

**Environmental Education  
through Listening to Children.**

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## **KEY WORDS**

Environmental Education; Education for Sustainability; Environmental Learning Processes; Child Participation in Research; Environmental Education Centre; Sociology of Childhood.

## **ABSTRACT**

Environmental education centres contribute to schools and communities in Environmental Education and Education for Sustainability through nature and urban-based, experiential learning and action learning approaches. An underlying assumption of these centres is that intensive, short-term, outdoor/environmental education experiences can change key attitudes and/or actions leading to positive environmental behaviour. This study reflects the interests of a researching professional who investigated aspects of a program that he designed and implemented as principal of an environmental education centre. Most evaluations of similar programs have used quasi-experimental designs to measure the program outcomes. However, this study considered the experiences of the program from the perspectives of a group of key stakeholders often overlooked in the literature; the children who participated in the program.

This study examined children's accounts of their own experiences in order to contribute new understandings of children's perspectives and how they can be considered when designing and implementing environmental education programs. This research drew on key theoretical assumptions derived from the sociology of childhood. Within sociology of childhood, children are considered to be competent practitioners within their social worlds, who, through their talk and interaction, participate actively in the construction of their own social situations. This approach also views children as capable and competent learners who construct their knowledge through everyday participation in social experiences.

This study set out to generate children's own accounts of their experiences of a five day residential program at the Centre. In total, 54 children participated in the study that used a multi-faceted data collection approach that included conversations, drawings, photographs and journal writing. Using content analysis, data were analysed by means of an inductive approach to develop themes related to the children's perspectives of their experiences. Three interrelated and co-dependent

components of the experience emerged from the analysis; space and place; engagement and participation; and responsiveness and reflection. These components co-exist and construct the conditions for effective experiences in environmental education at the Centre.

The first key finding was the emphasis that the children placed on being provided with somewhere where they could feel safe and comfortable to interact with their environment and engage in a range of outdoor experiences. The children identified that place was an outdoor classroom where they could participate in first-hand experiences and, at times, explore out-of-bound spaces; that is, a place where they had previously been limited, often by adults, in their opportunities to interact with nature.

A second key finding was the emphasis that the children placed on engagement and participation in environmental experience. The children described participating in a range of new primary experiences that involved first-hand, experiences and also described participating in collaborative experiences that involved interacting with peers and with teachers, who appeared to behave differently to how they behaved at school. Finally, the children described a different type of interactional relationship with teachers, comparing the active educational role they played on camp to a more passive role at school where they sat at a table and the teacher wrote on the board.

The final key finding was the emphasis that the children placed on responsiveness and reflection in the experience. In responding to their experiences, the children described the fun and excitement, confidence and satisfaction that they gained from the experience. The children also identified how their experiences contributed to the development of a caring-for-nature attitude and the value of a disorienting dilemma in promoting responsiveness to the environment. This disorienting dilemma was an event that caused the children to reassess their own beliefs and attitudes.

From the three main findings, a theoretical framework that represented the children's accounts of their experiences and a pedagogic approach that respected their accounts was developed. This pedagogic approach showed how a disorienting dilemma could create a disequilibrium in relation to a child's existing ideas and experiences. As a result, children were challenged to reflect upon their existing environmental beliefs and practices.

The findings of this research have implications for the field of environmental education. Adopting sociology of childhood provides an alternative foundation to research and can present a deeper understanding of what children believe, than an approach that relies solely on using scientific methods to uncover and analyse these understandings. This research demonstrates the value of gaining children's accounts to assist educators to design environmental education programs as it can offer more than adult and educator perspectives. This study also provides understandings of environmental education practice by describing how the children engaged with informal learning situations.

Finally, two sets of recommendations, drawn from this study, are made. The first set considers nine recommendations about and for future research and the second relates to redesigning of the environmental educational program at the research site, with six recommendations made.



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## LIST OF ABBREVIATIONS

ABS	Australian Bureau of Statistics
AEC	Australian Education Council
ARIES	Australian Research Institute in Education for Sustainability
BIEEC	Boyne Island Environmental Education Centre
BTR	Board of Teacher Registration
CC	Curriculum Corporation
CUT	Chalmers University of Technology
DEEWR	Department of Education, Employment and Workplace Relations
DfES	Department of Education and Skills
EeS	Environmental Education for Sustainability
EES	Education for Environment and Sustainability
EESD	Education for Ecologically Sustainable Development
EfES	Education for Environment and Sustainability
EIRD	Department of Employment and Industrial Relations
EPD	Educating for a Sustainable Future: Environment, Population and Sustainable Development
EQ	Education Queensland (Queensland Department of Education)
ESD	Education for Sustainable Development
EYLF	Early Years Learning Framework
IEEP	International Environmental Education Program
IUCN	International Union for Conservation of Nature
KLA	Key Learning Area
MEEERA	My Environmental Education Evaluation Resource Assistant
OEAQ	Outdoor Educators' Association of Queensland
QDE	Queensland Department of Education
QUT	Queensland University of Technology
UG	University of Gothenburg
UNCED	United Nations Conference on Environment and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEP	United Nations Environment Program
UNICEF	United Nations International Children's Emergency Fund
WWF	World Wildlife Fund

## **STATEMENT OF AUTHORSHIP**

The work contained in this thesis has not been previously submitted for a degree or diploma at any other higher education institution. 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. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

**Signed:**



**David Kopelke**

**Date:**                   **18 May 2012**

## Conference Presentations

Kopelke, D. (2011). *Improving environmental education in outdoor education settings through listening to children*. 6<sup>th</sup> World Environmental Education Congress, 19-23 July. Brisbane, Australia.

Kopelke, D. (2010). *Listening to children to improve the effectiveness of interpretative programs*. 5<sup>th</sup> Annual National Association of Interpretation (USA) International Conference, 13-17 April. Townsville, Australia.

Kopelke, D. (2010). *Improving experiences at a centre*. 6<sup>th</sup> Outdoor & Environmental Centres Biennial State Conference, 27-29 January. Barambah, Australia.

Kopelke, D. (2010). *The Sounds of Children: How children can help develop effective partnerships*. Botanic Gardens of Australia & New Zealand. Queensland State Conference, 12-15 August. Gladstone, Australia.

Kopelke, D. (2009). *It's not like school. What do children say about environmental education?* 5<sup>th</sup> World Environmental Education Congress, 10-14 May. Montréal, Canada.

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# Chapter 1: Introduction



Figure 1.0: Wordle of the 30 most common words in Chapter 1



## Chapter 1: Introduction

### 1.1: Catalyst: Why this Research Project was Undertaken

*The bus has arrived in the car park of the environmental education centre and by the time I reach the parking area, the children have started to stream out of the bus. I can hear the note of excitement in their voices. They look up with expectation in their eyes. What exciting adventures are they going to engage in today? I return their gaze but, in my mind there are so many doubts. Will I be able to give these children quality environmental education experiences? Will the children actually learn anything about the natural environment, or how to care for it or will this simply be a day out of the classroom? I question if what I have devoted the past thirty-five years of my teaching career to has been of value in the education of children.*

This research project is derived from my teacher reflections, and seeking to enhance the quality of the children's experiences at an environmental centre. Over many years in environmental education, I have seen many changes in the nature of environmental education. As an environmental education practitioner, I have engaged in debates with colleagues about the nature of activities at the Centre. I have sought many alternative means of delivering environmental education over the years. Discussion with Centre staff about environmental education has made me question how we have provided environmental education experiences. Do we make a difference in the short time that the children have participated in the Centre's activities? How is it possible to recognise and build on the life experiences that a child brings to the visit? Such considerations, I was to identify later in the research, provided an ontological dimension to my work. The Centre has coordinated many community and school-based rehabilitation programs involving on-ground work, reflecting a type of environmental education that has meant actively working for the environment. As an environmental education advocate, I was involved in a number of advisory committees, some at a state government Ministerial level and others with local government. All these situations contributed to my growth as an environmental education practitioner. However, in discussions with staff, I always felt that we spoke with a limited understanding of just what our role was and how we should practice. In order to improve the level of understanding, I sought to develop professionally as an environmental education practitioner and to become an environmental education

researcher as well. I developed my research focus to investigate how the children who attended the Centre for short-term residential programs described their experiences of the program. This research aimed to listen to children's perspectives on their experiences at the Centre. By looking at the experiences at this one site, the Centre has become a case for understanding how children accounted for their experiences, and offers new understandings to the practices of the Centre and to environmental education more broadly.

## **1.2: The Field of Research: Environmental Education Centres**

As an environmental education practitioner, I had participated in many forms of environmental education over the years. As a pioneer environmental educator, I took children for what would be now called nature study rambles, naming the trees and animals. On reflection, these activities saw me adopting a traditional teacher role as a source of knowledge and leader of the activity.

The dominant practices of environmental education are underpinned by the more general processes of education rather than transmission. That is, environmental educators have accepted a role of preparing students to become critical thinkers, informed decision-makers and able communicators—a role that exceeds far beyond presenting information (Ballantyne & Packer, 1996; Fien, 1993; Payne, 2006; Sterling, 2001). Environmental education aims to help learners achieve environmental literacy, which has attitude and behaviour dimensions in addition to a knowledge dimension. Thus, for many practitioners, the goal of environmental education is to contribute to learners' knowledge about the environment, positive attitudes toward the environment, competency in citizen action skills, and a sense of empowerment and advocacy for the environment.

During the last 40 years, the merging of the terms 'environment' and 'education' has witnessed the development of a new subject area (environmental education) and, in many educational settings, has also given rise to philosophical, curriculum and pedagogical debates. These debates are particularly robust given environmental education's role in dealing with values, morals and controversial issues (Payne, 1997; Scott & Oulton 1998; Stevenson, 1987; United Nations Educational, Scientific and Cultural Organisation - United Nations Environment Program [UNESCO-UNEP], 1978). The field of environmental education has

multiple dimensions, threads and histories and, as a result, tensions exist within the field.

In Australia, the history of environmental education centres can be traced back to the establishment of the first National Fitness Camp in 1939 at Broken Bay, New South Wales where natural science was a core part of the program (Webb, 1980). Centres were called at first Field Study Centres. This naming drew on a British tradition with its then Field Studies Council of Great Britain, established in 1943 (Webb, 1980). Although the British centres were established to cater for the needs of amateur naturalists and university field groups, soon, they were used by schools. In *Learning Outside the Classroom*, the authors state, “every young person should experience the world beyond the classroom as an essential part of learning and personal development, whatever their age, ability and circumstances” (Department for Education and Skills, 2006, p. 1). This recent emphasis is in sharp contrast with a 1979 British education report that stated, “field work could be a week sometime in the year if there is time” (Webb, 1980, p. 93). There has been renewed interest, therefore, in the value of learning outside of the classroom.

In Queensland, the first of a state-run network of 26 centres was established in the 1960s, with the Tallebudgera Beach Outdoor Education School on Queensland’s Gold Coast.<sup>1</sup> The most recent centre to open was at Runaway Bay in 2010. A Department of Education internal report in 1974 regarding the establishment of centres with a specific environment focus detailed only modest facilities that consisted of a room and some storage facilities (Queensland Department of Education [Education Queensland-EQ], 1974). In the report, suggestions included forestry plots, gardens, crops, beehives and bird feeding stations with accommodation considered as a possible addition sometime in the future (Webb, 1980). In the early years the emphasis was on nature study and the use of the immediate environment, with a bush setting as the norm. Attention was given to the curriculum needs of specific subject disciplines, and programs paid little attention to approaches such as examining environmental issues or problem solving (Webb, 1989). Although field studies have been viewed traditionally as not being an essential

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<sup>1</sup> Tallebudgera Beach Outdoor Education School was originally called the Tallebudgera Beach Camp School. It is located in the Queensland Department of Communities, Child Safety and Disability Services camp. The Centre was originally established to provide a venue for country-based primary school age children to experience coastal environments.

component of schooling, Webb (1980) identified in her research that their value has long been recognised.

Today, in Queensland, environmental education centres are described in the *P12- Environmental education curriculum guide* (Queensland Department of Education [Education Queensland-EQ], 1993) as “multi-purpose curriculum venues working in partnership with teachers, schools, advisers and the wider community to provide specialist environmental education programs, professional development, advice and resources that meet the ongoing curriculum of students” ( p. 4). Centres have the task of “promoting, demonstrating and modelling environmental education” (EQ, 1993, p. 4) and goes on to state that an environmental education centre:

- helps students through excursions.
- helps teachers through professional development and pre-service training
- helps schools and communities through modelling environmental education practices, provision of resource materials and the operation of community action programs. (EQ, 1993, p. 4)

The legal basis for Queensland centres can be found in the Queensland *Education (General Provisions) Act 2006*, section 14:

The Minister may establish institutions at which the State provides educational instruction to persons enrolled at State schools as an adjunct to the educational programs provided to the persons at the State schools, including, for example—

- (a) environmental education centres; and
- (b) outdoor education centres.(Queensland Government, 2006, p. 31)

Centres are located across the state, and deliver learning experiences in locations including islands, beaches, bushland, mangroves, rainforest, the reef, wetlands, historical and cultural environments and city streets. Centres explore an expansive vision of sustainability and place with students of all ages, and can offer residential and day visit opportunities. They promote living and learning sustainability, and encourage participants to make environmentally responsible decisions in order to leave a positive legacy for future generations (EQ, 2010). Many programs and services are based on three inter-connected models of operation with the aim of achieving improved knowledge, values and behaviour related to learning for sustainability, and personal and social wellbeing, namely:

- Destination: Teachers, students and communities come to centres to experience high quality specialist programs.
- Expert: Centres visit schools to extend student learning and deepen professional development by building on destination experiences.
- Partnership: Centres work together with schools and communities to maximise destination and expert experiences in order to achieve mutual goals over a longer time period. (EQ, 2010, p. 3)

Centres are diverse in their operations and delivery of programs. These three models are applied at different centres in a variety of ways depending on location, program specialty and levels of resources to meet the needs of schools. However, this state government system is just part of a larger group of centres, which includes centres operated by private or independent schools, sport and recreation centres, community associations, universities or facilities that fulfill an environmental education role in one area or another such as museums or zoos.<sup>2</sup>

### **1.3: The Research Site**

The Boyne Island Environmental Education Centre (BIEEC) is one of the network of 26 centres operated by the Queensland Department of Education and Training. It is located near the industrial port city of Gladstone in Central Queensland. The Centre has no permanent students of its own; instead, it works with the students from many different schools who visit the site. The Centre's Prospectus states that the Centre "is designed to give students of all ages, teachers and community members access to high quality environmental education. The work done at BIEEC is designed to complement school-based programs" (BIEEC, 2009, p. 2).

