only do the children in this study demonstrate that if left to themselves in nature they act in selfish, thoughtless ways, but Capra’s writing also demonstrates that human values can only be taught by humans.

Capra (1999) brings to our attention the differences between ecosystems and human communities. “There is no culture in ecosystems, no consciousness, no justice, no equity. So we can’t learn anything about these human values from ecosystems” (p. 3). Nature cannot teach us human traits, moral or values. It cannot teach us how to respect, wonder or care. Only human interaction can. Human interaction is vital in the child in nature. Nature teaches us about itself, principles of connection, relationships and context. It creates opportunities for vast and varied interactions with itself and others and provides a setting which is essential in soothing and inspiring the mind. And, it is part of the world around us which contains and influences our human relationships.
Exploring in multiple ways

*Nature cannot teach human values, human interaction is vital (Capra, 1999, p. 3).*

As mentioned above Capra (1999) states that we, as human beings, cannot learn human values from nature. Myers and Saunders (2002) contrast this by quoting Kagan (1986) who states, “A child can only lose a moral sense” (p. 88) and therefore, moral failures cannot be attributed to lack of moral instruction. Consequently, why did the children in this case study exhibit low moralistic attitudes towards nature? Is the increase in urbanisation and isolation from nature creating dislike or disrespect for nature?

The answer lies in the previous statement “The children explored in many ways with multiple goals” (See section, “Exploring: Unrestricted, Free Exploration,” p 170). I suggest neither ‘caring’ nor ‘cruelty’ are ‘natural.’ These perceived innate desires are in fact evidence of a stronger innate desire to **explore**.

Children are not born solely loving nature and are then corrupted by society, neither are they born solely wanting to exploit and misuse nature. Children are born with all possibilities, options and choices open; they possess the capacity to both love and hate, hurt and help, free and take captive. They are motivated by a desire to explore all of these possibilities, which is why I believe I saw both negative and positive attitudes towards nature in children as they explore their own connection with and power over nature. This is especially meaningful in the child’s interaction with nature as both the child and the natural environment are unlimited and complex. Only the truly natural environment in all its complexities and depth can equal the needs of the child and allow him/her to explore all aspects of themselves and their surroundings.
Together society and the natural environment teach certain crucial values; to respect life, wonder at nature and living harmoniously within natural systems. The fact that only nature can match the child, as no man-made environment can suggests that nature was made for the child and the child for nature; an all knowing, intelligent designer, has created the whole of nature around humanity and each individual must interact with it and with each other in order to live an ecologically wise life. It is in this way, that human kind is biologically connected to nature (as we share the same Creator and are all made from dust, Genesis 2:7) and cannot be separate from nature. Neglecting either the natural environment or social others, leaves us unhealthy and incomplete. We will never be better without nature and Rivkin (1995) even questions “can we still be fully human” (p. 6) if we lack an intimate association with nature?

The case-study children posses a great capacity to explore every avenue and option, yet often without developing further. Pam describes “how in some ways Sally and Matt have got themselves really quite stuck and Sally in particular” (Teacher Interview P2). The facts, knowledge and values are not instilled by the plants and animals but waited for social interpretation and the passing down of knowledge from generation to generation. Alone, the children are; imaginative, social, antisocial, unoccupied, busy, cruel, happy, wondering, watching, creating... but without scaffolding the child is limited by their own ideas and knowledge of the world. The following section on Sharing describes, how adults may be best placed to guide children along the paths on which they must develop and extend themselves.

**Children in the wild**

The case-study children limit us, in this glimpse of the development of human values, as I cannot record or consider the effects of their parents, the media and other children. How would children interact with nature and others if raised solely in nature? Michael Newton penned an
interesting history and discussion on cases of “Savage Girls and Wild Boys” (Newton, 2002). The children he researched were raised by wolves, bears or other wild animals in wild places and are often called ‘children of nature.’ Hopefully this discussion will also answer Rivkin’s (1995) question “…lacking intimate association with nature, can we still be fully human?”(p. 6) and demonstrate the importance of human relationships and significant adults in the child in nature.

Newton (2002) writes of a naturalist Virey, who for some months wrote on and studied a boy, first seen in 1797 naked and running free in the woods near Lacaune, France, but captured in 1798 (Newton, 2002, p. 98). Aside from his lack of language and social development, his essential naturalness, raised apart from the interference of desensitising and morally inhibiting external influences of humans could serve as an example to show the natural care and development of values, and humanity taken from nature. Like the famous Itard, the savage of Aveyron, the child had in his life “immersed himself in, and unified himself with, nature. Taking delight in it - rains, snows tempests, boundless space, had been his sources of entertainment, his companions, his love” (Montessori, 1912, p. 150).

Virey could not detect in the boy any signs of interest in other humans. “He showed no affection and formed no attachments... he was neither wicked, nor good, being unaware of both” (Newton, 2002, p. 104). He was selfish, had no sense of fairness, seemed incapable of pity or compassion, but lived only for himself, “having no thought for others than as if the were simply useful or unnecessary objects” (Newton, 2002, p. 104). Surrounding ‘the boy’ individuals sought to use him to disprove Roussea’s then beautifully woven vision of human nature, by asserting the opposite, that the state of nature was “not magical, attractive or beautiful: it was a state of vacuity and barbarism, an empty, ugly and unmeaning condition of entrapment”
They shared the idea described for them much later by Montessori (1912), that education into civilisation is “a renunciation of all [that was enjoyed in nature], but is an acquisition beneficent to human progress” (p. 150). Truly these believers in an ‘omnipotent education’ opposed Rousseau’s principal that “the work of education is deleterious and spoils the man” (Montessori, 1912, p. 150) and Kagan’s (1986) similar idea that morals are desensitised or inhibited developmentally by external influences.

Among the plethora of wild children cases is one involving two Indian children, Kamala and Amala raised by wolves, early last century. The girls lived among a pack of wolves until taken to live in a missionary orphanage. They had “no sense of humour, no sadness, no curiosity or connection to others” (Newton, 2002, p. 186). Although they did befriend a baby boy in the orphanage, who crawled as they did, one day without warning they turned and attacked him, biting and scratching. As Virey’s boy was neither wicked nor good, these children of nature were neither good nor bad. They were human, but without the understanding of human values and morals. Born with the ability to explore in a multitude of ways both good and bad, these children of nature lacked the opportunities for human interaction, language and attachment to other humans which teaches humanity.

It seems that even forests, the most natural and wild of places, children left to develop alone in nature, do not develop all the qualities usually attributed to develop in nature play. Without human companionship there is not development of creativity, curiosity or connection.

I recorded the following in my journal:

“I am starting to realise, children need to be taught how to use nature. It is not enough to just let them play in it. They must be shown to respect it and not be cruel to bugs and destroy plants. We need to teach our children to love nature or they will not know how to

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and they will take pleasure in destroying it and this will not change when they get a little bit older, and eventually a lot older! I am seeing children use killing bugs and breaking baby plants as interesting and enjoyable play games. This sort of play could be redirected into something immensely valuable, but the teacher must be there to guide it otherwise, the beautiful nature play becomes a thoughtless, destruction of life” (Research journal, 10/11/04).

In addition to this, Malone and Tranter (2003a) found “that in schools where there was little or limited access to natural elements children were more likely to engage in anti-social or destructive behaviour and felt less able to engage in imaginative or creative play activities.” It seems for creativity, wonder and a set of environmental values to develop children need both nature and social interaction together and never apart. Those in guardianship for children need to recognise that “children construct knowledge and values not only through interaction with a physical world (with nature) but through interaction with a social world and with social discourse” (Kahn, 2002, p. 113).

Greenman (1988) so eloquently writes: “It is through people that children become fully human members of society and discover how the social world works and their place in it... it is the action and interaction with people and things that counts” (p. 29). Whether or not children construct their environment, as Piaget would have it, or actively absorb it as Montesorri describes. It is that ‘clear eyed vision,’ that ‘fresh and new and beautiful’ view of the world which Rachel Carson writes of, which is lost before adulthood unless children have that sympathetic adult with whom to explore and learn to love the world with. Finally, I have come to the conclusion of this section and the beginning of the next, dealing with the importance of adult interaction in childhood experience of nature.
Sharing

(7) Children and adults

“The most important learning task facing young children remains that of making sense of their world and the adults in their lives are the tour guides of the world” (Redleaf, 1983, p. 3).