Activities at the Centre have the aim of being "enjoyable, exciting, challenging, practical, first hand experiences with various aspects of the environment that adds value to school based programs by exploring the field work component of environmental education" (BIEEC, 2009, p. 5). The experiences were designed to enable the Centre to support a school's curriculum by "exposing students to a wider range of multi-literacies and competencies beyond the capacity of a traditional school" (BIEEC, 2009, p. 5).

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<sup>2</sup> Examples include: Dunwich Research Station (University of Queensland); Erapah (Scout Association); Moogerah Dam (Brisbane Boys College); Camp Bornhoffen (Police Youth Club); Binna Burra Centre (Natural History Association).

## **1.4: Rationale for the Study**

Historically, environmental education literature has been dominated by applied science methods, a paradigm with causal-comparative experimental studies that attempted to connect environmental knowledge, attitudes and behaviours (Hart & Nolan, 1999; Rickinson, 2001). More studies appear to investigate learners rather than learning (Hart & Nolan, 1999; Rickinson, 2001). The focus of these studies has been on students' environmental characteristics rather than on the educational characteristics. That is, there has been more information about learning outcomes than about learning processes. In addition, much of the research is characterised by its methodological uniformity. The focus on outcome-based research has also often used quantitative methods to investigate environmental education outcomes.

Within environmental education research, there has been little focus on students' experiences of environmental education, and little investigation of the processes involved in environmental educational programs. With little known about how children experience environmental education, there is scope to explore and better understand experiential learning programs (Allison & Pomeroy, 2000; Bocarro & Richards, 1998). Further, the Australian Research Institute in Education for Sustainability (ARIES) has recommended that outdoor and nature based environmental education providers (including environmental education centres) explore the potential of experiential learning and action learning approaches to nature-based programs in sustainability (Tilbury, Coleman & Garlick, 2005). In summary, there is scope for research to better understand experiential learning programs in environmental education centre contexts by seeking children's descriptions of their experiences.

## **1.5: Research Questions**

With this rationale in mind, this research project sought children's views of their experiences during four short-term (five day) residential environmental education immersion programs for five schools.<sup>3</sup> Children were invited to provide accounts of their experiences of one environmental education program conducted at the Centre. Three research questions underpin this study:

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<sup>3</sup> One camp consisted of a combination of two small country schools.

- *How did children account for their experiences of an outdoor environmental education program?*
- *How did the environmental education program engage children?*
- *What are the implications for using a methodology that draws on children's accounts of their experiences?*

## **1.6: Theoretical Framework: Sociology of Childhood**

The study drew on the theoretical understanding that children are active participants in the research, and invited them to participate by asking them about their experiences of the environmental education program. As such, there was a need to consider the implications for using a methodology that draws on children's accounts of their experiences. Therefore, the third research question was posed. The starting point was the recognition of children as environmental stakeholders and engaged participants in their own environmental learning (Chawla, 2002; Hacking [Barratt], E. Barratt, R., & Scott, 2007; Spencer & Woolley, 2000).

This theoretical understanding recognises children are competent practitioners actively participating in the construction of their worlds (Danby, 2002; Danby & Farrell, 2004; James, Jenks, & Prout, 1998; Mason & Danby, 2011; Theobald, Ailwood, & Danby, 2011; Waksler, 1996). In its theoretical commitment to listening to children as reliable informants of their own experiences, the study adopted a method of research *with* children rather than *on* children providing the theoretical basis for the methodology of this study. Research into children's understandings of their own experiences presents an opportunity to gain a deeper understanding of how children engage and respond to the informal setting of an environmental education centre.

## **1.7: Methodology and Method**

With my background in quantitative research methods, I came to the research with a belief that I could test the children both before and after each of the different activities. Those activities that displayed the greatest change in the children could be regarded as more successful and the Centre should, therefore, concentrate on these types of experiences. I sought initially to undertake a quantitative study that would use questionnaires designed to ascertain the environmental literacy levels of students, what Hart and Nolan (1999) term quasi-quantitative methods. The

literature identified that environmental education research had evolved during the 1990s away from its roots in the dominant paradigm of quantitative studies towards a broader base of methodologies. More recently, the majority of the studies have used a combination of methodologies (Fisman, 2005; Hopwood, 2007; Kenney, Militana, & Donohue, 2003; Knapp & Benton 2006; Myers, Saunders & Garrett, 2003; Powell & Wells, 2002; Powers, 2004; Volf & Cheak, 2003). However, these approaches did not focus specifically on engaging children as active participants in the research, or by inviting them to participate by talking about their experiences of the environmental education program. Therefore, I chose a qualitative approach as it offered deeper insights into children's experiences.

This research uses case study methodology. Case study research follows the research philosophy of investigating existing, real-life situations in all their complexity, describing the situation in as much detail as possible, and finally explaining the findings in a clear and comprehensible way (Dillon & Reid, 2004; Lotz-Sistka & Raven, 2004; Stevenson, 2004,). The study drew on multiple ethnographic methods, including audio-recordings of children's conversations about their experiences, photographs, drawings, and journal writing. Data collection included conversations with the children who were regarded as "active participants and competent interpreters [through their] talk and interaction" (Danby & Farrell, 2004, p. 36) of their experiences. As well, Centre documents, such as the Curriculum Framework (Boyne Island Environmental Education Centre [BIEEC], 2005), were used to help understand the context of the study.

Although there are a number of possible procedures that qualitative researchers can use to analyse data, analysis was framed within a content analysis approach informed by literature from sociology of childhood. Broadly defined, content analysis is "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorff, 2004, p. 18). Data were analysed using Berg's (2001) Criteria of Selection of Data Analysis and developed through an inductive process. An inductive approach begins with researchers "immersing themselves in the texts" (Abrahamson, 1983, p. 286), with categories emerging in the course of analysing the data. The development of the inductive categories allowed linking or grounding of categories to the data from which they derive (Schatzman & Strauss, 1973).

## **1.8: Research Significance: A Contribution to Scholarship and Professional Practice**

First, this research has contributed to addressing concerns identified by Hart and Nolan (1999) and Rickinson (2001). These researchers identified that a focus on the student experiences within environmental education was missing from the environmental education literature.

Second, this study offers an alternative lens through which to examine environmental education programs. The research approach of this study represented a shift from the more typical outcome-based focus of examining the effectiveness of environmental education programs to one that invited children to participate by asking them to discuss their experiences. This lens is created from a different epistemological foundation by drawing on key theoretical assumptions derived from the sociology of childhood (Corsaro, 2005; Prout & James, 1990) that included employing a child-centered method of research that values gaining children's accounts to assist educators to design environmental education programs. The method used in this research - that of listening to children - is a method that has not been used typically in research investigating aspects of environmental education and environmental education centres. Using this approach presents understandings of how listening to children can offer up new ways of understanding the programs, often viewed only from adult and educator perspectives.

Third, the research contributes to meeting the ARIES recommendation for environmental education centres to research nature-based programs in sustainability by better understanding the child learners' experiences

Fourth, the research contributes to a better understanding of practices in Queensland's outdoor and environmental education centres, a process initiated by Ballantyne and Packer (2008, 2009).

## **1.9: Chapter Overviews**

This thesis has seven chapters. Chapter 1 provides an introduction to the thesis, beginning with an examination of the catalyst for this research so as to help the reader understand why this research project was undertaken. A brief history of environmental education centres was discussed to provide an understanding of the field of this research. An outline of the study was provided that introduced the

research questions, described the theoretical framework, sociology of childhood, and the methodology and method. Finally, the significance of the research was considered, with a discussion of the study's contribution to scholarship and professional practice.

Chapter 2 is a review and synthesis of literature relevant to the study. It begins with a brief overview of the history of environmental education and the more recent phenomenon, education for sustainable development. I identify what environmental education might mean to a researcher in the field and addresses Reid and Nickel's (2003) and Hungerford's (2005) concern that a researcher should provide a substantive structure of the field in which the research is being carried out. The second section of the chapter contains a description of types of research that could be undertaken in the field of environmental education through a review of the topics selected, and methods used by other environmental education researchers. In this section, it is identified that there are key imbalances in the research literature, with more studies investigating learners rather than learning and that the evidence base for environmental education is characterised by methodological uniformity. Missing from the research has been an alternative approach to investigate the children's perspective. Having identified a specific focus for this research, the third section examines the literature of sociology of childhood to show that this perspective, built on listening to children, is an appropriate theoretical framework for this research.

Chapter 3 is a description of the methodology and research methods of this study. There are eight sections to this chapter. First, a theoretical framework for the research is developed by considering the implications of different ontologies and associated epistemologies for methodologies and methods. In the second section, I examine my role as a researcher. As a qualitative researcher and researching professional (Guillemin & Gillam, 2004), I took on multiple roles including interlocutor, as well as interpreter, evaluator and finally advocate. The third section contains a description of the participants in the study. In the fourth and fifth sections, I describe the research design and delivery and the data analysis process. In the research design, the importance of utilising a research methodology that reflects the sociology of childhood perspective is examined along with children's conversations as valuable data collection methods for this study. In this section, the data analysis

process is described using content analysis to sort and isolate patterns and processes so that conclusions would be grounded in the statements of the children. This chapter also includes a discussion on validity and reliability, achieved through triangulation in methods and procedure. Ethical implications from both the methodology and procedures are examined. Finally, limitations of the research are discussed.

Chapter 4 is the first of three data discussion chapters that address the research questions. This chapter includes a discussion of the children's perspectives on space and place, considering first the concepts of space and place by examining how an experience begins in an undifferentiated space, and becomes a place as the children gradually experience the setting and attribute certain meanings to it. Place is discussed as being where children can participate in first-hand experiences - an outdoor classroom - and as where children feel safe and comfortable. Place is also sometimes identified as out-of-bound spaces where children are able to explore. A possible consequence of being restricted from exploring natural areas - diminishing connections by children to the natural world - is examined.

Chapter 5 contains the second of the three themes of my data analysis, the children's perspectives on engagement and participation. The concepts of engagement and participation are explored by discussing primary and secondary experiences. The children participated in a range of new experiences, first-hand experiences and collaborative experiences, interacting with both peers and teachers. A different type of interactional relationship was identified as occurring at the Centre, one where the children were active agents and eager learners, active rather than passive recipients of learning.

Chapter 6, the last of the three data discussion chapters, includes a discussion of the children's perspectives on responsiveness and reflection within the context of environmental education. The concepts of responsiveness and reflection are explored by discussing Kolb's (1984) experiential learning and teaching cycle. The children described how they responded to their experience with fun and excitement and through gaining confidence and satisfaction. The children also described a response that went beyond the self and expressed a concern for wildlife. This response was discussed in the context of biophilia and anthropomorphism. The children tell of reflecting on their experiences. The value of a disorienting dilemma is discussed as a means of promoting learner responsiveness and reflection.

Chapter 7 presents the study's findings, implications and recommendations. It begins by revisiting the research topic, catalyst and methodology of this study. The key findings of the study are presented in the context of a nested framework developed from the children's accounts of their experiences. In applying the framework, a pedagogic approach is theorised about environmental experiences at BIEEC. This approach also describes the role of a teacher in the experience. The implications of the study include contributions to the field of environmental education and what being a reflexive researching practitioner has meant for the Centre. The chapter concludes with a number of recommendations for future research and for the research site's environmental educational programs. Finally an epilogue provides the reader with a glimpse of the impact of this research on the research site and a concluding comment on the Wordles that feature at the commencement of each chapter.<sup>4</sup>

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<sup>4</sup> Wordle is a Web2 application for generating 'word clouds' from a text source.

## Chapter 2: Positioning the Research within the Literature



Figure 2.0: Wordle of the 30 most common words in Chapter 2



## **Chapter 2: Positioning the Research within the Literature**

The purpose of this chapter is to review and synthesise literature relevant to the study. The chapter has three parts, beginning with a brief overview of the history of environmental education that provides a ‘substantive structure’ (Hungerford, 2005) of the field in which this research is situated. This discussion includes an explanation of changes over time in environmental education and the role of environmental education centres in environmental education. I also examine the research site’s documents in relation to environmental education. The second section provides an understanding of what types of research have been undertaken in the field of environmental education by reviewing the topics selected and methods used. It also identifies some limitations of existing research practices, and proposes the inclusion of investigations through alternative frameworks such as a sociology of childhood lens. The third area of literature in this chapter relates to the sociology of childhood specifically, and how this was used to guide the collection and analysis of data, a process explained in detail in Chapter 3.

### **2.1: Environmental Education**

This section identifies that there are a variety of ways of thinking about environmental education and, as a consequence, there are differing interpretations of, and approaches to, pedagogy and curriculum in the field. Hence, it assists in providing a ‘substantive structure’ of the field in which the research was situated (Hungerford, 2005; Reid & Nickel, 2003; Robottom & Hart, 1993). When examining the term ‘environmental education’, the links between the words ‘environment’ and ‘education’ are examined. The differing purposes of environmental education are discussed here before describing the more recent development in the field - education for sustainability. Finally, the role of environmental education centres in environmental education is discussed, including environmental education at the research site.

#### **2.1.1: History of environmental education.**

In the 1960s, there was a groundswell in Western countries of individuals and groups challenging the conservative norms of the time (Sterling, 2001). These

individuals and groups created movements toward social liberation, questioning authority and government, and demanding greater freedoms and rights, such as for women and minorities. Renewed concerns about the environment also developed in this milieu and a global concept of environmental education started to develop. An early environmental education pioneer, Bill Stapp (1969) described how initiatives such as 'environmental education' could "be capable of producing citizens (who are) knowledgeable concerning their bio-physical environment and its associated problems; aware of how to help solve these problems; and motivated to work toward their solution" (p. 31).

The 1970s brought a more holistic approach to environmental issues, a move away from earlier single issue concerns, such as saving rainforests, and sought to address environmental problems through economic, social and political policies, and technological change (Payne, 1997). One of the first international agendas in relation to environmental education occurred at the 1972 United Nations' Conference on the Human Environment (Stockholm). This conference of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) created the United Nations Environment Program (UNEP) and the International Environmental Education Program (IEEP). The aim of these programs was to develop, promote, and fund environmental education. Over the next six years, these programs provided the foundations of modern environmental education, expressed in the *Belgrade Charter* (1976) which advocated that education be directed at solving the social and environmental problems that flowed from poverty, hunger and exploitation and stated that, "we need nothing short of a new global ethic; an ethic which espouses attitudes and behaviour for individuals and society; which are consonant with humanity's place within the biosphere" (UNESCO-UNEP, 1976, p. 1). Two years later, the *Tbilisi Declaration* (1978) ratified the *Belgrade Charter* and confirmed a general set of goals and principles for environmental education that sought to "provide opportunities for learners to acquire the knowledge, values, attitudes, commitment and skills to protect and improve the environment and to create new patterns of behaviour" (UNESCO-UNEP, 1978, p. 3). In Australia, Linke (1974) prepared a report on the position of environmental education in Australia, identifying that it was not well developed as a field within education.

Environmental education became broader, but also more fragmented, in the 1980s and 1990s. Environmental education included, for example, conservation education, urban education, nature and environmental education, and critical environmental education. At the same time, the growth of environmental education into a world-wide movement paralleled other education-for-change movements including peace education, world studies, anti-racist education, human rights education, human-scale education, holistic education, development education, gender education and futures education (Sterling, 2001). This plethora of education themes has been labelled ‘adjectival education’ (Hopkins, 2006).

A major shift in the field of environmental education came in 1987 with the report, *World Commission on environment and development: Our Common Future* (Brundtland, 1987) of the World Commission on Environment and Development. It was from this report that the term ‘sustainability’ began to emerge in the environmental education literature.

Australia, at a national level, developed education for environment and sustainability principles and listed these in its 2000 publication, *Environmental Education for a Sustainable Future: National Action Plan* (Commonwealth of Australia, 2000). The 2002 World Summit on Sustainable Development confirmed this shifting emphasis from environmental education to education for sustainability with a focus on transformational change in values and behaviour from the individual to a global scale (Cloud, 2005). *Agenda 21* (United Nations Conference on Environment and Development [UNCED], 1992) and the *Thessaloniki Declaration* United Nations Educational, Scientific and Cultural Organisation - Educating for a Sustainable Future: Environment, Population and Sustainable Development [UNESCO-EPD], 1997) appear then to have laid the foundations for education for sustainability while ‘neutralising’ the term ‘environmental education’ (Cloud, 2005). By 2005, the Australian Commonwealth Government was responding to these changing concepts and produced *Educating for a Sustainable Future: A National Environmental Education Statement for Australian Schools* (Commonwealth of Australia, 2005) and, in 2007, *Caring for our Future: The Australian Government Strategy for the United Nations Decade of Education for Sustainable Development, 2005–2014* (Commonwealth of Australia, 2007), where ‘education for sustainability’ was the favoured term over ‘environmental education’. In 2009, a number of

recommendations about education for sustainable development were made in the document *The Gothenburg Recommendations on Education for Sustainable Development* (Chalmers University of Technology & University of Gothenburg [CUT & UG], 2009), that further clarified and extended thinking about education for sustainable development.

This brief history details key stages in the growth of modern environmental education. It is important to note that from its beginnings in the 1960s, environmental educators have argued for an ethic that espoused pro-environmental attitudes and behaviour, underpinned by education opportunities to support the knowledge, values, attitudes, commitment and skills necessary to protect and improve the natural environment. In the next section, I explain the diverse ways in which environment and education have been put together over the years.

### **2.1.2: Linking education and the environment.**

Environmental education has multiple dimensions and occurs in a wide range of contexts extending well beyond the formal educational system. The merging of the terms ‘environment’ and ‘education’ has witnessed the development of a discrete subject area, and given rise to ongoing philosophical, curriculum and pedagogical debates. In this section I examine the literature around these debates. These debates reflect environmental education’s role in dealing with values, morals and controversial issues (Hungerford, 2005; Payne, 1997, 2006; Reid, 2011; Scott & Oulton, 1998; Sterling, 2001; Stevenson, 1987; UNESCO-UNEP, 1978).

The construction of the term ‘environmental education’, merging ‘environmental’ and ‘education’, allows for a number of possible interpretations:

- **environmental** education,
- environmental **education**,
- **environmental education**.

While the words ‘environmental’ and ‘education’ are contained in each of the terms, the different emphases (illustrated by my bolding) lead to different meanings.

Depending on which emphasis is given by a researcher, different forms of research can emerge. If a researcher emphasises the word ‘environment’, most likely, research will emphasise environmental studies, for example investigations of water quality in a river system. Alternatively, an emphasis on ‘education’ is more likely to result in research that draws on understandings from the broad field of education, for

example, pedagogy. For the researcher who places equal emphasis on the two words, ‘environmental’ and ‘education’ a new entity, ‘environmental education’ is created, rather than an adaptation of either environmental studies or education studies. However, even within this entity, there are different types of environmental education, or ‘adjectival educations’ (Hopkins, 2006), aimed at social and environmental improvement. Three adjectival forms of education *and* the environment are: environmental studies, environmental interpretation and outdoor education. Although there are also other forms, such as urban studies, these three relate best to the curriculum framework of the research site and, therefore, are examined in more detail in the next section. However, first I define the term ‘environmental education’ and the rise of environmental education for sustainability.

### **2.1.3: Defining environmental education.**

In 1976, the Queensland Department of Education adopted the definition of environmental education published by the International Union for the Conservation of Nature and Natural Resources:

Environmental Education can be described as the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behaviour about issues concerning environmental quality (Queensland Department of Education [Education Queensland-EQ], 1976, p. 2).

However, by the 1980s UNESCO recognised that environmental education was “fundamentally education in problem solving - but problem solving from a philosophical basis of holism, sustainability, enhancement and stewardship” (Meadows, 1989, p. 5). Therefore, by 1993, the Queensland Department of Education defined environmental education as the need, “to acquire the understanding skills and values that will enable them to participate as active and informed citizens in the development and maintenance of an ecologically sustainable, socially just and democratic society” (Queensland Department of Education [Education Queensland-EQ], 1993, p. 5). What each of these definitions highlight is an emphasis on values and acting for the environment. This emphasis can be traced from environmental educators’ ideas of acknowledging the importance of producing

an 'environmentally knowledgeable citizenry' (Stapp, 1969) as a key part of its rationale.

The purpose of environmental education has been described as the triple goals of education *in*, *about* and *for* the environment (Donaldson & Donaldson (1958). The distinctions *in*, *about* and *for* the environment constitute a socially constructed framework for thinking about environmental education and allows an explanation of the different aims and approaches to the teaching of environmental education under specific circumstances. Lucas (1979) argued that misunderstandings about the intended type of environmental education program could be overcome by characterising goals as under the headings of *in*, *about* or *for* the environment, or a combination of these classes. Fien (1988) attempted to identify the contribution that can be made from each of these forms of environmental education. Education *in* the environment can:

- Give reality, relevance and practical experience to learning through direct contact with the environment.
- Develop important skills for data gathering and field investigations.
- Develop aesthetic appreciation.
- Foster environmental awareness and concern. (Fien, 1988, p. 7)

Education *in* the environment goes beyond science and, it can be argued, that if people are to understand their environment, then they have a need to know the workings of the systems around them. Education *about* the environment can:

- Provide understanding of how natural systems work.
- Provide understanding of the impact of human activities.
- Develop environmental investigation and thinking skills. (Fien, 1988, p. 6)

However, the preposition *for* extends the meaning of environmental education from simply learning about or in the environment. An element of environmental responsibility is implied and, inherent in this, the need to take action when necessary. Therefore, education *for* the environment builds on education *in* and *about* the environment and:

- Develops an informed concern and sense of responsibility for the environment.
- Develops an environmental ethic.
- Develops the motivation and skills to participate in environmental improvement.
- Promotes a willingness and ability to adopt lifestyles compatible with wise use of environmental resources. (Fien, 1988, p. 7)

Some writers have argued “that education *in* and *about* the environment provide most educational value when they are used to provide skills and knowledge to support education *for* the environment” (Board of Teacher Registration [BTR], 1993, p.24); that is, education *in* the environment is not merely an outdoor education camp. Instead, through education out of the classroom “increased awareness of aspects of the environment can be expected” (BTR.1993, p.22).

Gough (1987) questions the validity and educational merit of education *for* the environment by arguing that:

Apart from being somewhat patronising and anthropocentric (who are we to say what is ‘good for’ the environment, and which environment is ‘the environment’ anyway?), this slogan maintains the sorts of distinctions that tend to work against a deeply ecological worldview, distinctions between subject and object, education and environment, learner and teacher. (p. 50)

Jickling and Spork (1998) expressed a concern that education *for* the environment is a universalising discourse that seeks to marginalise other approaches and allege that it borders on indoctrination. In reply to Jickling and Spork, Fien (2000) argues that the critical pedagogy of education *for* the environment provides a professionally-ethical way of teaching in seeking to address weaknesses of alternative approaches to environmental education where any simplistic interpretations of *in*, *about* and *for* can lead to a misunderstanding of the aims and hence associated approaches to environmental education. Therefore, a form of environmental education, characterised by positive attitudes toward the environment, competency in citizen action skills, and a sense of empowerment is the basis for an ‘education *for* the environment’. As Gayford (1978) succinctly put it over a decade earlier than Sterling (2001), “education *for* the environment is generally agreed to be a significant part of the *raison d’être* for environmental education” (p. 8). Ballantyne and Packer (1996) tell how environmental education in the 1990s was characterised also by an emphasis on the “affective rather than the cognitive domain [with] environmental educators generally adopting a values education approach to teaching” (p. 1). By the new millennium, writers, such as Hungerford (2005), suggest that environmental education was seeking to achieve an outcome that “is almost always rooted in responsible environmental citizenship” (p. 1), that is it is predominantly education *for* the environment. As a result of this acceptance, the impact of

pedagogical principles and practices associated with education *for* the environment has been significant for the field of environmental education

Another point of discussion about environmental education is that the early theoretical underpinnings of the environmental education field that derived from the *Belgrade Charter* (United Nations Educational, Scientific and Cultural Organisation - United Nations Environment Program [UNESCO-UNEP], 1976) were characterised as having a focus on the individual undergoing a psychological change leading to the development of a pro-environmental ethic or attitude demonstrated by individual behavioural change. Later interpretations of environmental education articulated a critical pedagogy arising out of critical theory. This orientation emphasised the development of an environmental consciousness and ethic, critical thinking and problem solving through individuals reflecting on, and reconstructing, their social world and developing as critical and active citizens (Fien, 1993). These socially critical ideas were influenced strongly by the social critiques described in Freire's *Pedagogy of the Oppressed* (1970). Thus, the pervading goal of environmental education during the period of 1970s to 1990s was the development in learners of knowledge about the environment, positive attitudes toward the environment, competency in citizen action skills, and a sense of empowerment (Payne, 2006). These changes, however, did not "invalidate the early and still evolving traditions of nature studies and fieldwork, but puts them in a broader context" (Sterling, 2001, p. 29). Adding to the debate, Hart and Nolan (1999) identified three paradigms of environmental education in addition to critical theory: positivism, constructivism and postmodernism. These paradigms, they claim, are evidence of the complexity in attempting to define environmental education. Some researchers, such as Stables (1998) propose alternative goals for environmental education. Stables (1998) suggest 'environmental literacy' as a goal which includes functional, cultural, critical criteria. However, other writers have proposed alternative interpretations relating to outcomes for environmental education. For example, Cutter-Mackenzie and Smith (2003) have proposed the idea of 'ecological literacy', which involves the individual developing a range of knowledge, skills and attitudes regarding the environment.