Adults constantly make choices for children. I have already discussed the significance of ‘out of sight’ places, and being away from teachers and adults, in the child’s exploration of the environment. As a cat awakes and stretches out all its muscles so the child needs to stretch out and explore with a sense of freedom, and independence. This is not to say adults do not have an important role to play.

Children often invited adults to share in the experience, at other times sensitive adults capture the moment and join in. This sharing is from adult to child and child to adult, a reciprocation and connection between the child and another; a linking between the layers in Bronfenbrenner’s social ecology (Figure 1). The following discussion demonstrates how significant adults can have a lasting and profoundly important role to play in the child’s experience.

Sometimes adults are used to help children physically. Sally asks an adult to help her in the account below, but unsure of my response to her reasons, or in an effort to exclude me (a stranger) from the actual activity of bug hunting, she goes about asking in an indirect way:

Sally comes out of the house to where I am standing by a massive pot with a citrus tree and some strawberry plants in it.
She tells me, that pot isn’t supposed to be there, it should be here. She draws a circle in the earth with her finger a meter away in a rather inconvenient spot right near the cubby door. I say I think Pam wants it here and it is too big to move. She says she wants to find if there’s any bugs under there.
This seems OK to me so I do move the pot, Oh relief, it is not heavy.
She bends over the spot and looks.
“Ants!” she cries and “A worm!” she picks it up, then bends over and flicks sandy dirt all over the bugs and stirs up the neatly arranged ‘under the pot world’. She says “Spider,” and gets a lid to scrape it.
“You can put it back now” she tells me “we’ve got what’s under it… a worm.”
I put the pot back (Structured observation, 9/11/04, 12:00 pm).

Sometimes adults are not in tune with children:

The children sit on the pond decking and spot dragonflies. Sam creeps forward and peers down into the deep water.
“I see mosquitos in there.” He says.
“Come back, Sam.” Sam goes back to his spot. “It is not safe” The teachers tell him.
“I hear frogs.” Someone calls, but the teachers are chatting. Jill soon moves them on, but Sam stops and squats, gazing into some grass (Running record, 13/12/04, 11:18 am).

“Jemima tells Mrs Stuart, “When I put sand in, bubbles come up.”
“Why is that?” asks Mrs Stuart.
Jemima replies “I don’t know. You tell me!” (Structured observation, 6/12/04, 2:14 pm).

Jemima does not want to play a game of seemingly endless questions with Mrs Stuart. She enjoys sharing her discovery with Mrs Stuart but not being continually quizzed on what she is learning. In both of these cases the adults have not captured that moment which Malaguzzi speaks of as the central act of adults; they must try to capture the right moments to activate the meaning-making competencies of children and make this the basis of all learning. This is done through a ‘fruitful dialogue,’ of meanings and interpretations with children (Fraser, 2000, p. 31). Such a ‘fruitful dialogue’ is described below.

Sam’s mum is significant in his story in creating a delightful and memorable experience for him. She is there every morning at preschool and often stays for group time. In Sam’s folio there is a note from his mum, telling him about how special he is in his family. In this glimpse Sam’s mum
shines through as being a great affirming influence in his life, and their close relationship is illustrated for us through their interactions on the excursion, which she also attended.

“Look at the snail,” Sam shows his mum the snail he is holding. The other mum’s join in and talk about it with the children. Sam’s mum takes a photo. The snail is stuck onto Sam’s hand. He pulls it off and goes to wash his hands with mum (Running record, 13/12/04, 11:28 am).

In the Herb Garden the children line up to make a herb bag. Sam is last. He looks to his mum. She smiles and winks at him (Running record, 13/12/04, 12:19 am).

Parents are, except on rare occasions, the most significant adults in their child’s life. On the excursion we see Sam and his mum connect and share the world together. With her, Sam is more articulate, he seeks to interpret the surroundings for her, involve her in his play and in return he received positive responses and an understanding that she values his behaviour; she takes a photo of him. Both Sam’s parents are veterinarians and it seems that a deep love for animals and plants has been encouraged or supported in Sam, since his birth.

On other occasions the adult who significantly influences the child’s experience, is one whom the child has just met. Jemima’s parents do not attend the excursion, but Jemima still spends a lot of time with adults. Jemima discovers that if she stays close to Jill, the RBG teacher, she is right in the middle of the action, she can learn from her and she won’t miss out on anything. She was disappointed when she missed out on seeing the worms, and it is after this that stays close to Jill.

Jemima is very excited... They are going to see worms. Not all the children can see. It is just a small pile of worms, on top of the soil. Although some children enjoy holding them, Jill whisks them away after a moment."

“At the potting table: Jemima just watches, her mouth open and her fingers in the earth. She copies everything Jill does to plant her seedling.”

“The children leave the IPFCG and walk into the wider RBG. Jemima has mud on her nose, she runs to Jill and holds her hand.”
“Jemima sticks with Jill. She tells her when she needs to let go of her hand, so she can pick up a leaf and then she holds it again. As we walk Jemima talks to Jill and points to things she sees (Structured observation, 13/12/04, 11:28 am – 12:30 pm).

If children were natural naturalists, as Emily Sedgwick Galvin (1994) suggested, by age 4 and 5 they have certainly come to a place where discovering for themselves it is not enough and adult guidance is necessary. Adults must help children to interact in a meaningful way in nature. It is not enough to provide children with good environments they need scaffolding and demonstrations. This is evident for children in poorly set up outdoor areas, where support is needed in providing materials. It is also important for children in complex play areas, where they require guidance in their exploration, particularly in dangerous exploration which involves fighting and killing. Children alone in nature, will not easily or deeply learn the values which can be taken from nature, of connection, balance, love, respect, care, systems thinking, cycles, connection, balance. Adults and older children can serve as role models to guide and gentle examples of nurturing nature and participating in environmental action.

During the six case studies there were few times when adults, particularly teachers interacted meaningful with children outdoors. Quite a few times teacher-child conversations with children were carried out at some distance while the teacher stood drinking a cup of coffee. Also, many teachers are unable to interact deeply with children, as they are constantly policing the playground. It is unfortunately named yard ‘duty’ in primary schools, and as duties are usually unpleasant, but necessary work, such a term puts boundaries in the mind about the types of behaviours the teachers might participate in during outdoor play time. As much as a well-planned, supportive environment liberates the teacher from a policing role, the teacher must then make it a priority to interact, to ask the right question at the right time and to involve
children in their environment. Outdoor play time is not a time for adults to have a coffee and chat to each other, this is the most profound time to tune children into developing their thoughts and discovering how nature works, so that the resulting principles and understandings can be used to create the sort of citizens who can work to maintain sustainable living.

The excursion to the Royal Botanic Garden's Melbourne provided a different setting for adult/child interaction. Pam's expectations for the excursion were that the children “would have a lovely exploratory time... actually finding [minibeasts] ourselves and not having them put on the table in front of us. Fishing things out of the pond ourselves with nets. Just doing all that exploratory stuff with a grown up who could say “Hey I think you've found one of these” and having a picture of one and saying, “If we had a magnifier” and getting a magnifier and saying, and can you see...”(Teacher Interview P2).

Out of the preschool and in the Royal Botanic Gardens teachers and parents, in particular, engaged and tuned into their children. In this environment and situation parents made the most of the surrounding gardens and interacted with their children, taking the time to show them plants and animals which they felt were important for the child to experience.

Dawn, the teacher of Waratah Preschool believed “that the child in the Royal Botanic Garden with only a mother or teacher, who lacked an intimate knowledge of nature, would be missing out on the important knowledge that a guide could impart” (Teacher Interview P1). However, I believe parents (or a friend's parent) are of great value in the outdoors. Parents do not have to teach specific scientific facts to young children to gain from nature. The value for the young child is in Sharing their experience and discovery, and the value for the child in observing an
adult role model, is that an intimacy with nature is developed which knowledge can be built on in later years.

There is one child who constantly focused on adults while outside and unfortunately this did not increase his interactions with nature. Perhaps, Chris lacked the play skills, confidence, creative thinking, risk taking or language skills needed to play independently. However, while with adults Chris' conversations almost always focused on nature.

Listed below are the times Chris spoke with his teacher and myself, and voluntarily included natural items as the focus. Other conversations with Chris included, looking for Vietnam on a map, but generally all his conversations referred to nature.