Debates continue to occur in terms of the priority and usefulness of different interpretations of the field (Reid, 2011; Sauv e, 2005). Sauv e (2005) undertook a mapping of the pedagogical field in environmental education noting the broad extent

of possible pedagogical approaches. Reid (2011) identifies the distinctions made between theories or practices of education couched in terms of *about, in, for, through, being with, by*, and more recently, education *as* sustainability. He also identifies the long tradition of approaches, philosophies, categories of interest and paradigms in environmental education goals, practices, and approaches in the development and shaping of environmental education (Reid, 2011, p. 151).<sup>5</sup> In summary, these concepts are debated in terms of “either their fit with current local and wider approaches to framing and practicing EE approaches, or their potential and shortcomings as a framework for learning that stimulates or reinvigorates approaches to EE” (Reid, 2011, p. 151).

#### **2.1.4: Environmental education and education for sustainability.**

A further understanding of the substantive structure of environmental education can be made by examining recent literature regarding environmental education and education for sustainability (Queensland Department of Education [Education Queensland-EQ], 1993; Fien, 1995; Sterling, 2001; Tilbury, Coleman & Garlick, 2005; United Nations Conference on Environment and Development [UNCED], 1992). There is ongoing debate on the links between environmental education and education for sustainability typified by examining their similarities and differences. For example, “whether EE is a part of ESD, ESD is a part of EE, ESD and EE partly overlap, or ESD is a stage in the evolution of EE—that is, debated in terms of the frameworks within which EE is currently and might otherwise be directed, imagined, developed, and challenged” (Reid, 2011, p. 152). An important consideration, then, centres on the fundamental components of environmental education and education for sustainable development. The influence

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<sup>5</sup> Reid (2011) identifies a number of examples of this long tradition including:  
Approaches: naturalist; conservationist/resourceist; problem-solving; systemic; scientific; humanist; value-centered; holistic; bio-regionalist; praxic; socially critical; feminist; ethnographic; eco-education; sustainable development/sustainability.  
Philosophies: deep ecology; conservation biology.  
Socially critical forms of analysis: eco-feminism; post-humanism.  
Categories of Interest: pedagogies of socio-ecological justice; place; decolonization; stewardship; ecological citizenship; eco-critical literacy; experience; consciousness.  
Paradigms in EE goals: practices.  
Approaches: positivist; interpretative; socially critical; post-paradigmatic approaches.

of more recent documents such as the *World Commission on environment and development: Our common future* (Brundtland, 1987), *Agenda 21* (UNCED, 1992) and the *Thessaloniki Declaration* (UNESCO-EPD, 1997) on environmental education is evident in the new terms used in the literature such as ‘education for sustainable development’ (ESD), ‘education for ecologically sustainable development’ (EESD), ‘environmental education for sustainability’ (EEfS), ‘education for sustainability’ (EfS) or ‘education for environment and sustainability’ (EfES).

The 1991 *World Conservation Strategy, Caring for the Earth: a strategy for sustainable living* (International Union for Conservation of Nature, United Nations Environment Program, & World Wildlife Fund, [IUCN/UNEP/WWF], 1991) added impetus to the call for the redirection of environmental education towards education for sustainable development. The 1992 document *Agenda 21: The United Nations Programme of Action from Rio* from The United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, added further support for the shift of environmental education towards education for sustainable development. *Agenda 21* related specifically to education for sustainable development, with Chapter 36 concerned with re-orienting education toward sustainable development, raising public awareness about, and providing training opportunities in education for sustainable development. It was through *Agenda 21* that an opportunity was provided for the promotion of the concept Education for Sustainability by stating that:

Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues. It is critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision-making. (UNCED, 1992, p. 2)

Within a decade at the international conference in 1997 in Thessaloniki, Greece (marking the twentieth anniversary of the *Tbilisi Declaration* and the fifth anniversary of the Rio Earth Summit Conference) the term ‘environmental education’ was mentioned only twice within the 29 statements of the Declaration, confirming the shift from environmental education to education for sustainable development. It was suggested that ‘environmental education’ be referred to as ‘education for environment and sustainability’ (EES), with the latter terminology

being seen as heralding a “new and holistic approach to attaining environmental stewardship” (United Nations Educational, Scientific and Cultural Organisation - Educating for a Sustainable Future: Environment, Population and Sustainable Development [UNESCO-EPD], 1997, p.2). The *Thessaloniki Declaration - A charter for the future of education for sustainability* (UNESCO-EPD, 1997), therefore, appears to have laid the foundations for education for sustainability to become the new terminology for education related to environmental and sustainability matters, while neutralising the term ‘environmental education’. The terms environmental education and education for sustainable development are not synonymous, however M<sup>c</sup>Keown and Hopkins (2003) in their article *EE ≠ ESD* discuss the differences and similarities between environmental education and education for sustainable development. They pose:

What’s the difference between environmental education (EE) and education for sustainable development (ESD)? Is EE becoming ESD? Some insist EE is the same as ESD; others draw a distinction. The education community is grappling with an issue for which there is little clarity of definition or intent.

(M<sup>c</sup>Keown & Hopkins, 2003, p. 117)

*The Gothenburg Recommendations on Education for Sustainable Development* (Chalmers University of Technology & University of Gothenburg, 2009) also marked a departure from environmental education when the authors “call[ed] on governments, civil society and in particular educators to prioritize processes that develop and strengthen education for sustainable development (ESD)” (p. 3) then detailed a number of recommendations. These recommendations were in eight fields: access for all to a process of lifelong learning; gender; learning for change; networks; arenas and partnerships; professional development to strengthen education for sustainable development across all sectors; education for sustainable development in curriculum; sustainable development in practice and research. These recommendations recognised that education, in its broadest sense, is of fundamental importance to the achievement of sustainable development. There was acceptance in the Gothenburg Recommendations of an urgent need for education for sustainable development. This represented a progression forward from debates over the nature of education for sustainable development.

Within the debates between education for sustainable development and environmental education, one clear difference is articulated, that is, while education

for sustainable development is focused around capacity-building, environmental education is focused more around problem solving (Gough, 2006). Stevenson (2008) describes this difference in terms of being positive or negative in approaches to the environment. He describes environmental education as focusing on environmental problems, or a negative outlook rather than a positive state. Smyth (1995) too sees the emergence of the concept of sustainable development as an evolution of environmental education for its proactive, rather than reactive, approach to the environment, by “aiming to prevent problems arising rather than cleaning up afterwards” (p. 10). Smyth (1995) argues that the term ‘environmental education’ overtly presents the environment as the focus of concern, and omits reference to social, economic, and development issues. Knapp (2000) argues that the ultimate goal of both environmental education, and of education for sustainability, is to produce an environmentally literate and responsible citizen, “who can make decisions that will help check many of the environmental problems that will arise in the 21st century” (p. 34). Scott and Gough (2004), in their critical review of sustainable development and education literature, note that what is new about education for sustainable development seems to be more of emphasis than substance. However, they acknowledge the difficulty in developing a single clear understanding of the differences. The significance of this discussion for this study is that the documentation attempts to come to grips with the varied terminologies used within the broad field of environmental education. However, as M<sup>c</sup>Keown and Hopkins (2003) propose, debate over which terminology should be adopted is ultimately damaging and fruitless.

### **2.1.5: Education about, in and for the environment.**

Earlier, when linking the terms ‘education’ and ‘environment’, it was noted that there are several types of education, or adjectival educations (Hopkins, 2006), aimed at social and environmental improvement. In this section, I discuss three adjectival forms of ‘education *and* the environment’ - environmental studies, outdoor education and environmental interpretation. These are relevant to this study undertaken in an environmental education centre.

### ***2.1.5.1: Environmental studies .***

Environmental studies are a form of education that often includes the collection of animal and plant specimens for later close examination, as often occurs in science-oriented outdoor excursions. These activities emphasise knowledge *about* the environment, but do not necessarily emphasise an environmental care ethos. It has been noted Fien (1988) identified how learning *about* the environment emphasised knowing natural systems work or develop investigation and thinking skills. Scientific practices have been criticised by Cheung and Taylor (1991) who argue that “conceptual understanding and its applications is often overlooked in the notion of concept-free process” (p. 32). This view is supported by Hungerford and Volk (1990) who suggest that “the research would indicate that knowledge of ecology does not in itself, produce environmental behaviour” (p. 11). In the quest for ecological knowledge, pedagogical principles and practices may go so far as to reflect an anti-environmental ethos through, for example, direct experimentation on animals.

### ***2.1.5.2: Outdoor education.***

Outdoor education centres on learning experiences that take place outside of classrooms. The research site is a residential education facility in which most educational processes occur outdoors, that is, *in* the environment. Again, it has been noted how Fien (1988) identified how learning *in* the environment can give reality through direct contact with the environment and develop aesthetic appreciation. Therefore, much of the education that occurs at the Centre can be considered to be outdoor education. Over time, a dichotomy has occurred in education *in* the environment within the Australian context resulting in a split into adventure-type education and environmental education field work. Priest (1986) described this split as two branches of the same tree. The term ‘outdoor education’ is now mainly reserved for adventure-type education. Although both adventure and environmental education field work depend largely on the natural environment and are both experiential in their approach, each stresses different learning processes directed toward the achievement of somewhat different objectives. Outdoor education tends to emphasise vigorous physical activity and is a significant differentiating

characteristic from environmental education that does not necessarily place physical exercise as a major outcome.

Like environmental education, outdoor education is a dynamic form of education that is continually evolving as a result of new research. In 1998, for example, the Outdoor Educators' Association of Queensland (OAEQ) described outdoor education as "interactions with the environment, as much as possible in a natural setting, adventure outdoors, interactions with others and experiences of self-discovery" (OEAQ, 1998, p. 1). This definition presents an emphasis on the person, where an anthropocentric view of the environment prevails, where personal health is paramount, and where interpersonal or socio-centric perspectives dominate. By 2008, OEAQ was using the definition, "through interaction with the natural world, outdoor education aims to develop an understanding of our relationships with the environment, others and ourselves. The ultimate goal of outdoor education is to contribute towards a sustainable community" (OEAQ, 2008, p. 1). In this later definition, outdoor education seeks goals very similar to those of environmental education. However, in practice, outdoor education retains an anthropocentric and sociocentric perspective towards the environment. These perspectives towards the environment are reflected in the definition of Schroth, Helfer and Lanfair (2011), who believe that outdoor education "encourages activities that build interaction with the natural environment, allowing individuals to learn about and participate in the shaping of social norms, to undergo and surmount challenges in a supportive environment, and to gain appreciation of and knowledge about the process of learning and engaging in activities with others" (p. 288).

Outdoor education continues to emphasise education *in* the environment, where "outdoor education achieves the outcomes of...personal...and group development...at a deeper and more thorough level" (OEAQ, 2008, p. 1). Therefore, outdoor experiences aim to teach the ability to overcome adversity and enhance personal and social development (OEAQ, 2008). Despite a goal of encouraging a deeper relationship with the natural world, practices such as using camp fires, as often happens in physical education-oriented outdoor programs, may not be in keeping with the values of environmental care, a characteristic of environmental education especially, if this were to occur in situations such as in a national park. Writers such as Kellett (1977) have explored the concept of outdoor activities as a

humanistic enterprise in which personal development is achieved by modifying and exploiting one's surroundings, and is often framed in terms of a human conquest of nature. Wattchow and Brown (2011) describe the modern outdoor adventure educator as seeing nature as “an assault course, gymnasium or puzzle to be resolved and controlled” (p. 77), or, as Brookes (1993) describes it as a place where “short raids on the bush” (p. 31) can occur. In these approaches, ‘place’ tends to be rendered as abstract and emptied spaces, in order that they may be dominated or colonized by the achievements of the person.

The uncritical assertion that outdoor and adventure education are inherently good for everyone is challenged by writers such as Burke (2010) and Wattchow and Brown (2011). Burke (2010) argues that there is a need to “address the fact that not all people’s experiences of nature are, or have been, positive” (p. 91). He goes on to assert that outdoor educators “must acknowledge the role of domination and oppression in the colonial history of adventure, and he or she must question whether an approach that rests on such a foundation is universally good for everyone” (Burke, 2010, p. 91). Education that uses the environment merely as an opportunity to achieve personal or social outcomes is in marked contrast with education that emphasises the importance of actively caring for the natural environment. The theory supporting outdoor education is “predicated on the belief that an individual’s true nature is revealed through working with nature, as he or she is removed from the distraction of modern comforts and conveniences” (Schroth, Helfer & Lanfair, 2011, p. 288). This use of the environment merely as an opportunity to achieve personal or social outcomes illustrates that, without attention being given to attitudinal and behavioural outcomes in adventure programs, vital learning opportunities will be lost and even the very environment on which the educational/recreational experience depends can be destroyed (Newhouse, 1990). Lynch and Moore (2004) describe this as a paradox for outdoor education.

A fundamental model used in outdoor education practice to enhance learning is the comfort zone model. Although there is no comfort zone theory per se, “the comfort zone model is premised on the belief that, when placed in a stressful situation, learners will respond to the challenge, overcome their hesitancy or fear and grow as individuals (Wattchow & Brown, 2011, p. 41). However, Wattchow and Brown (2011) argue that the adoption of a comfort zone model may have undesirable

consequences in terms of student engagement, psychological wellbeing and emotional safety that can result from the unwitting promotion of individualism and the minimising of “mutuality and reciprocity in learning” (Seaman, 2008, p. 12). Orams and Hill (1998) argue there is a risk of reducing the value of the complex relationship between learning and behaviour change resulting from “the curious and naive belief that taking parties into the countryside is educationally beneficial, regardless of what they do there” (Beckman, 1988, p. 22). Outdoor education can, however, provide opportunities for immersion into the natural world and exposure to environmental issues facing society. M<sup>c</sup>Keown and Hopkins (2003) suggest a theoretical framework about how one thinks about, and relates, to the natural environment that helps to explain differing attitudes. These different attitudes include anthropocentric, sociocentric, biocentric, ecocentric and Gaiacentric.<sup>6</sup> Each of these describes how an individual relates to the natural environment starting with a person thinking mainly about self and then progressively expanding the sphere of concern to extend to other people, other living things, ecosystems, and finally, the planet.