Chris and his teacher, Pam:

After making a pirate hat Chris comes out of the gazebo with 2 eye patches on and tells me “A ringtail fell out of the tree cause its enemy was fighting it. A bird.” He then tells Pam the same thing. “You have to take care of pets” He says, “ Mine ran away. It was a dog, I liked its licking” (Structured observation, 10/11/04, 11:13 am).

It is story time, the group talk about spring. Chris says he saw an acorn in the picture. In winter, he says, “When it is a little bit raining we can go up to the mountain and see the snow.”

The story group go for a walk and Chris notices that the leaves are the same on the three maples. He finds another deciduous tree at Pam’s request. “Well done,” she says. He noticed the new green leaves growing because it is summer.
The children hunt for acorns, after the activity is over, Chris actually finds one! And shows Pam (Structured observation, 24/11/04, 9:45 am).

All the children follow the big long line through the lavender. Lisa stops and asks the children what do bees make. Chris answers “Honey” (Running record, 13/11/04, 10:40 am).
Chris and the researcher:

**Chris holds up a stick** “See the spider webs?... I found some spider webs!” He tells me, I say “Oh yeah,” and then he goes over to his mum (Structured observation, 10/11/04, 11:30 am).

**Chris waves a shoelace in my face.** “Wiggly worm. Wiggly worm, wiggly worm...” he repeats, “I saw a worm at kinder when your weren’t here... it was in the garden.” “Were you digging?” I ask. “Yes” he replies (Structured observation, 11/11/04, 9:10 am).

**In sandpit Chris tells me to watch the water rush through the tunnel as he pours it in** (Structured observation, 11/11/04, 11:24 am).

**“We wait under the lillipillies. Chris says to me “Look up” He is looking up. I look up and see leafy branches above my head** (Running record, 13/11/04, 11:35 am).

Chris clearly enjoys sharing nature through conversations with adults and illustrates a different type of experience to that of the independent, confident exploration of Sally, Matt and Anna. In his conversations his keen eye for detail around him is made evident. He knows my picture is missing “the wind” and “the leaves [and] branches for the leaves to go on” (Structured observation, 11/11/04, 11:20 am).

Throughout all these varied experiences, one thing is certain, children can only go so far alone. Yet, sadly modern children spend an increasingly large part of their lives alone with their toys, a situation inconceivable several centuries ago (Sutton-Smith, 1985). Here is an echo to Francis’ (1995) ‘childhood of imprisonment’, where the lives of children are controlled and restricted, away from the community. In this type of childhood the home garden takes on an even more important role in childhood, it becomes a place to restore some of the qualities of childhood (Francis, 1995). For Chris, drawing his backyard was important, each detail included, from the pile of rocks to ‘the grass under the trampoline’ and ‘the grass under the slide’. In this place he
plays with his brother. In Chris’ experience of nature, he seeks out others, particularly adults, and it is this presence of others which is vitally important in all the children’s stories.

The presence of others enriches and adds multiple perspectives to our exploration and learning. Ultimately, adults can help children interpret their surroundings, revealing to the child something beautiful beyond what they can perceive alone, demonstrating to the child how to use their senses, to an awareness of wonder, joy and spiritual meaning.
Chapter 6: Conclusion

I walk through a busy playground. Children scattered around, busying themselves under bushes, in the sandpit, climbing over tyres and onto swings. Some children are dragging logs around and building a cubby, with plenty of arguing and discussion. One little boy sits and talks to the assistant teacher, following her around, while others still peer intently into a rice bubble box observing the slimy snails inside. I am the teacher. My teaching has changed as I allow more time and encourage deep interactions between the children and between children and teachers. I am providing them with more loose objects, greater time for exploration, for touch and deep conversation.

I have asked the question, “How do young children experience nature?” This question was guided and supported by researching the following questions, which were described in the main text.

- How does the child respond to nature in the preschool program and on an excursion to the Royal Botanic Gardens, Melbourne?
- How does the child interact with and use nature?
- What factors are seen to be significant in the child’s experience of nature? (Both innate and environmental influences)
- How is nature significant in the child’s development?

The seven children individually experienced nature in many varied and complex ways, through imaginative play, spontaneous songs, collecting, hunting, using the senses, making rhythms, sifting through soil, abundant exploration, through using loose natural materials, and using nature as settings for play, through climbing, running, hiding, talking, harvesting, digging, carrying, lifting, rolling and pretending.
The seven children also experienced nature with others by sharing it with an adult, sharing it with other children, by excluding children, by claiming it as belonging to them, by making and broadcasting discoveries and by sharing memorable experiences.

A summary of the main points is made below:

- The children who used **loose natural materials** gained a richer and higher quality nature experience. The abundance of low structure materials they could access provided greater depth for imaginative play and creative thinking.

- At times the children used the outdoor set up for specifically set purpose, at other times the children were inspired by **nature as a setting** and spontaneously used a nature item.

- The children demonstrated satisfaction and a thorough enjoyment in **collecting, hunting and gathering** natural items for play, trading or merely possessing.

- The children remembered special unique **memorable experiences** in nature and relived them, sharing them with others. Many of these significant experiences will be remembered through to adults and help develop the child’s likes and dislikes, character and values.

- The children used nature to explore in abundant ways. **Unrestricted and free exploration** with the whole body and mind.

- The children also explored boundaries, **power, control and social goals** more deeply in the outdoor natural environment, where play is not directed or interrupted by adults as frequently.

- The children enjoyed sharing their experience with **adults**. The encouragement and support of the significant adults added depth and value to the experience. The adults also provided the children with access and time in nature along with good human relationships to develop values, morals and knowledge.
My research findings have many implications for teachers, parents and those in contact with children. Children are rarely in control of setting up the environment which surrounds them. Teachers, parents and communities must provide children with environments which are rich and complex and inspired by nature. Each of the case-study children's individual experiences of loose natural materials and natural settings demonstrates the importance of opportunity and access. Children need to have the 'opportunity' to spontaneously be inspired by natural elements and children need to have 'access' to natural elements for a specific purpose, within a place that provides greater freedom and broader boundaries than the indoors.

Although the term “developmentally appropriate” is going out of fashion. There is the idea that in providing open-ended materials and settings children will be empowered to work on their own level. And while many believe that children select “the experiences they developmentally need, children can only select from what is present” (Greenman, 1988, p. 153). And what is present? A sandpit and some foam wedges or “a small scale replica of the world, with as many as possible of the sensory experience to be found in the world included in it” (Greenman, 1988, p. 177). My research describes children's creativity and scope for play that increases directly with the complexity and number of loose parts in the environment.

Overall, higher quality play and interactions take place when the case-study children are in environments which are more complex places and are surrounded with a culture which empowers children to access materials and places, as Figure 31 illustrates.
Figure 31: Relationships between the preschool environment and the quality of play.

Figure 31 illustrates the effect of varying environments on the quality of play and interactions. A complex environment includes a variety of permanent structures, such as trees, climbing frames and hiding places, as well as a wide variety of loose materials. However, a complex and rich environment does little in serving the child if the adults who supervise and plan for the site do not permit the use of these materials and areas. The terms opportunity and access refers to the preschool's philosophy and outdoor play culture. Environments where more activities are permissible and all areas of the play ground are accessible are play areas with “Abundant opportunity and access” these provide the greatest opportunities for play. Play areas with out of bounds areas and materials, which are not readily accessible, are play areas with “Limited opportunities and access,” these environments restrict opportunities for play.
Waratah Preschool it best placed in the *medium* range of Figure 31, as the preschool teacher provided children with a reasonable amount of places and materials to use outside (see tables 8, 9 and 10) and also encouraged children to explore with limited restrictions.

Banksia Rd Preschool demonstrates a preschool which provides children with a highly complex environment, easy access to materials and all areas of the play yard and shared a philosophy of empowering children through the least restrictive environment. This preschool fits into the *high* range Figure 31. In the case Chris, who played very little in nature although the environment was accessible and rich, he also needs additional support from teachers at developing his play skills.

Kanooka Christian College is an excellent example of a *low* range preschool. Although the preschool yard was moderately interesting with a few bushes and garden beds, some of these were out of bounds and the areas set up for children to play and interact in contained very few or no loose materials. These out of bounds areas created a negative feeling and interrupted play, as children were asked not to explore in the few planted areas. It is difficult to develop feelings of self worth in a setting which invites negative and disruptive behaviour which teachers must restrict (Kritchevsky et al., 1977, p. 22).

As has been illustrated many times in the analysis and discussion, the essence of childhood is exploration. Children constantly explore and move in the environment, therefore they must be provided with a rich, complex place to play. Places and institutions shape future visions, “children reared in fortresses barricaded against the world outside, or in dingy basements, or in worlds of fluorescently-lit plastic and tile will have different aesthetic sensibilities than those raised in light, airy, open places with plants and easy access to the outside... These things
ought to be considered when issues of program structure, square footage, windows, sinks, and furniture (and staff salaries and staffing) are considered” (Greenman, 1988, p. 44).

While “numerous studies have found that children often prefer to play in natural or wild spaces where they can engage in direct contact with natural objects (Cunningham, Jones, & Taylor, 1994; Malone, 2004; Maxey, 1999), the children in this study demonstrate that they are not given the choice. Children are often powerless to choose suitable play spaces as they lack opportunity and knowledge. How can a child prefer a natural space if they have never experienced one?

An excellent summary of what it is like to create a complex natural environment for children is provided by Banksia Rd Preschool teacher, Pam as she recalls the blue tongue lizard discovery. She says:

_The teacher must create the environment to be wild, so animals can come in. I mean we find little skinks that throw their tales, but no one has ever found anything like [a blue tongue lizard] before. And it just says something about how important it is to have a wild garden. One that is not like their family’s neat suburban garden, with a mown lawn and a trampoline... so I want to continue to keep our garden wild and messy... They do actually spend more time painting if it is outside and building if it is outside, with boxes and other construction with glue. They are more creative with those things outside than they are inside (Teacher Interview P2)._  

Parents also have an important role to play. They must do as Joseph Cornell commands “teach less and share more!”(Cornell, 1979). Human relationships are vitally important in developing environmental values and natural care. The very presence of significant adults demonstrates to children the value of a place, creature or object, if adults are willing and able to share the sense of wonder and connection to nature innately within.
Just playing in a garden and watching my parents tend and plant, taught me our garden was a beautiful place where miracles happened daily. Tall leafy plants grew tasty, red tomatoes, eggs could be plucked warm from under a chicken and pea pods could be eaten off the bush, without being picked, so there was some of that growing magic left in them. As an adult I long to recreate these things and share the same joyful experiences with children, encouraging them to “learn with excitement each unique and enchanting day in a unique and inspiring life” (Kriegler, 2000, p. 32).

I now conclude with my thesis statement and in answering the main research question the supporting questions are answered also.

Each child experiences nature in multiple ways, which are in the spirit of abundant exploration. When the child is provided with access to a rich and complex natural environment they experience a high quality of play and interact deeply with adults, other children and nature itself. Experiences which are unique and contain elements of wonder also play a role, as these memorable experiences in nature form pinnacles in the mind, which profoundly influence the child throughout life and in developing a view of the world around them.

The encouragement and support of significant adults is essential in ensuring children have these opportunities and in adding depth and value to the child’s experience, which is made more memorable through being shared.

Finally, I ask the reader to remember their own childhood, the special feelings and discoveries of you shared in. Can you remember what it felt like to play out the back where no one could
see you and the warm fuzziness of going to sleep in a room and hearing the muffled voices of adults next door? Or are the memories starting to dim, so long forgotten? Adults must remind themselves of their special childhood memories, or relearn them, in order to know how to give children the important and special experiences they need. Or perhaps adults do not need to construct and give these experiences, they just need to ensure they stay available and are valued. I always find it amazing and saddening that adults cannot understand everything about childhood, although we were once children. Adults have the responsibility to provide children with the opportunity for good experiences in nature and the permission and ability to access natural places and materials. I hope that all adults can create a set of environmental values, which include the child in nature, experiencing the environment in a special and unique way.

Anna, Brett, Sally, Matt, Chris, Jemima and Sam have demonstrated an experience of the outdoor environment which is bound by limitations out of their control. Without sympathetic adults to widen these boundaries, the abundant sense of exploration and high quality of play evident in the rich natural environments will remain in only some children, others will lose this nature knowledge and sense of wonder, or will find it dim over time.
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## Appendix 1.1

**Behaviour Mapping**

Definitions and key to abbreviations:

<table>
<thead>
<tr>
<th>Social Interaction</th>
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</thead>
<tbody>
<tr>
<td><strong>SP</strong></td>
<td><strong>Solitary Play</strong> - plays alone, no reference to others</td>
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<tr>
<td><strong>PP</strong></td>
<td><strong>Parallel Play</strong> – alongside others, uses available materials, no influence on other children</td>
</tr>
<tr>
<td><strong>AP</strong></td>
<td><strong>Associated Play</strong> - plays with others engaged in similar activity. Communication and materials exchanged, no overall goal to activity</td>
</tr>
<tr>
<td><strong>CP</strong></td>
<td><strong>Cooperative Play</strong> - group of children organise themselves with a specific goal in mind</td>
</tr>
<tr>
<td><strong>TP</strong></td>
<td>Two people</td>
</tr>
<tr>
<td><strong>SG</strong></td>
<td><strong>Small group</strong> (3-6 approx.)</td>
</tr>
<tr>
<td><strong>LG</strong></td>
<td><strong>Large group</strong> (7+ children)</td>
</tr>
<tr>
<td><strong>TC</strong></td>
<td><strong>Teacher and child</strong> *</td>
</tr>
</tbody>
</table>

* This element has been added for the purpose of an early childhood setting and differs from the Malone and Tranter (2003b) framework from which this behaviour mapping schedule is adapted.

<table>
<thead>
<tr>
<th>Play Behaviour</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SF</strong></td>
<td>Self focused</td>
</tr>
<tr>
<td><strong>IP</strong></td>
<td><strong>Inside physical</strong> environment (goes into the centre building)</td>
</tr>
<tr>
<td><strong>OO</strong></td>
<td>Observing others</td>
</tr>
<tr>
<td><strong>VI</strong></td>
<td><strong>Verbally interacting</strong> with others (talking with one or more children)</td>
</tr>
<tr>
<td><strong>CO</strong></td>
<td><strong>Constructing activity</strong> (building with blocks, sand, loose objects)</td>
</tr>
<tr>
<td><strong>IE</strong></td>
<td>Close <strong>interaction</strong> with natural <strong>environment</strong></td>
</tr>
<tr>
<td><strong>EE</strong></td>
<td><strong>Exploring environment</strong> (moving in, through and engaging with nature ie. climbing trees, using bushes as a hiding place)</td>
</tr>
<tr>
<td><strong>IA</strong></td>
<td><strong>Imaginative activity</strong> (children engage in role play/ drama, pretend, make believe, fantasy ie. home corner play)</td>
</tr>
<tr>
<td><strong>FE</strong></td>
<td>Playing with <strong>free equipment</strong> (using hoops, bean bags, balls – but not a structured game)</td>
</tr>
<tr>
<td><strong>FS</strong></td>
<td>Playing on <strong>fixed structure</strong> (using designed and constructed fixed equipment)</td>
</tr>
<tr>
<td><strong>SG</strong></td>
<td>Participating in <strong>structured games</strong>* (games with rules and roles e.g. quoits, basketball, bowling etc)</td>
</tr>
<tr>
<td><strong>OP</strong></td>
<td><strong>Observing participant</strong> (waiting to have a turn)</td>
</tr>
<tr>
<td><strong>ML</strong></td>
<td><strong>Moving</strong> between <strong>locations</strong> (no engaged in a play activity – define movement ie. Running, walking)</td>
</tr>
<tr>
<td><strong>CA</strong></td>
<td><strong>Changing activity</strong> (where no play activity is yet evident)</td>
</tr>
<tr>
<td><strong>O</strong></td>
<td><strong>Other</strong> (include short description)</td>
</tr>
</tbody>
</table>
# The Child in Nature: Behaviour mapping schedule

<table>
<thead>
<tr>
<th>Centre</th>
<th>Code Name</th>
<th>Gender</th>
<th>Physical conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Play period</th>
<th>Date</th>
<th>Time</th>
<th>Age</th>
<th>Physical conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Observation Reference to map / time</th>
<th>Social Interaction</th>
<th>Play Behaviour</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SP, PP, AP, CP, TP, SG, LG, TC</td>
<td>SF, IP, OO, VI, CO, IE, EE, IA, FE, FS, SG, OP, ML, CA, O</td>
<td>Description</td>
</tr>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>Time:</th>
</tr>
</thead>
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<tr>
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</table>

<table>
<thead>
<tr>
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<tbody>
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</table>

<table>
<thead>
<tr>
<th>3</th>
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</thead>
<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>4</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>5</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 1.2

*Main observation structure*

<table>
<thead>
<tr>
<th>Centre</th>
<th>Code Name</th>
<th>Gender</th>
<th>Physical conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Play period</td>
<td>Date</td>
<td>Age</td>
<td></td>
</tr>
</tbody>
</table>

Observation Reference to map / time:  
Joy, Curiosity, Wonder, Observation, Empathy, Connection, Care, Relationships

1
Time:

2

3

4

5

6
Following pages continue columns as many as required.
## Appendix 1.3

### Observation structure for non-outdoor play anecdotes

<table>
<thead>
<tr>
<th>Centre</th>
<th>Code Name</th>
<th>Gender</th>
<th>Physical conditions/weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occasion</td>
<td>Date/Day</td>
<td>Time</td>
<td>Age</td>
</tr>
</tbody>
</table>

- **Context:** e.g. What has happened before children began outdoor play?