### ***2.1.5.3: Environmental interpretation.***

A further understanding of environmental education can be obtained by contrasting it with the related field of ‘environmental interpretation’, a third adjectival form of education and the environment. Environmental interpretation is yet another term used in environmental education literature and has been defined as, “an educational activity which aims to reveal meanings and relationships through the use of original objects, by first-hand experience and by illustrative media, rather than simply to communicate factual information” (Tilden, 1977, p. 8). Therefore, ‘environmental interpretation’ can assist an individual to re-evaluate their meanings and relationships with their environment, particularly in non-formal learning

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Anthropocentric: A focus on the human being as central to the universe or viewing and interpreting everything in terms of human  
Sociocentric: A focus on one's own social group.  
Biocentric: A focus on living things.  
Ecocentric: A focus on concern for environmental issues.  
Gaiacentric: A focus on Gaia hypotheses; there is a spectrum of Gaia hypotheses from the Earth's biosphere effectively acts as if it is a self-organizing system through all lifeforms to being part of a single planetary being to the entire Earth is a single unified organism. (Dictionary.com, n.d.)

situations. These meanings and relationships may encompass the broad spectrum of values suggested by M<sup>c</sup>Keown and Hopkins (2003).

In summary, the nature of environmental education in non-formal learning situations is complex. For example, first-hand experiences exploring the mangrove forests may result in negative attitudes towards the environment if the individual is being attacked by the Biting Midge. Consequently, attempts to educate people to reduce inappropriate behaviours like dumping rubbish in mangrove areas may be naïve.

Different adjectival educations within the framework of education *in, about* and *for* the environment contribute to providing a substantive structure to the field in which this research was carried out. In the next section I discuss further education *in* the environment by examining the role of environmental education centres.

### **2.1.6: The role of environmental education centres: Education in the environment.**

Having discussed a theoretical basis for differing types of environmental education by using the triple goals of education *in, about* and *for* the environment, this framework provides a basis for examination of the literature around the role of environmental education centres. Environmental education can occur in the context of both formal and informal learning. Education, whether classified as formal or informal, is that which occurs within an organised and institutionalised setting. Formal education is separated from informal education by the context of the educational setting; normally, formal education is that which largely takes place in a school, whereas informal education could occur at an environmental education centre (Meek, 2011). The value of environmental education centres to environment education lies in their ability to provide first-hand experiences with the environment. Disinger (2001) argues that environmental education in non-traditional settings outside the classroom (such as at an environmental education centre) may be more effective than classroom environmental education in changing environmental behaviours. It has been noted that Fien (1988) argues that education *in* the environment can “give reality, relevance and practical experience to learning through direct contact with the environment ... [and] ... develop aesthetic appreciation”(Fien, 1988, p. 7).

The field work component of environment education is related closely to experiential education. The emphasis on ‘experiential education’ relates to the learning process rather than a description of education in terms of outcomes. The learning process is based on experience and task-centred learning (Wright, 2000). As Knapp and Benton (2006) state, “although children may readily obtain information about events from a variety of sources, including what they see and hear, memories based on participation are likely to be the most complete, accurate, and organised” (p. 168). Therefore, ‘experiential education’ reflects Dewey’s (1938/1991) theory of learning that all genuine knowledge originates in direct experience.

### ***2.1.6.1: The research site: A residential environmental education centre.***

This section includes background information about the geographical area in which the Centre is located. After examining the role of the Centre, the offered curriculum of the research site is discussed. Finally, the role of the teacher at the Centre is examined.

Established in 1977, the Boyne Island Environmental Education Centre is one of 26 environmental education centres throughout the state of Queensland. Schools that visit the Centre come mainly from Central Queensland, but some regularly travel from as far as Brisbane (approximately 400 kilometres) to participate in the Centre’s programs, based on its marine and estuarine environments. A small number of non-government schools also use the Centre. Approximately 5,000 students visit each year, for periods ranging from one to five days although these may extend up to 10 days for wilderness camps. Year levels range from the preparatory year (Prep.), through primary and secondary years, to tertiary and adult levels. Although varying from year to year, primary and secondary students account for the majority of the visitors (just under 50% each), with the remaining participants from the Prep year, tertiary institutions and the community (BIEEC, personal communication, 2011).

Situated on 2.4 hectares of natural Eucalypt bushland in the suburban setting of Boyne Island, the Centre provides a range of facilities. Numerous trails and discovery centres<sup>7</sup> feature in the grounds as well as high and low rope courses. Accommodation is in a Lodge for small groups or in Safari Cabins with bunks. There

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<sup>7</sup> Discovery centres are physical structures that have posters and activities based on a theme. In these centres, children are encouraged to carry out individual activities.

are numerous indoor and outdoor settings for eating in addition to a dining room with a modern kitchen attached. A 'teaching space' contains a library and computer laboratory. The Centre is equipped to meet the needs of the programs offered, although special programs may require the group to supply some items or to bring additional items to complement Centre equipment. The Centre possesses numerous examples of environmental practices. These include solar power production, water tanks, composting toilets, solar and heat-pump hot water systems, energy efficient lighting and environmental waste management practices.

In the Centre's prospectus, programs undertaken are described as being designed to complement school-based programs by:

- helping students through excursions.
- helping teachers through professional development and pre-service training.
- helping schools and communities through modelling environmental education practices, provision of resource materials and the operation of community action programs. (BIEEC, 2009, p. 2)

The Prospectus claims that "this adds value to school-based programs by exploring the field work component of environmental education" (BIEEC, 2009, p. 2) where the range of activities aims to be "enjoyable, exciting, challenging, practical, first hand experiences with various aspects of the environment that adds value to school based programs by exploring the field work component of environmental education" (BIEEC, 2009, p. 2). Activities at the site are designed to involve children in all aspects of the local environment so as to present a balanced insight into the environment and to enable the children, at the culmination of a program, to display environment-friendly values in their formulation of personal environmental action plans. The Centre sees education *in* the environment as not merely being an outdoor recreational camp, as identified in the previous section. Instead, it argues that through education out of the classroom "increased awareness of aspects of the environment can be expected" (Board of Teacher Registration, 1993, p. 22). In other words, the Centre seeks to provide education *for* the environment in addition to environmental studies.

The research site's unique location supports a curriculum that emphasises the natural coastal, marine and reef environments and the human use of these areas. It is the only centre in the state that provides for groups to participate in an extended excursion to the outer Great Barrier Reef. Reef programs may concentrate on

biology, geography, marine studies or outdoor education. Vocational training, such as boat safety, is embedded in programs (BIEEC, 2009. p. 6). Overall, BIEEC seeks “to improve student learning outcomes by providing classroom teachers with unique learning opportunities for their students, beyond the capacity of most schools” (BIEEC. 2009. p. 2). Because the environment is integrated throughout the entire curriculum of Boyne Island Environmental Education Centre, essential core elements of ‘Key Learning Areas’<sup>8</sup> can be found in all components of the curriculum. BIEEC programs integrate environmental studies with environmental education in a site-specific curriculum framework which includes development of values, knowledge, cognitive processes and action skills. Centre activities seek to involve students in the above domains sequentially in order to present a balanced insight into the environment that enables students at the culmination of their visit to display environmental-friendly values through the formulation of personal action plans. The overarching curriculum framework for activities carried out at the Centre is the *Cycles of Life* (see Appendix E). This framework aims to “create a journey of environmental awareness, leading towards the development of environmentally-literate citizens” (BIEEC. 2009. p. 2). There are three stages:

- Stage 1: the ‘skilling’ stage, where students explore personal awareness of the environment and develop critical thinking and problem solving skills,
- Stage 2: the ‘knowledge’ stage, where students gain knowledge and information by studying components of the natural and built environments,
- Stage 3: the ‘action’ stage, where students monitor human impacts and learn ways to protect and care for the environment.

The *Cycles of Life* Framework is designed to be applicable to students of all ages with activities modified to meet the specific needs and ages of students. Centre staff design and deliver, in collaboration with visiting teachers, a sequence of learning activities based on the students’ specific interests, and directly linked with the classroom curriculum. Although there are usually common components, each program is different. Details of the school programs relevant to the research described in this thesis are included in Appendix F. The Centre’s Curriculum Framework (BIEEC, 2005) emphasises mainly the *what* rather than the *how* of education. In a document that spans 22 pages, only two paragraphs relate to

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<sup>8</sup> Key Learning Areas are the discipline areas within school education as specified by Government.

pedagogy. This lack of material about pedagogy reflects scholarly criticism that much of the focus of environmental education is on environmental aspects rather than teaching and learning. Having described the curriculum of the research site, in the next section, I examine what the Centre documents state about the interpretation of environmental education at the research site.

### **2.1.7: Environmental education at the research site.**

The Centre details its understanding of environmental education in its *Environmental Education Curriculum Framework* (BIEEC, 2005).<sup>9</sup> The Centre's approach to environmental education derived from the policy on *Environmental Education in Queensland State Schools* (Queensland Department of Education [Education Queensland-EQ], 1988) and the *P-12 Environmental Education Curriculum Guide* (Queensland Department of Education [Education Queensland-EQ], 1993). This approach to environmental education aims to enable students to "acquire the understanding skills and values that will enable them to participate as active and informed citizens in the development and maintenance of an ecologically sustainable, socially just and democratic society" (EQ, 1993, p. 5). The Centre also identifies the gaining of knowledge of ecologically sustainable development as important. The Centre defines ecologically sustainable development as:

Development that meets the needs of the present without compromising the ability of future generations to meet their needs. For development to be sustainable, it must also be socially just and appropriate to the culture, history and social systems of the place in which it occurs. (BIEEC, 2005, p. 6)

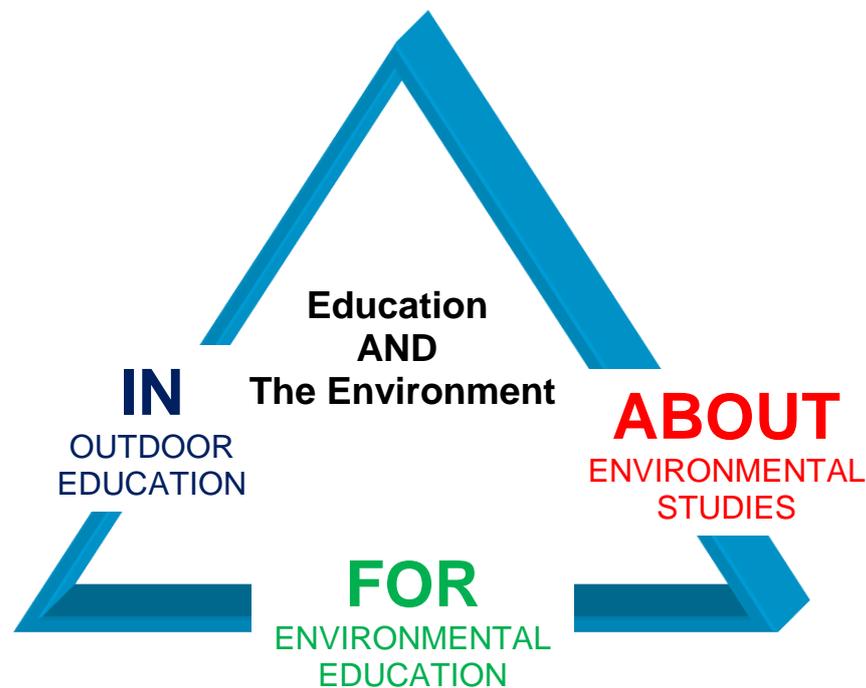
Ecologically sustainable development is a more recent concept in the history of environmental education and illustrates an attempt by the Centre to keep its concept of environmental education reflecting current Australian and world trends.

The site's interpretation of environmental education also supports Fien's (1988) interpretation of the diversity of aims and approaches for environmental education, illustrated by the phrase, 'education *in, about* and *for* the environment' (Donaldson & Donaldson (1958). (see Appendix A) This interpretation is illustrated

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<sup>9</sup> The Curriculum Framework discusses how the centre sees environmental education linking with knowledge, values and ways of working. However, in the Curriculum Framework primary documents are not acknowledged; therefore, in writing this section, I have acknowledged the Boyne Island document rather than possible primary documents.

in its *Environmental Education Curriculum Framework* (BIEEC, 2005, p. 3). (see Figure 2.1)



**Figure 2.1: Environmental education curriculum framework** (BIEEC, 2005, p. 3)

As a consequence of the extensive discussion about knowledge in environmental education (see Appendix B), it appears the research site places considerable importance on children gaining knowledge about their environment. Given that there is a multiplicity of approaches to environmental education, the fact that the Centre identifies knowledge acquisition as important continues to reflect a more traditional approach to environmental education. However, the document also identifies that the Centre recognises that knowledge is not simply the acquisition of facts about the environment but views its program as helping to develop in children, a type of knowledge that draws on the high order thinking skills. The Centre document also links knowledge with the Queensland education system's concept of knowledge in Productive Pedagogies.<sup>10</sup> These identify essential characteristics of

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<sup>10</sup> The Productive Pedagogies describe a common framework developed by Lingard, et al., (2001). in Queensland. Within Productive Pedagogies teachers can choose and develop strategies in relation to what are they teaching and the variable styles, approaches and backgrounds of their students. There are four dimensions, which include intellectual quality, connectedness, supportive classroom environment and recognition of difference. They are based on the work of Newmann & Associates (1996).

knowledge such as natural or social systems that teachers should address when engaged in teaching and learning.