- **Guiding points:** *Joy, Wonder, Observation, Ecophobia / ecophilia, Empathy, connectedness, spontaneous interest in nature, ownership, protection, use of loose materials.*

<table>
<thead>
<tr>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
</table>
Appendix 2

Observation cover sheet for excursions

Date:…………………………………….
Time:……………………………………

Centre:………………………………..
Address:………………………………
…………………………………………
Contact details:………………………
Teacher:………………………………

Group:..................................................................................................................

Mode of transport to and from excursion..............................................................
Weather :..............................................................................................................
Number of Teachers present:................................................................................
Number of Parent helpers:...................................................................................
Is child’s Parent present: ....................................................................................
Children under observation: .................................
........................................

Other notes:........................................................................................................
..................................................................................................................
..................................................................................................................
..................................................................................................................
..................................................................................................................
Appendix 3

Interview cover sheets and schedule

*Interview Schedule/Cover sheet:*

Date:………………………………………
Time:……………………………………

Centre:………………………………….
Address:………………………………
Contact details:……………………..
Teacher:………………………………

Code Name:…………………………….
Age:…………………………………….
Gender:………………………………..Suburb:……………………………………

Mode of transport to and from preschool………………………………………………

Place of Interview:………………………………………………………………………..
Other notes:………………………………………………………………………………...
………………………………………………………………………………………………...
………………………………………………………………………………………………...
………………………………………………………………………………………………...
Interview schedule for children

Section One
Can you describe the perfect day or your favourite place for me?
(The child is asked to imagine the perfect day and describes what happens or has happened.)
Draw a picture of an ideal place to play.
Describe your picture to me.

Section Two: Play Environment
What were you playing?
Where is the best place to play? at kinder, at home?
Or What is your favourite thing to do outside?

What things could we get/do to make this game better?

Section Three: The excursion (select relevant questions)
Discussion on excursion.
Did you know we are going on an excursion tomorrow?
Have you been there before?
What do you think you might see and do there?

Why did we go to the Royal Botanic Gardens?
‘How did you feel in the garden?’
Would you like to go there again? Why?
What would you do if you were there all by yourself and could do anything you wanted?

What would take from the RBG and put at kinder?

Section Four: The Preschool Playground
Can you give me a tour of your play ground?
Show me all your favourite places to play.
Optional questions to prompt discussion and movement:
Is there a place you play every day?
Where is your favourite place?
Where did you play the very best play?
Is there anywhere you are not allowed to play?
Why do we have outdoor play time?
Would you like to go outside more?

Section Seven: Clarification of Observation
These questions will emerge after the excursion and each round of behaviour mapping.
Appendix 4

Informal interview schedule with teacher

Discussion to cover the following aspects.

The centre
Centre philosophy,
Outdoor play policy – e.g. is there a ‘no hat no play’ / is it unregulated.

Describe and justify preschool program (collect documentation. eg. photocopy of program, weekly and term if available.)

The teacher
Own philosophy
Image of the child
What influences your own feelings about involving children in nature and does this impact on programming for the children?

The excursion
Pre-excursion
Have you participated in this excursion before? In what way?
Reasons for the excursion?
Expectations for the excursion?
Are you preparing the children for the excursion, or using it as a introduction (what affect does this have for the excursion… or is there more to preparing children for a nature visit than for a science lesson?)
Why is the excursion important?

What do you want / expect from the excursion?
Are you expecting a science lesson? Or is this about getting the children to wonder at nature?

Post-excursion
Did the excursion fill the needs for the preschool program?
Did the children respond to the garden environment in a way you expected?
How will you be using this experience in the following weeks?
Will you be returning to the RBG next year?

Collect Documentation.
Photocopy of program, weekly and term if available.
Policies on play and outdoor play
Appendix 5

Preschool 1: Waratah Preschool’s daily routine

Monday routine

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:45 pm</td>
<td>Arrive – group time</td>
</tr>
<tr>
<td>12:50 pm</td>
<td>Songs and actions</td>
</tr>
<tr>
<td>1:05 pm</td>
<td>Indoor play</td>
</tr>
<tr>
<td>2:00 pm</td>
<td>Outdoor play</td>
</tr>
<tr>
<td>3:30 pm</td>
<td>Indoor group time: Story</td>
</tr>
<tr>
<td>3:45 pm</td>
<td>Home time</td>
</tr>
</tbody>
</table>

Wednesday and Thursday routine

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:45 am:</td>
<td>Arrive – group time</td>
</tr>
<tr>
<td>9:10 am</td>
<td>Show and Tell</td>
</tr>
<tr>
<td>9:20 am</td>
<td>Indoor play</td>
</tr>
<tr>
<td>10:10 am</td>
<td>Outdoor play</td>
</tr>
<tr>
<td>11:45 am</td>
<td>Lunch</td>
</tr>
<tr>
<td>12:05 pm</td>
<td>Outdoor play</td>
</tr>
<tr>
<td>12:30 pm</td>
<td>Indoor group time: Poem and Story</td>
</tr>
<tr>
<td>12:45 pm</td>
<td>Home time</td>
</tr>
</tbody>
</table>
## Appendix 6

### Preschool 2: Banksia Rd Preschool’s Program Sample

<table>
<thead>
<tr>
<th>Objectives for all children</th>
<th>Strategies</th>
<th>Activities</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social/Emotional</td>
<td>Work books with picture trays – star stamps when done. ‘with a friend’ symbol, friends name tag</td>
<td>Do with adult after story group</td>
<td></td>
</tr>
<tr>
<td>Motor Planning</td>
<td>Part of gross motor circuit, free choice games</td>
<td>‘totem tennis’ badminton bats, and cock bowling alley equipment. Add to circuit</td>
<td></td>
</tr>
<tr>
<td>Motor Planning</td>
<td>Add to circuit stilts, hurdles</td>
<td>Stilts hurdle component, Long skipping rope</td>
<td></td>
</tr>
<tr>
<td>Fine Motor and co-ordination</td>
<td>Small group work, ‘hoopy hoop’ ‘under and over’</td>
<td>at one table, divide into 2 -- parent helper</td>
<td></td>
</tr>
<tr>
<td>Fine Motor and co-ordination</td>
<td>Small group work Drawing on calico bags</td>
<td>Sewing - ribbon, beads frames</td>
<td></td>
</tr>
<tr>
<td>Fine Motor and co-ordination</td>
<td>Free play activity: Sewing, threading, making Christmas decorations, and cards</td>
<td>Thread beads--bracelets and necklaces -- attach to mount board when finishes</td>
<td></td>
</tr>
<tr>
<td>Cognitive</td>
<td>Small group work Building towers of small blocks</td>
<td>Table for making cards, decorations</td>
<td></td>
</tr>
<tr>
<td>Maths</td>
<td>Wooden “Jenga” blocks at small table, add number cards Unifix blocks add the number boats + tape measure</td>
<td>Folding, cutting, pasting cellophane over hole</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>Nature table with trays for collections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>New Rhymes to say together: Worms; Swans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>Mat time – Introduce weather cards: Today is Tuesday (etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art</td>
<td>1 table for folding and cutting, then pasting cellophane easels + metallic colours to make wrapping paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art</td>
<td>Mat time “Pizzicato Polka” tracks 8 –10 from “Let’s go”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music, Drama, creative movement</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

235
Plan – group & individual objectives, strategies for November 23 – Dec. 9

To respond to music creatively
Listening
To use imaginations while listening
Songs
To recall old songs.
To learn new ones
Percussion
To enjoy keeping the beat together