The range of attitudes and values emphasised in the curriculum framework is quite extensive (see Appendix B). What the attitudes and values listed appear to target is a sense of joy in, and enthusiasm for, the environment and a respect for nature. While the list may be expansive, they are displayed in a logical sequence that takes a participant through developing a sense of joy towards “a preparedness to examine and change their personal lifestyles to secure sustainable, healthy futures” and “a willingness to work individually and with others to improve, the environment” (BIEEC, 2005, p. 8).

Whilst within the *Tbilisi Declaration* (UNESCO-UNEP, 1978) the need to develop skills is identified, in the research site’s documentation, environmental education is described as “provid[ing] opportunities for students to display proficiency in ‘competencies’ reflecting their stage of schooling” (BIEEC, 2005, p. 8). (see Appendix B) The competencies start with “the use of all of the senses to explore a variety of environments and the capacity to evaluate and reflect on these explorations, the observation and recording of information, ideas and feelings about environments” (BIEEC, 2005, p. 8), through to divergent thinking skills and “the selection, design and implementation of appropriate courses of action on environmental issues” (BIEEC, 2005, p. 8). These competencies reflect higher order thinking skills that require students to manipulate information and ideas. Manipulating information and ideas through these processes allows students to solve problems and discover new (for them) meanings and understandings. The Centre also states that environmental education provides an ideal mechanism to achieve the Mayer Key Competencies (Mayer, 1992).<sup>11</sup> (see Appendix C)

As this discussion shows, Centre programs, as identified in the *Prospectus* (BIEEC, 2009) display both an environmental education and education for sustainability orientation. It is acknowledged, however, that the programs and approaches used at the Centre are generally more aligned with my earlier discussions of environmental education than with education for sustainable development. At the Centre, programs are underpinned by a “constructivist paradigm” (BIEEC, 2005, p.

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<sup>11</sup> This is a list of employment-related key competencies for post-compulsory education and training contained in a report of a Committee headed by E. Mayer to advise the Australian Education Council and Ministers of Vocational Education, Employment and Training.

17) through semi-structured learning experiences designed by the research site. The distinctiveness of environmental education at the research site lies in its claim to achieve Martin's (1993a, 1993b) belief that outdoor experiences have the ability to promote critical reflection and learning focused on human-nature relationships (BIEEC, 2005) and the Board of Teacher Registration (1993) claim that education outside of the classroom "increases awareness of aspects of the environment" (p. 22).

Analysis of the Centre's Curriculum Framework (BIEEC, 2005) also appears to support many of the early writers more traditional views of environmental education. Given that the Centre was established in 1977, it can be considered to have maintained a tradition of environmental education from those early days. It states clearly in its curriculum document that "the concepts encapsulated in the phrase *in, about and for the environment* provides the basis for the curriculum at BIEEC" (BIEEC, 2005, p. 4). A further understanding of the Centre's interpretation of environmental education can be found in the Curriculum Framework, in which programs are characterised as meeting four key elements common to what the document claims is 'best practice' in environmental education programs: "its integrated nature, a concern for the development of environmental awareness, a problem-solving and activity-centred orientation and its decision-making component" (p. 17). The Framework goes on to provide details of what should characterize an environmental education program if it is to be best practice. (see Appendix D)

### **2.1.8: Terminology in this thesis.**

In the previous discussion, I have identified that environmental education has multiple dimensions. When linking the terms 'education' and 'environment', it was noted that there are several types of education, or adjectival educations (Hopkins, 2006). Debates continue to occur in terms of the priority and usefulness of different interpretations of the field (Reid, 2011; Sauv e, 2005). However, as M<sup>c</sup>Keown and Hopkins (2003) propose, debate over which terminology should be adopted is ultimately damaging and fruitless. In an analysis of the Centre's Curriculum Framework (BIEEC, 2005), it states clearly that "the concepts encapsulated in the phrase *in, about and for the environment* provides the basis for the curriculum at BIEEC" (BIEEC, 2005, p. 4). Centre programs, as identified in the *Prospectus*

(BIEEC, 2009) display both an environmental education and education for sustainability orientation as well as environmental studies, outdoor education and environmental interpretation. Therefore, when drafting this thesis, I am faced with the problem of which term to use. Although the curriculum of the research site contains a multiplicity of forms of education *in* the environment, the research site is called an environmental education centre. Therefore, in this Thesis, I shall use the term ‘environmental education’ to refer to all manifestations of education and the environment examined at the research site.

## **2.2: Environmental Education Research**

Having provided a substantive structure of the field in which the research was situated, in the second section of this literature review, I examine the environmental education literature that has guided the framing of the design of this study. This examination is carried out around two themes. First, much environmental education research has focused on outcomes, in particular, measuring behavioural change as the dominant topic. Consequently, much of the research literature is characterized by methodological uniformity. Second, there has been an increasing call in recent literature for researchers to explore new approaches to examining, more deeply, learning processes in environmental education. In summarising these arguments, I identify a niche for my research which I discuss in the third section.

### **2.2.1: Dominant topics and methodologies in environmental education research.**

Various authors have identified that the dominant topics in the environmental education research field centre around the study of learning outcomes, as distinct from the learning processes (Hart & Nolan, 1999; Payne, 1997; Rickinson, 2001, 2003, 2006; Zelezny, 1999). Hart and Nolan (1999) reviewed hundreds of journal articles, abstracts, books, and conference proceedings published between 1993 and 1999 and identified that the crucial part of research dealing with learning in environmental education is poorly represented. They found that major programs of research were based on an assumption that the primary goal of environmental education is responsible environmental behaviour that can be predicted, measured,

and assessed psychometrically through research dominated by applied science methods.

Much of the research investigating student thinking (attitudes, beliefs, values, perceptions) in environmental education has also tended to adopt a behaviourist orientation and to be positivistic in nature, that is, looking for correct answers, appropriate behaviours, or acceptable levels of knowledge (Rickinson, 2001). A consequence of research investigating environmental behaviour from a view that it can be predicted, measured, and assessed is that studies through the 1990s have tended to examine changes in knowledge, attitude and/or behavior. Smith-Sebasto and Semrau (2004) found in their research that too many studies were based on the more traditional views of environmental education, that is, there was a focus on knowledge or education *about* the environment (Fisman, 2005; Kenney, Militana, & Donohue, 2003; Lindemann-Matthies, 2002; Powell & Wells, 2002). Other studies centred on measuring attitudes towards the environment (Christenson, 2004; Hyun, 2005; Littledyke, 2004; Myers & Saunders 2002; Wickenberg et al., 2004).

Reflecting these characteristics of environmental education research, research at the environmental education centre level has also focused on identifying whether, and to what extent, specifically designed educational interventions yield changes in learners' environmental characteristics (Athman & Monroe, 2006; Hart & Nolan, 1999; Rickinson, 2001; Sauvé & Berryman, 2003). Learners are viewed as individuals whose behaviours can be changed through educational programs. The underlying assumption is that intervention can change key attitudes and/or actions with the right program leading to proper behaviour in an input–output fashion, as illustrated in Figure 2.2.



**Figure 2.2:** Traditional or mainstream model for understanding experiences at centres

However, more recent research has sought children's views about programs such as the research by Smith-Sebasto and Obenchain (2009), who sought children's perceptions of a residential environmental education program at the New Jersey School of Conservation.

As intimated above, environmental education research in the 1970s was dominated by applied science methods predominantly within the quantitative paradigm (Bogner, 1998; Dettmann-Easler & Pease, 1999; Dresner & Gill, 1994; Emmons, 1997; Haluza-Delay, 2001; Hart & Nolan, 1999; Heffernan, 1998; Knapp & Poff, 2001; Moseley, Reinke, & Bookout, 2002). Applied to outdoor environmental education, these studies aimed at measuring the extent to which environmental education programs can effect changes in some students' environmental behaviours and attitudes, especially in intensive short-term, outdoor, experience. That is, most of the research has focused on identifying the positive advantages of these programs in producing outcomes. One example with a Queensland perspective was Ballantyne, Packer and Everett's (2005) research. Their study sought to measure young children's environmental learning across the dimensions of knowledge, skills, attitudes and behaviours during a visit to one Queensland environmental education centre. Their research demonstrates how the impact of environmental education programs on student environmental learning can be measured, even with young children. Although the research gave valuable insights into learning at this environmental education centre, again, the research emphasised young children's environmental learning outcomes.

Recent research has expanded the scope of topics and methodologies in environmental education research. For example, Bruni, Chance and Wesley (2012) developed an Environmental Motives Scale (EMS) to measure an individual's concerns about environmental issues. Howley, Howley, Camper and Perko (2011) provide a detailed description of how one school incorporated place-based, environmentally conscious education over the course of more than a decade. Zint, Dowd and Covitt (2011) write about using the world wide web with *My Environmental Education Evaluation Resource Assistant* (MEEERA) to enhance environmental educators' evaluation competencies. Reis and Roth (2009) examine the importance of emotion in the pedagogy of environmental education. The results of research by Roberts (2011) show the use of a video diary technique to be much

more successful in capturing the development of student learning than written diaries. What these recent studies show is that the dominant paradigm of applied science methods is being challenged by alternative methods. Indeed some research, such as by Lawrence (2012), who studied the relationship between visitation to natural areas, place identity and environmentally responsible behaviours demonstrates the changing nature of research with her examination of the importance of 'Place' in environmental education.

In summary, various researchers have identified that the dominant topic in environmental education research has been the study of learning outcomes, as distinct from learning processes. This focus on measuring behavioural change has privileged scientific, quantitative, psychological research approaches. For residential outdoor/environmental education centres, the aim of many programs has been to effect changes in environmental behaviour and attitudes through the introduction of intensive, short-term, education experience with the 'right' program leading to 'proper' behaviour in an almost input–output fashion. Although rich insights have been gathered from traditional research methods, I argue that there is a need for research to consider alternative approaches that builds on this previous knowledge but provides new and different ways of thinking about environmental education and about environmental education research.

### **2.2.2: The call for alternative research approaches.**

I identified above that there are calls for research in environmental education that focuses on educational experiences, preferences and learning processes rather than focusing on environmental ideas and perceptions and learning outcomes (Hart, 2003; Reid and Nickel, 2003; Rickinson, 2001). Responding to this call requires “a paradigm shift away from what has traditionally been considered the 'correct' way to conduct research” (Bocarro & Richards, 1998, p. 107). Marcinkowski (2003) argues that the failure to look beyond studies examining students' thinking (knowledge, attitudes, and behaviour) limits the scope and value of educational research efforts in environmental education. In recognition of the dominance of research that investigates the evaluation of environmental education outcomes, Reid and Nickel (2003) called for a “need to focus more on educational experiences and preferences and learning processes, than on environmental ideas and perceptions and learning

outcomes” (p. 161). Meyers (2006) also identified the need for change in an examination of practice, research and theory in environmental education. The Australian Research Institute in Education for Sustainability confirmed this continuing gap in current knowledge at the environmental education centre level in the Australian context when, in 2005, it exhorted environmental education centres to research learning processes.

Recent research in Queensland has contributed to addressing this call. Ballantyne and Packer (2008, 2009) undertook a study of Queensland environmental and outdoor education centres seeking to link student performance in environmental education outcomes to discussions of pedagogy. The pedagogical framework examined in centres was that of the four dimensions of Productive Pedagogies (Lingard, et al., 2001) used in Queensland schools. The study found what had the greatest impact on student learning is what Ballantyne and Packer (2008, 2009) refer to as a ‘Fifth Dimension’ of the Productive Pedagogies Framework that relates to experience-based learning. They also identified the features of this dimension, which includes: learning by doing, being in the environment, a supportive learning environment, real life learning, sensory engagement and local context. However, they did not explore how this dimension functioned in practice.

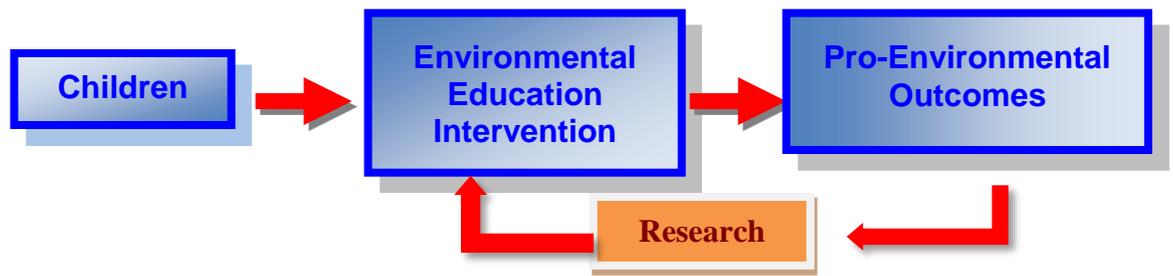
In recent times, then, researchers have been adopting a wider range of approaches to environmental education research. Smith-Sebasto, this time with co-writer Walker, (2005) describe how they used a qualitative methodology with a grounded theory approach in the exploration of student perceptions of the residential environmental education program at the New Jersey School of Conservation to identify which areas of the program were most meaningful, most confusing, and most interesting to the students. Griffin (1999) has suggested entirely new indicators that could be used to identify engagement. These included children initiating their own learning, purposefully manipulating artefacts and ideas, sharing with peers and experts and showing confidence in personal abilities. Christenson (2004) used children’s literature to explore different perspectives in relation to environmental issues. Knapp and Benton (2006) utilised a phenomenological approach to investigate the recollections of a fifth-grade class from an elementary school in a rural town in Idaho (United States of America) of an environmental education residential program, and as a result offered a model of learning for residential

environmental education programs structured on episodic/semantic memory systems. Littledyke (2004) interviewed primary school age children from a school in the United Kingdom to find out their understanding and views on issues related to environment and science. Several qualitative studies (Bogner, 1998; Dresner & Gill, 1994; Emmons, 1997; Powell & Wells, 2002) used questionnaires designed to ascertain the environmental literacy levels of students. For example, Emmons (1997) studied the value of formal field experiences, Bogner (1998) researched short-term outdoor ecology education programs, Powell and Wells (2002) have examined the role of experiential science lessons, while Hopwood (2007) examined children's perspectives of classroom experiences. These mostly qualitative studies, however, continue to reflect an issue identified earlier in this chapter, that is, there are many possible forms of environmental education (Dettmann-Easler & Pease, 1999; Rickinson, 2001), and "evaluation is important to determine which forms are most effective" (Dettmann-Easler & Pease, 1999, p. 33). These studies were concerned with finding the best possible way of acquiring knowledge and behaviours, "possibly through a behavioural or cognitive-behavioural process" (Sauvé & Berryman, 2003, p. 171).

Some researchers (Hart and Nolan, 1999; Reid and Nickel, 2003; Rickinson, 2001) call for research to go well beyond scientific, quantitative, psychological research approaches and to refocus on educational experiences, preferences and learning processes. In recognition of this call, in the next section I present an argument for the method and topic adopted in this research.

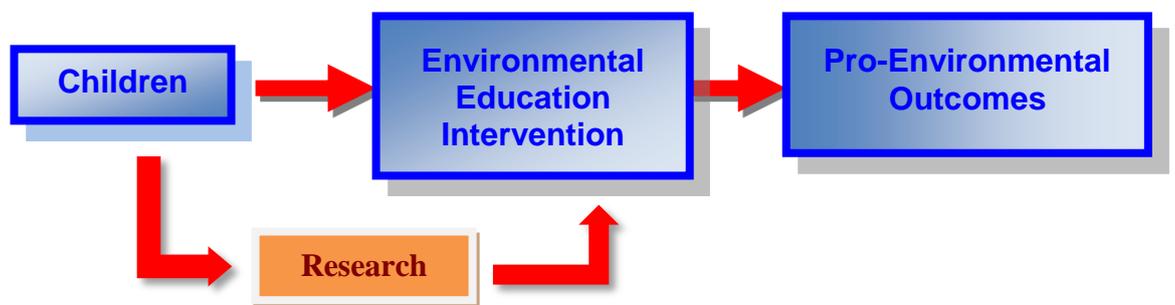
### **2.2.3: Argument for this research.**

As discussed in the previous section, in recent times the field of environmental education has been moving away from attempting to prove that environmental education programs are effective. Instead, research is seeking to understand the learning processes that are involved in such programs. Here, I argue that research conducted from different epistemological foundations to those that have been predominant in the past may provide new understandings. I argue, therefore, for a shift from research focused on outcomes to a child experience approach to research. The concepts associated with traditional environmental education research that focuses on outcomes can be illustrated, as in Figure 2.3.



**Figure 2.3: Research focused on outcomes**

In Figure 2.3, the child engaged in the environmental experience is outside of the research loop. There is a backward flow, where the researcher uses data from the outcomes to explore the nature of the experience. While process-oriented qualitative studies drawing on ethnography, case study, phenomenology and biography have not been as prevalent as outcome-based approaches, there is a growing recognition that these types of studies offer important insights not afforded by outcome-based approaches (Allison & Pomeroy, 2000; Richards, 1997; Rickinson, 2001). Missing from the research have been alternative approaches investigating a child’s perspective. Using a sociology of childhood perspective, a child-centred approach to research is illustrated in Figure 2.4.



**Figure 2.4: Child experience approach to research**

In Figure 2.4, the focus of research has moved to the left of the child-experience-outcome continuum. In this figure, the child engaged in the environmental experience is now in the centre of the research loop. By moving to the left, this study moves away from the earlier focus on outcomes research. There is a ‘forward’ flow, where the researcher uses data from the participants to explore the nature of the experience. The ‘forward’ flow draws on key theoretical assumptions derived from sociology of childhood (Corsaro, 2005; Prout & James, 1990). The

starting point is the recognition of children as ‘environmental stakeholders’ and engaged participants in their own environmental learning (Chawla, 2002; Hacking [Barratt], E. Barratt, R., & Scott, 2007; Spencer & Woolley, 2000).

The sociology of childhood perspective provides a valuable theoretical framework for this study. This research into children’s understanding of their own experiences presents an opportunity to gain a deeper understanding of the children’s perspectives about their experiences at an environmental education centre. As an environmental education practitioner, the catalyst for this research was my desire to enhance environmental education experiences for children. As an environmental education researcher, I sought to address my practitioner concerns by listening to children and asking them to identify what aspects within an environmental education program contributed to the quality of their experience at the Centre.

In this section, I have reviewed the research literature and identified the dominant topics and methodologies of research within environmental education and about environmental education centres. It is from this review that the structure of my own study springs. My desire to use a different model of research to examine the nature of environmental education centres has created a research niche for this study, that is, investigating children’s experiences at my centre. In the next section, I examine the literature that describes the alternate perspective, sociology of childhood, to research approaches that has guided this research.

## **2.3: A Focus on Children**

The third section in this chapter investigates a conceptual approach known as the sociology of childhood. This approach provided a theoretical framework that guided this study. In this section, the concept of ‘childhood’ as a social construct is discussed. A discussion of a sociology of childhood perspective follows in which it is proposed children engage in complex understandings of how they interpret their own experiences and actions. The section concludes with the argument that the sociology of childhood perspective provides a valuable lens for this research.

### **2.3.1: Childhood as a social construct.**

Until recently, sociology has paid relatively little attention to children and childhood (Corsaro, 2005). This is not to say that children have been ignored, but

rather they have been marginalised mainly because of their subordinate position in societies. This marginalisation is related to traditional views of socialisation, which relegate children primarily to a passive role. Adults often view children with an eye to what they will become, that is, future adults. In other words, children have not typically been viewed in ways that appreciate who they are now, as individuals with their own capabilities, understandings, needs and desires (Berk, 2009).

First, it is necessary to define some key terms. Childhood is a social and cultural construction while children are physical beings (Heywood, 2001). As a structural form, childhood is a temporary period for children in their lives but it is a permanent category in society. Childhood is not a new phenomenon. Childhood has been viewed differently in different eras in history and by different social and ethnic groups, resulting in how adults view children differently in different contexts (Heywood, 2001; James, Jenk, & Prout, 1998).

The concept of childhood consists of ideas that have, through time, created a particular vision of the child. Jalongo, Stevenson, Davis and Stanek (2010), in their description of adult attitudes to childhood note:

Childhood is often remembered by those no longer in it as a carefree, happy time; a time for exploration, for discovery and for satisfying one's curiosity. Yet childhood has come under strain as a result of demands made by the very same adults. Instead of being viewed as a stage of life worthy of respect in its own right, with its own unique features, it is now too often viewed as disconnected from important human endeavours, or at best as preparation for the future. (p. 1)

According to James, Jenks and Prout (1998), childhood is an intensively governed sector of personal existence, and the current needs and desires of children are often seen as causes for alarm by adults, that is, as social problems that are threatening and need to be resolved (Waksler, 1991). As elsewhere in the contemporary, industrialised Western world, Australian children are subjected to unprecedented levels of surveillance and control, driven by parental and institutional concern about environmental risk and crime (Cadzow, 2004). These concerns have been described as an atmosphere of child panic (Honore, 2008; Wade, 2008), where there is exceptional anxiety around the vulnerability of the child (Cadzow, 2004). This concern is not to say that there are not real threats to children, but that there is a level of unprecedented anxiety around the vulnerability of children.

In recent decades, there have been significant shifts in thinking about childhood that have impacted on education. One is the repositioning of aspects of contemporary social life, such as an ageing population. Reduced fertility rates mean the child has increased scarcity value and is, thus, more precious (Cadzow, 2004). A second shift is the children's rights perspective such as detailed in the *Convention on the Rights of the Child* (United Nations International Children's Emergency Fund, UNICEF, 1989). The United Nations General Comment (No. 7) on *Implementing child rights in early childhood* (United Nations Office of the High Commissioner of Human Rights, 2005) identifies the rights of children to express their views and that these views should be taken into account in "the development of policies and services, including through research and consultations" (p. 7). A third shift relates to assumptions about children's competence. New ways of conceptualising children's competence stem from the rise of constructionist and interpretive theoretical perspectives in sociology (Connell, 1987; Corsaro, 1997; Danby, 2002; James, Jenks, & Prout, 1998). Childhood is being redefined, therefore, in processes of social action with recognition that the child is an active social agent.

Most of the thinking about children and childhood derives from theoretical work on socialisation with two different models of the socialisation process proposed (Jenks, 1982; Prout, 2000). The first is a deterministic model, in which the child plays a passive role. Here, the child is seen as something that must be shaped and guided by external forces in order to become a fully-functioning member of a society. In the second, a constructionist model, the child is seen as an active agent and eager learner (Corsaro, 1997, 2005; Danby, 2009; James, Jenks, & Prout, 1998). Childhood here is defined in the processes of social action, with the child constructed as being active, rather than passive (Jenks, 1982). The child is involved in gaining knowledge from their environment and constructing their own interpretations of the world. Central to this view of socialisation is the appreciation of the importance of collective, communal activity (James, Jenks, & Prout, 1998). As Corsaro (2005) points out, "in dealing with problems, the child always develops strategies collectively - that is, in interaction with others" (p. 7). Constructivism stresses the child's active role in participation in the social world.

A child's active role can be explained by the concept of interpretive reproduction (Corsaro, 2005). Interpretive reproduction views children's evolving

membership in their cultures as reproductive, rather than linear (Corsaro, 2005). According to this reproductive view, children do not simply imitate or internalize the world around them. They strive to interpret or make sense of their culture and to participate in it. Therefore, in attempting to make sense of the adult world, Corsaro (2005) believes that children “come to collectively produce their own peer worlds and cultures” (p. 24). Interpretive reproduction provides a basis for a new sociology of childhood and replaces linear models of children’s individual social development with the collective, productive-reproductive view. When applied to the sociology of childhood, constructivist and interpretive perspectives argue that “children and adults alike are active participants in the social construction of childhood and in the interpretive reproduction of their shared culture” (Corsaro, 2005, p. 7). As co-constructors, during this period of their lives, children both affect and are affected by society and, since they form a group within society, have unique needs and rights. Children are not inadequate or partially formed adults, but rather, they have their own set of interests that should be recognised as such.

Sociology of childhood perspectives has been developed by earlier thinkers such as Alanen (1988, 1992), Qvortrup (1987, 1991, 1994) and James and Prout (1997). During the 1980s and 1990s, these and other writers began to question much twentieth-century research that suggests that childhood is experienced in a similar way by all children. In particular, they questioned the developmental psychology idea that children progress through preordained stages of development to maturity. Children engage in complex understandings of how they interpret their own experiences and actions. Some researchers (Danby, 2002; James, Jenks, & Prout, 1998; Waksler, 1991) argue that children are competent practitioners actively participating in the construction of their worlds rather than childhood merely being a stage that is developing towards adulthood.

The theoretical frameworks of social constructionism highlight new ways of representing and understanding children and childhood. In this perspective, children are “active participants and competent interpreters of their own worlds” (Danby & Farrell, 2004, p. 38), which, in turn, contributes to raising the status of childhood (Mayall, 2002). These approaches view children as “capable and competent learners who construct their knowledge through participation in authentic, meaning social experiences” (Hedges & Cullen, 2003, p. 19). Salamon (2011) tells us that children

are “quite adept at tuning into and acting on the nuances of a social and emotional world...and this appears to...counter some cultural expectations of young children’s capabilities” (p. 5) and “from a surprisingly young age, children are capable of a level of sophisticated social understanding and interaction for which they are rarely given credit” (Goodman & Tomasello, 2008, p. 21). These theoretical frameworks recognise a diversity of childhoods and children’s agency. James, Jenks and Prout (1998) describe this as a ‘new paradigm’ of the sociology of childhood, in which children are understood as “social actors shaping as well as shaped by their circumstances” (p. 6). Consequently, the new ways of representing and understanding children and childhood emphasise children’s agency.

Prout and James (1990) identify key features of this redefinition of childhood. First, ‘childhood’ is a social construction. Second, as a social construction, there are a variety of childhoods rather than a single universal phenomenon. Third, the social relationships and cultures of children have inherent value. Fourth, children are not passively shaped by social processes but actively construct and determine their own social lives. Therefore, children are not deficient adults and less cognitively sophisticated. Rather than emphasising such quantitative differences, children’s lives are merely qualitatively different from those of the adults (Loreman, 2009). Being a child has value in its own right and childhood is more than a passing phase between infancy and adulthood and there are many diverse childhoods created through social relationships in different settings. Smith (2007) summarises this paradigm and identifies that:

Children construct their social worlds; that they have agency; that they are participants in social processes; that they are persons not property; that they constitute multiple voices rather than a collective and undifferentiated class; and that childhood should be given as high (if not higher) priority. (p. 151)

The sociology of childhood literature has identified that childhood is not a new phenomenon. Childhood is a social construct that is viewed differently in different eras in history and by different social and ethnic groups, resulting in how adults view children differently in different contexts. However, childhood is being redefined in processes of social action with recognition that the child is an active agent. In the next section, I examine literature from the sociology of childhood perspectives with the intent to explain why this is an appropriate theoretical

framework for this research as it can contribute to addressing the issue of uniformity in past methodologies in environmental education research.