<table>
<thead>
<tr>
<th>Physical</th>
<th>Tuesday November 23</th>
<th>Wednesday November 24</th>
<th>Thursday November 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross motor and co-ordination</td>
<td>Circuit</td>
<td>Circuit</td>
<td>Visit from Dove Puppets</td>
</tr>
<tr>
<td>To practise hopping, jumping, over – still rope, - moving rope. To play tennis, badminton, bowling.</td>
<td>Balance rounds</td>
<td>Mat time:-</td>
<td>Before Lunch</td>
</tr>
<tr>
<td>Motor planning</td>
<td>Tunnel</td>
<td>Small group time</td>
<td>Lunch together</td>
</tr>
<tr>
<td>To practise walking on slits; passing ball under and over</td>
<td>Slits</td>
<td>Before Lunch</td>
<td>Listening time</td>
</tr>
<tr>
<td>Language</td>
<td>Balance maze</td>
<td>Drama, creative movement</td>
<td>Game</td>
</tr>
<tr>
<td>To enjoy rhyming words</td>
<td>Mat time:-</td>
<td>Lunch together</td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td>Hello” song</td>
<td>Listening time</td>
<td></td>
</tr>
<tr>
<td>Drama, creative movement</td>
<td>Talking time</td>
<td>Game</td>
<td></td>
</tr>
<tr>
<td>To respond to music and spoken word with body movements</td>
<td>Introduce weather cards: Today is Tuesday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listening</td>
<td>Rhyme time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To use imaginations while listening</td>
<td>Small group time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Songs</td>
<td>Before Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To recall old songs. To learn new ones</td>
<td>“Kookaburra sits in the old gum tree...”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percussion</td>
<td>“The ants go marching”</td>
<td>Percussion instruments: keep the beat to “The ants go marching”</td>
<td></td>
</tr>
<tr>
<td>To enjoy keeping the beat together</td>
<td>Lunch together</td>
<td>Lunch together</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Listening time</td>
<td>Game</td>
<td></td>
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</tbody>
</table>
### Appendix 7

**Preschool 3: Kanooka Christian College’s Program Sample**

<table>
<thead>
<tr>
<th>Intelligence</th>
<th>Objectives</th>
<th>Experiences</th>
<th>Specialist Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Verbal/Linguistic</strong></td>
<td>To provide opportunities for children to engage in the conventions of literacy</td>
<td>• Library corner&lt;br&gt;• Stories during group time&lt;br&gt;• Morning Meeting Agenda&lt;br&gt;• Storytelling opportunities - Jack the kookaburra</td>
<td>Wednesday:&lt;br&gt;11:20 - 12:00</td>
</tr>
<tr>
<td></td>
<td>To extend children’s interest and understanding in letters and words</td>
<td>ELC children’s sign in book&lt;br&gt;Communication table: magnetic words&lt;br&gt;Morning meeting discussions:&lt;br&gt;• Ideas for our Christmas concert&lt;br&gt;• Concerns about going onto prep&lt;br&gt;Telling and writing stories and illustrating books</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For children to practice using their language skills to communicate, solve problems and discuss issues that are meaningful to them</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For children to explore literacy in terms of storytelling</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Logical/Mathematical</strong></td>
<td><strong>Cognitive skills:</strong>&lt;br&gt;For children to strengthen awareness of space and shape, and independence in fitting objects together</td>
<td>Puzzles&lt;br&gt;Block corner with odd and different shapes&lt;br&gt;Light table with construction shapes&lt;br&gt;Studio: box construction&lt;br&gt;Counting children at morning meeting&lt;br&gt;Circle block building and counting game&lt;br&gt;Studio: working with and painting clay sculptures&lt;br&gt;Table for four: memory/lotto game</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For children to engage in counting experiences: One to one correspondence</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For fairy group to explore their ideas for building a fairy house</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For children to extend memory and matching skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bodily/Kinaesthetic</strong></td>
<td><strong>Fine motor skills:</strong>&lt;br&gt;For children to practice their skills in hand-eye co-ordination and manipulation of fine objects</td>
<td>Using inks to revisit children’s drawings of christmas&lt;br&gt;Table for six: beads, pins &amp; balls to make Christmas decorations&lt;br&gt;ELC sign in book</td>
<td>Tuesday:&lt;br&gt;Motor Program 9:40 - 11:00</td>
</tr>
<tr>
<td></td>
<td><strong>Gross motor skills:</strong>&lt;br&gt;For children to be involved in using their bodies to express different feelings and ideas about Christmas</td>
<td>Creative movement opportunities, developing actions and movements for the Christmas concert&lt;br&gt;Provocation: sensory boxes with soft/smooth and rough/hard materials</td>
<td>Tuesday: Creative Movement 9:40 - 11:00</td>
</tr>
<tr>
<td><strong>Musical/Rhythmic</strong></td>
<td>For children to develop skills in turn taking and patience&lt;br&gt;For children to strengthen skills in working together as a whole group, and to extend children's interest in singing Christmas songs</td>
<td>Group songs with turn taking process:&lt;br&gt;• Who stole the cookie?&lt;br&gt;• Kangaroo skippy roo&lt;br&gt;Group time: singing Christmas songs&lt;br&gt;• five days of Christmas&lt;br&gt;• Christmas in Australia&lt;br&gt;• waiting all night&lt;br&gt;• tell me the story of christmas</td>
<td>Wednesday, Music&lt;br&gt;9:00 - 10:20</td>
</tr>
<tr>
<td><strong>Visual/Spatial</strong></td>
<td>For children to explore the use of colour, shape and pattern&lt;br&gt;For children to explore colour, shape and pattern, fitting shapes together&lt;br&gt;For children to extend their hand-eye coordination and develop fine motor control&lt;br&gt;For children to visually represent their ideas for Christmas</td>
<td>Studio: Easels with paints&lt;br&gt;Light table with construction shapes&lt;br&gt;Studio: Observational drawing of mushrooms and painting the fairy house&lt;br&gt;Transferring drawings onto t-shirts for Christmas concert costumes&lt;br&gt;Using inks to revisit children's Christmas illustrations</td>
<td>Thursday, Art&lt;br&gt;9:00 - 11:00</td>
</tr>
<tr>
<td><strong>Intrapersonal</strong></td>
<td>For children to strengthen self help skills&lt;br&gt;Embracing Diversity: For children to develop positive attitudes towards diversity in appearance and ability</td>
<td>Games and songs with varied instructions:&lt;br&gt;• Everybody line up&lt;br&gt;• Heads and shoulders&lt;br&gt;• Simon says&lt;br&gt;• Ra cha cha&lt;br&gt;• Bobs and statues&lt;br&gt;Encouraging children to take responsibility for own belongings&lt;br&gt;Book: A life like mine (unicef)&lt;br&gt;Dramatic play with multicultural dolls</td>
<td>Friday, Religious Education&lt;br&gt;11:20 - 12:00</td>
</tr>
<tr>
<td><strong>Interpersonal</strong></td>
<td>Being Inclusive: For children to develop skills in making others feel welcome in our ELC&lt;br&gt;For children to engage in cooperative dramatic play, verbal language experiences, and to explore different identities</td>
<td>Group time: discussions about how to make children with different language, appearance and ability feel welcome&lt;br&gt;Home corner with table and chairs, telephone and jewellery/scarves.</td>
<td></td>
</tr>
<tr>
<td><strong>Naturalistic</strong></td>
<td>To extend children’s interest in dramatic play with zoo animals&lt;br&gt;For children to explore Australian native animals and their habitats&lt;br&gt;For children to safely explore new places and talk about nature</td>
<td>Giant zoo animals in the block corner&lt;br&gt;Platform with Australian bush Christmas Tree, and Australian animal figurines&lt;br&gt;Weekly Walk: visit to the island on the lake</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 8.1 – 8.4

Records of three games played by Sally and Matt and the Goblin Game played by Sam.

Appendix 8.1 The Pirate Game

11/11/04, 11:09 am – 11:22am
Sally is on a rope ladder with Ed and another boy. She jumps off, climbs up the ramp and slides down the slide and goes to Matt, he shows her some things in his hand. He’s been pulling of the bushes.
She goes back to fixed equipment and joins in pirate play.

Matt is there and he says “Do you want some cannon balls? He says to several children and shows the little nuts he has collected of the conifer trees. Sally goes and gets a little yellow spike ball and calls it a cannon ball, she is pretty excited about the possibilities and tells the boys to look at it.

Sally and Matt go into the garden to collect nuts etc. Ed calls them back to the ship they say “No! We are collecting cannon balls!”
“Keep away from me Matey” Sally shouts and brandishes a bamboo shoot.
“Wasp” she suddenly notices and tries to smash it into the ground.
Teacher says, “Be careful with that sword.”
Sally runs over to bamboo kitchen.

And a few minutes later she is watching children gardening with Pam.
Appendix 8.2 The Leaf Game

18/11/04, 11:20- 11:35am

It is 11:20 am: Five children play with Sally. She is so excited, as she has a centipede. She shows it and goes red in the face and shouts to the other children in the group, who run over and look, except for Ed who is in a tree.

Sally and her group have shrunk to 3 boys and one girl. Ed and a boy are saying “Kill the butchie boys.”

Ed says “Every bad spider you should kill… we found a white back spider and Sally killed it.” He snatches a leaf from Sally. The other children play a ‘keepings off’ game, keeping it off Sally. She shouts for it back. They all chase each other into the garden and begin ripping the leaves off the tree by the handful. Wendy, the relieving teacher, comes over and tells them not too as this will wreck the tree. Sally and Ed look at the leaves each other found. Ed has more than Sally and she tries to snatch them from him. He pulls free and runs away with them… The three boys take them and climb on the ‘fort’.

“I've got leaves, I've got them!” they shout.

Sally and her girl friend stay in the garden for a while, then run over to the shouts.

“I've got one” Sally says, “Ed, if you want me to be on your team, I've got one.” She holds her leaf up.

Ed tells the boys that Sally is allowed on their team. The boys reply that Sally and the other girl are not allowed on their team. Sally runs away from the boys. She says she has one of their leaves, she managed to get one off one of the boys who didn’t know she wasn't allowed on their team by telling him that she was allowed to have them. The boys yell, “Hey! She’s got one of our leaves, you're not on our team any more!” Another big boy runs over to her and looks threatening. “Give it back,” he demands.

“Well, where is mine?” Sally retorts.

He looks at her and she says “I'll flip your head off.” But something changes her mind and she begins to offer her ring and a visit to her house in exchange for the leaves.

He doesn't give in to this, but grabs her and puts his hand over her mouth. I am sitting very close to them, they almost touch me in the scuffle so I feel I must respond and I say, “Excuse me, I am sitting here.”

Sally looks at the boy, “No fighting, a teacher’s here.” They grab at and chase each other and run away.
The children continue the game. The children play on the fixed equipment, which they call a fort, but shout orders, such as “Get back to the ship now!” They are trying to protect the leaves and hide them in their pockets. They call to each other as though they are on different teams, girls vs boys mostly or at least boys vs Sally. They say “Get Sally.” She is the one who is a threat to the leaves. The leaves are a pretty red and green and white splodged gum leaf, not too common in the play yard, but not that rare either.

Appendix 8.3 The Bamboo Kitchen:

9/11/04, 11:54 am Sally is in the bamboo. It is the Bamboo Kitchen She sits by herself with a bowl in front of her. She holds a little stick and picks bits in and out of bowls, she gets a spoon and digs up some earth.

10/11/04, 11:19 am Sally and Matt leave boats (the have a bucket of green cone shaped sticks which they poke in the water occasionally) now as they leave they take these sticks with them, I see they are bamboo shoots. Now they are in the bamboo I see them searching for the shoots (around 50 cm long) and snapping them off at the base. “I found a better one.” Matt calls and leans into the bamboo to pick it. Sally bends over and picks another shoot.

The children are in the Bamboo Kitchen I go to the opening in the bamboo stand and knock, “Can I come in please?” I ask. They say “Yes.” I seat myself on an unused table.

What have you found?
Matt replies “Plants grow in the leaves. We have to get the salt out the bottom” and he demonstrates by dipping the end of the bamboo into a bowl of sandy water. I am left with the impression that something falls out of the bamboo when this happens, because Matt keeps checking the base of the shoots to see which ones have been done.

“I found this beauty,” he says.

Sally joins him and together they place the dozen or so shoots on a little table and use a bowl to make some food.

They put in smaller (20cm) shoots and then mix in sand and what Sally calls “mixing product” (more sand) into the bowl. They make a “Wet stew sand” to quote them.

11:25 am Sally is up a tree, very high (the tree is in the bamboo kitchen, above the table). They are very high. They are seeing if they can see the blue tongue which Sally found at kinder once (they are verbalising this to each other)

Another boy comes into the cubby. “I found a bamboo stick” he says.

Another different boy runs into the kitchen and says “Sally look what I found” he holds up a photo of her.

Matt is out of the tree now and he picks up a very long bamboo shoot. “And look what weve got to get you!” he replies brandishing the bamboo like a weapon.

The different boy with photo leaves and Sally and Matt say “First we need to pull the leaves off (there are five little leaves on top of each shoot) they don’t pursue the photo boy.

Sally disappears.

Matt and the first visitor boy are left and they discuss whose bamboo is whose. Sally returns with some little shoots (she must have been doing more collecting)

“Matty, I found these to put in” she says and adds them to the pot.

We found the most” Matt says, he sorts out the bamboo belonging to the other boy (four small shoots) and gives him the message that he is not wanted.

11:30 am Another girl arrives. “Can I play?” she asks.

“Don’t touch,” says Matt. Sally is busy cooking and doesn’t look up.

“What are they?” says the girl.

“We don’t know,” says Matt

“They're bamboo,” says the girl.

“We know,” says Matt.
The girl leaves and another boy again comes. Matt and Sally suggest they fight the boy. Nothing happens and the boy leaves.

Even another boy arrives (Andrew) he barges in and stops at the bowl of 'wet stew sand' and begins to stir vigorously. Matt and Sally say *please stop* several times. He keeps stirring and spills all the stew and steals some bamboo shoots and rushes out of the kitchen banging into this on his way (he is like a whirlwind!!!)

Matt and Sally decide to hide the bamboo. They choose an upside down rubbish bin. “Andrew will never find it here,” they say.

Sally goes out and calls “ANDREW” across the playground. “Don’t call him!” says Matt.

Matt says how naughty Andrew is but not as naughty as another boy who kicked Pam. “Andrew broke one of our beauties. I am going to find some more beauties” says Matt “Sally, I’m going to find some more beauties." They both leave.

**11:42 am** After a while, they do not return. They are having snack.

Sally returns to bamboo kitchen and gets a bamboo shoot from the bin. Then she runs across the yard to walk through the bushes. She finds Matt at the gazebo he is at the pull apart table doing robot making. She joins in.

**16/11/04, 11:35 am** Now Sally and the three boys have found the bamboo spikes from last week and are stirring water in a trough. And splashing with the spikes. The boys are using them to fight with but Ed says “We’re fighting Andrew.” Sally fights one boy for a second then she runs into the bamboo and hides in it, poking her head around to see the teacher.

Three boys say they will fight Andrew, then they go to a tree and whip it with the bamboo until the sticks break and the teacher calls them over and tells them not to do that. *The boys start to peel the bamboo.*

Sally has a bamboo shoot and she says “It is a stick, but not really a stick.” She does not know what it is.

She is going to peel it, layer after layer. She has seen Jake do this. Why? She wants to see what is inside? She shows me how she can peel the layers off.

She goes and sits with a boy who is also peeling the bamboo and they sit on a low bench by the swings and do this.

Jake is running around a bit with his tasselled bamboo stick and then runs over and joins them on the bench.
Ed comes over too, he also breaks up his bamboo and crushes it under his foot too. Sally smells the bamboo and gets Jake to smell it by holding it to his nose. He gets a bit and smells it then holds it to her nose. He shows the student teacher his tassel.
Sally is peeling her bits right off (not making a tassel) she doesn’t have a tassel she has a smooth white spike. After spending all this time peeling it to a smooth white spike, she drops it to the ground while talking to Jake and runs over to the bamboo (11:50am) She just keeps holding onto a small piece of bamboo root or wood.

Appendix 8.4 The Goblin Game

The Goblin Game is an imaginary game belonging to Sam and Thomas which involves hiding behind trees, under bushes. There is no child playing the part of the goblin, the goblins are imaginary. They run to the cubby, under bushes, giggle and say things in whispers like “hide, hide,” Run, run” and “Hide behind…” Sometimes other children join in.

9/12/04, 11:32 am Sam says that Sam is a cat, and Thomas is a cat, they are both scared of goblins who didn’t get anything to eat before going to bed (not sure if this is the goblin or the cat)
13/12/04, 1:10 pm It is lunch time after the excursion. Sam and Thomas finish eating quickly then play an active game, racing around and hiding behind a small tree. They talk about goblins and poisons.
“Goblins are in the tree,” the boys say and put on their most frightened faces.
These games continue and Jemima plays a game of chasey, even though the teacher keeps telling all the children to sit on the mat and not run around.”

A conversation with Sam:
I saw you playing Goblins, did you see them on TV? No. I saw a real one at my house. Hundreds, millions in my house. They’re green and they live around toadstools, but not mushrooms. They hate mushrooms. When they catch us, we’ll shoot them with our guns. When they catch us, they’ll kill us with their guns.
Appendix 9

Full record of Sally and Matt exploring in cruel ways

Clapping/whacking flying insects:

9/11/04, 11:03 - 11:10 am “Sally has a carton of flies she has caught. She looks down and bangs the box “Wherever he is I’m gonna bang him;” she says, “Ahhh, shocka!” (the fly buzzes) “He’s scaring me!” she says.
“She hops in the garden bed and focuses on the flies hovering in the air. She claps her hands together to catch them (she continues this action for several minutes). Sally catches one, carefully she separates her hands and picks it up with her fingers, puts it in the carton, then returns to the clapping.”

10/11/04, 9:14 – 10:04 am During first 30 minutes Sally slaps bugs. She slaps a tiny bug with her hands “Got ‘im” she says.
At story time Sally tries to clap a mosquito between her hands.

11/11/04, 11:13 am Sally uses bamboo as a sword “‘Keep away from me Matey” Sally shouts and brandishes a bamboo shoot.
“Wasp” she suddenly notices and tries to smash it into the ground.

24.11.04, 10:45 am The children try to catch flies by clapping.

Scraping minibeasts and their homes:

10.11.04, 10:46 am Matt lifts up a log “I found something” Sally comes over. “A town!” She says, “A town of butchies.” “A cockroach,” they say.
Sally pushes dirt around “I’m squashing the people” she says, then lifts another log and yells, “Slug!” then puts it down again.

9/11/04, 12:00 pm Sally gets me to move a giant pot. She bends over the spot and looks. “Ants!” she cries and “A worm.” She picks it up, then bends over and flicks sandy dirt all over the bugs and stirs up the neatly arranged ‘under the pot world’. She says “Spider,” and uses a lid to scrape it.
“You can put it back now” she tells me “we’ve got what’s under it… a worm.”
Squeezing worms and witchetty grubs:

9/11/04, 11:38 am “Two children and Sally are at the water trough. Children look at worms in the water. Sally takes one out and observes them carefully, then runs her hands along them, squeezing her fingers along, drops them, picks them up and puts them in the carton, and walks around to bamboo.”

18.11.04, 10:59 – 11:08 am Sally has some worms, she says “I'm tying up a worm... I call it lunch tie up... Aww poor wormy... I think we should let the worms go like the spider... someone's hurt this one really bad, its bleeding.” Sally buries the worms in a shallow dusty hole in the tan bark, with her foot.

The children discuss how safe this spot is and ‘what if children run over this patch of tan bark?’

24/11/04, 11:00 am– 11:20 am Sally holds a witchetty grub.

“Pass it here. I know how to make it poo” Matt says.

He holds it upside down and watches it.

“Its going to do poop, I know it... Hes doing poop, poops good.”

Sally gets out another grub, “Matty, you see if this ones ready to do poop. Lets find them and squeeze them.”

Sally finds one, Matt says, “That's a beauty!”

They talk about ‘the dock’ – “I call him Docky, hello Mr Dock,” says Matt.

“Look at that brown stuff. He is going to blast his butt out soon.”

“Look at that poo, that guy's gonna blast the wee so much... Oooh!”

“Ooooh one of them fell in the poo!”

Sally, Matt and another boy, Lachlan watch the grubs.

Matt observes the grubs and explains, “Most witchetty's sniff their butts”

Matt wraps a worm around his finger and says, “It's tight, like a real snake.” Pam comes over to see what they are doing. They show her the ‘worm snake’ as they call it. Pam says that worms do not like being squashed. After Pam leaves Jackie comes over. They give her a grub. She says “Eww!” and throws it back. But she stays and watches.

Matt says, “Who wants me to kill a worm?” Three children answer “Me.” Matt explains that it would make a new worm.
Spiders

11/11/04, 11:39 am: Pam “have we dug over all the ground are we sure there are no potatoes?”

Sally and Matt keep digging. She looks up “There’s a spider on you Pam” She screams and smashes it with her hand (it is dead). Pam says, “It’s ok, I was going to blow it off.”

Swans

17/11/04, 1:30 pm We get ready to go. Sally says, “Good bye swan, I’ll give you a kick… what about my hand. It makes very good food.” She offers her palm to the swan.

Talking about killing and biting

15/11/04, 11:20 am Ed says “Every bad spider you should kill.” He says that they found a white tail and Sally killed it.

18.11.04, 10:59 – 11:08 am Matt calls out “They are killing the butchies!”

24/11/04, 10:35 – 10:45 am Sally digs up a bit of soil. “A millipede on a leaf, don’t touch them they stink.”

Matt tells Sally and a boy that he was once bitten by a cockroach as big as his eye. He calls it “a wild bush one” at his Nans and another time at his home.

The children continue digging.

The talk as they dig “Dig here”, “Worm and witchetty” “Thanks Matty” “I’ve found two things” “Come on people we need to put dirt in (the barrow).” “Lets look more in that hole.” “Matty one of those things again.” “This one’s alive.” “Its fierce.” “Its a cockroach.” “That one’s a cock, a cock…” “I’ve been bit by one.” “A witchetty bit me once.”

A boy jumps backwards, “Ouch! Ah he bit me!”

Matt says, “There’s a lesson! You always pick up a witchetty by its back.”
Appendix 10

Examples of Sally and Matt’s hunting behaviour

Hunting for little garden creatures at preschool

9/11/04, 11:20 am “Sally creeps along the fence and looks at the large rocks. Walks back to garden, holds hands wide to clap, but doesn’t clap. Instead she squats along the garden edge. Then hops in the bed, squats by the agapanthus and claps hands onto a leaf doesn't catch anything, hops up and steps out of the bed, walks around the back and pokes in the dirt for a few seconds.” (Sally plays with car tyres, talks to a mum…) 11:30 am Sally picks up the carton and pokes her hand in, taps the bottom, fixes her gaze inside and watches. She walks to a log and rolls it over.

9/11/04, 12:00 pm Sally gets me to move a giant pot. She bends over the spot and looks. “Ants!” she cries and “A worm.” She picks it up, then bends over and flicks sandy dirt over the bugs and stirs up the neatly arranged ‘under the pot world’. She says “Spider” and uses a lid to scrape it. “You can put it back now,” she tells me, “We’ve got what’s under it... a worm”

11/11/04, 11:00 am “Ed, Sally and Matt all get close to a bush. Matt is leaning in with a pair of tongs (this must be some sort of game where you try to pinch or catch something with the tongs).”

11:50 am Pack up time “Sally comes and looks at the slug (which is now in a little red bucket on a table by the gazebo) then runs and picks through dirt by water tank with a stick, Ed joins her.”

25/11/04, 11:15 am “Sally and Matt go and dig through leaves by hand and use a little bucket to collect bugs. Sally calls out, “I found a redback and she’s a beauty. Whoa, she’s angry. Look at her.” Matt comes over to see. They poke around in the bucket, leave the bucket and go into the plant tunnel and sit on the ‘bridge’. They look around them, talk and clap the flies hovering in the air. They dig through the dry leaves at their feet.”
Appendix 10 continued

Hunting for eels at the Royal Botanic Gardens

17/11/04, 1:00pm Sally and Matt lie on thier tummies and look into the lake. When I go over I see they are watching the eels and dropping bark into the water to draw the eels up. Sally tries to grab the eels with her hand. She touches them often before they swim away. Sally lures them with bark. She says “I touched it again!”

Ed looks over and says “You’re a good eel hunter.”

Almost all the children are over at the lake with Pam and the assistant teacher. They put their hands in the water. Matt and Sally and other have green sticks (reeds) which they have pulled up. And they are poking these at the many eels which surface under the water.