### **2.3.2: Children's voice and research.**

There have been considerable shifts made in the last fifteen years in bringing children's voices into research (Mason & Danby, 2011), moving from a focus on the child as object to a focus on the child as a participant in research whose perspectives are heard in matters concerning them. This approach identifies "the importance of including children as subjects whose perspectives are heard in matters concerning them is gaining momentum within child research" (Mason & Danby, 2011, p. 1). Komulainen (2007) suggests a tension exists around social research with children typically positioned as "agentic subjects with distinct voices" (p. 12). Komulainen (2007) found that a sociological deconstruction of children's voices becomes necessary so that the notion of voice is understood as a multidimensional social construction. Voices manifest discourses and the practices and contexts in which they occur. As a consequence, voices are always social (Alvesson, 2002). The use of the term 'voices' identifies "a plurality that differs significantly from many conceptualisations that assume voice as a singular entity" (Dillon, 2010, p. 14). An advantage of this pluralistic interpretation is the possibility for more dynamic and multi-faceted accounts from children.

The idea that people of any age are all equivalent and might all communicate through the same voice is based on a liberal theory of interaction and is part of a wider ethical project of establishing a culture where children are seen as human beings in their own right, as worth being listened to. Indeed, Roberts (2000) identified that not only could children answer questions in research but also that they enjoyed being asked for their opinions. For example, research about the role of children shows that children are concerned about the quality of the environment and have a clear desire to fulfill their role as local stakeholders (Chawla, 2002; Hacking [Barratt], E. Barratt, R., & Scott, 2007; Spencer & Woolley, 2000).

In this research, I recognise the role of children as environmental stakeholders. Adult researchers may find themselves uneasy in their participation in children's peer culture since "the crucial distinction that makes children is that they are not adults" (Mayall, 2002, p. 2). However, Matthews (1980, 1984) reduces the

gap between adults and children when he describes children, aged eight to eleven, engaged in conversations with adults. These conversations illustrated children's reasoning and their enthusiasm for such discussions.

In considering the ethics and practice of this study, there are complex ethical and epistemological considerations as “studying children in the contemporary world is inevitably political” (Komulainen, 2007, p. 25). The question arises whether ‘listening to children’ in social research is an empowering or a rhetorical device. That is, is it simply a device that attempts to furnish young children with a western value of competence and can exercise agency but is merely replacing one essentialist argument (that children are incompetent) with another (that they are competent) (Danby, Ewing & Thorpe, 2011; Danby & Farrell, 2004 ; Hughes, 2007; Komulainen, 2007). Before one can simply give a voice to children, there is a need to acknowledge that there are ambiguities involved in human communication, and that these ambiguities result from the socialness of human interaction. Roberts (2000) believes that more listening may not inevitably mean more hearing.

Listening to children, therefore, is not straightforward. The inclusion of children in this research may seem at first to be a sound ethical pursuit, even though there may be significant barriers to communication. It is possible that children can be, at the same time, vulnerable and competent; however, their positioning in this respect tends to be in the hands of the adult researcher. At the end of the day, it is the researcher who initiates communicative events with children, with the research styles and purposes framing to a degree the subsequent adult–child communication. However, opening up communication channels with children so as to give choices allows children to exert some control over the research experience.

Research that draws on sociology of children approaches aims to adopt research *with* children rather than research *on* children. This perspective is produced, not from the standpoint of looking down and from the adult point of view, but of looking up. Listening to children is a key tenet of sociology of childhood and “is central to recognising and respecting their worth as human beings” (Roberts, 2000, p. 229). As Christensen and James (2000), working from within a sociology of the child perspective, explained, “we need to treat children as social actors in their own right in contexts where, traditionally, they have been denied those rights of participation and their voices have remained unheard” (p. 2). Thus, recognizing and accounting for

children's 'voices' can be researched in an ethical fashion (Alderson, 1995; Spyros, 2011). Reflexivity is a strategy for ensuring ethical research conduct. Through reflexivity, I recognise adult mediation in the construction of children's voices. Reflexivity involves reflecting on what I hear as researcher and how these interactions frame the dynamics of adult-child interactions.

We cannot take what is meaningful to children in terms of the environment for granted (Hopwood, 2007). Adult discourses, teacher perspectives and practice, and curricular documents cannot fully account for how children experience environmental education. Dahlberg, Moss, and Pence (1999) caution adults against imposing their knowledge on children, as such imposition can diminish the status of children. "The abilities of children and young people to form opinions are often neglected or underestimated by adults; in fact they are often discouraged from articulating and expressing their opinions" (Kwan & Miles, 1998, p. 12). Nine and ten year olds live in a phenomenologically very different world than adults and although adults "may spend much time interacting with our children, we [adults] do not fully know them [children]. Moreover, we may not even have the desire or ability to understand what they do tell us" (Fine & Sandstrom, 1988, p. 9). Adults are limited by their tendency to process children's talk through adults' own view of the world in what is known as the adult-centric intellectual culture of understandings (Goode, 1986). In addition, there is a pattern of linguistic discourse that presents a mismatch between young children's and adults' perceptions of the natural environment as described by Hyun (2005):

When we (adults) study young children, we may often assume that our view of the world will be their (children's) view, although we may believe that adults are more knowledgeable and sophisticated than young children. That kind of adult-centric perspective may cause us to not pursue an understanding of young children's culture. Children have culture of their own: a culture of childhood. In order to learn young children's culture in relationship with nature, I positioned my researcher's eye in exploring children's competencies—what they can do that most adults ignore—to capture the intellectual culture of how children can do things and how adults are responding to young children's competencies. (Hyun, 2005, p. 201)

In the literature on children and childhood, childhood is identified as a social and cultural construction. The literature also identifies that there are new ways of conceptualizing children's competence that arise from constructionist and

interpretive theoretical perspectives in sociology. It is on this basis, that this researcher believes that the sociology of childhood perspective provides a valuable new lens for this study. There have been considerable shifts made in bringing children's voices into research (MacNaughton & Rolfe, 2010; Mason & Danby, 2011) and there have been shifts in bringing children's voices into environmental education research (Davis, 2009; Hacking [Barratt], E. Barratt, R., & Scott, 2007), but only to a limited extent. Therefore, this study contributes to providing children with a voice in the sphere of environmental education in a manner rarely given before.

## **2.4: Summary of Chapter**

The chapter began with a brief overview of the history of environmental education and provided a description of the research field. Environmental education has multiple dimensions and histories, and tensions exist within the field. As a consequence, there are differing interpretations of, and approaches to, pedagogy and curriculum, which have given rise to ongoing philosophical, curriculum and pedagogical debates. This examination of the literature situated the research field. In addition, the chapter described the environmental education centre, the site of the study. Here, the curriculum seeks to provide education *for* the environment in addition to environmental studies and all *in* the environment, but while not being an outdoor recreational camp.

The chapter identified that research approaches focused on outcomes have dominated the field and missing from these studies is a focus more on educational experiences, preferences and learning processes. Major programs of research were based on an assumption that the primary goal of environmental education is responsible environmental behaviour that can be predicted, measured, and assessed psychometrically through research dominated by applied science methods. This chapter identified that there are calls for research in environmental education to focus on educational experiences, preferences and learning processes rather than focusing on environmental ideas, perceptions and learning outcomes. In recent times, researchers have been adopting a wider range of approaches to researching aspects of environmental education.

The reviews established the need for, and the nature of, the research study. This discovery has created a research niche by focusing on investigating children's experiences at an environmental education centre a shift from research focused on outcomes to a child experience approach. The sociology of childhood perspective provides a valuable theoretical framework for this study. This research into children's understanding of their own experiences presents an opportunity to gain a deeper understanding of their perspectives about their experiences at an environmental education centre. I sought to collect data in a case study with sociology of childhood perspectives providing an alternative theoretical framework. In the next chapter, I describe the methodology and research methods of the study.



# Chapter 3: Methodology and Methods



Figure 3.0: Wordle of the 30 most common words in Chapter 3



## **Chapter 3: Methodology and Methods**

The methodology and research methods of this study are discussed in this chapter. There are eight sections to this chapter that first examines the assumptions behind the focus of the study and discusses the methodological framework. The second section explores my multiple roles as a “researching professional” (Guillemin & Gillam, 2004). The third section describes the participants, and the fourth and fifth sections outline the data gathering process and the data folios. The analysis process is described in the sixth section, and issues of validity and reliability in research and the ethical considerations of the study in the seventh section. Finally, limitations of the study are described.

### **3.1: The Methodological Framework**

This research presents an alternative approach to an outcomes-focused, objectivist epistemology common in environmental education research. Environmental learning is “too important a topic for researchers not to think creatively and strategically about the kind of research program that is needed” (Rickinson, 2006, p. 453). Hatch (2007) states that “describing a methodological theory base is directly related to, but not the same as, identifying a research approach. Methodological theory is that which is used to describe and explain the research approaches to be applied—the methods of the study” (p. 229).

Case studies are useful in educational research to describe context-specific educational situations (Kyburz-Graber, 2004). A case study is defined as “an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not to clearly defined” (Yin, 1994, p. 13). Given the context of this study, a case study approach is appropriate as it sought to listen to children’s perspectives of their experiences of an environmental education program at one particular site. When context is an important aspect of the research, as is here, Stake (1995) describes this as an ‘instrumental case study’.

A goal of case study research is to “gather evidence in such a way as to make it accessible to subsequent critical assessment, to internal and external criticism and triangulation” (Dillon & Reid, 2004, p. 25). Typically, techniques such as interviews and documentary analysis are used to assemble a detailed account of a specific

institution. Seen from an epistemological viewpoint, case study research builds on hermeneutics, that is, on understanding a phenomenon. Procedures in a case study involve gaining access to this phenomenon through data collection (Stake, 2005). The collection and analysis of data are done in such a way to present the relevant situations as objectively and as free from prejudices as possible (Kyburz-Graber, 2004).

Understanding and capturing the complexity of the situation requires a range and variety of quality control criteria. Yin (1994) suggests five quality control criteria. Here, I examine this research in relation to each of Yin's (1994) criteria:

i) Theoretical basis and case study protocol: Case study research has a theoretical basis as a point of reference for data interpretation. In this research the children's perspectives of their experiences are analysed, and this point of reference can be found in the theoretical approach that constructs children as competent and reliable interpreters of their own experiences using the theoretical understandings based on the sociology of childhood.

ii) Triangulation in methods and procedure: Case study research uses multiple data sources and builds on multiple perspectives for interpretation, a procedure called triangulation. Triangulation is understood as "involving varieties of data, investigators, and theories, as well as methodologies in the investigation of the same phenomenon" (Denzin, 1989, p. 237). The multiple data sources included site documents, conversations and journals. Following Janesick's (1998) advice, I carried out data analysis to reduce the data into a manageable format, purposefully seeking examples to build the narrative of this thesis. I used triangulation, not just of multiple sources of data, but by recognising that the theory I have discussed in the literature review provided support to the study's reliability and validity. Accepting that there is no one best method of research, I stayed close to the data and drew on an inductive approach to data analysis with the meaning, categories, themes and patterns coming from the data.

iii) Documentation of a case study research project and case study report: This case study report is compiled in the form of this thesis. The reliability of the study can be evidenced through providing extensive data extracts in the data analysis with the data extracts drawn from the original audio recordings of the children's conversations. This allows for auditability of the research to check for consistency of

statements and conclusions. Peräkylä (2004) believes that documentation also means that the quality of transcripts has important implications for the reliability of the research.

iv) Designing a chain of evidence: This case study displays distinct, traceable evidence in a step by step manner. All statements were linked to a code system that emerged from data material. Here, my task was to understand the children's accounts of their environmental experiences. Outcomes were grounded in the data that came from children. This process provided a chain of evidence.

v) The logic of generalisation: Generalisation is one of the most hotly debated problems in case study research, and "many criticisms stem from the way in which it is handled" (Kyburz-Graber, 2004, p. 62). In this research, with its sociology of childhood perspective, my study raised theoretical questions and provided a "methodology theoretical replication logic" (Yin, 1994, p. 64). This logic means that research may be generalised to the extent to which the methodology can be taken up in other situations.

One tension that exists in case studies is the internal need for contextual relevance and the external demand for transferability and abstraction. Case studies tend to be introspective and grounded within one specific institutional reality. However, by providing a rich description of the study site, in addition to an analysis of the case, it may make possible some capacity to apply the results of research in this situation to other similar situations. By applying findings to other contexts by the reader, a degree of transferability is possible, as a direct function of the similarity between the study context and the context of the persons seeking to make the transfer (Lincoln & Guba, 1985). Therefore, a case study can be useful beyond the immediate context for theorising about practice (Cochran-Smith & Lytle, 1993). Generalising from case studies is less of a problem than is usually assumed (Fluvbjerg, 2004; Silverman, 2006).

This study is a case of one environmental education centre and four five-day programs conducted at the Centre over a four week period. I examine the details of this case study in succeeding sections. However, before undertaking that examination, I outline the role of the researcher and the participants in the study.

## **3.2: The Role of the Researcher**

In this section, I examine my role as researcher. However, in order to situate the discussion of my role and to better understand the significance of this discussion, I first discuss the concept of reflexivity in research. In the second section, I discuss my multiple roles as a qualitative researcher.

### **3.2.1: Researcher Reflexivity.**

I have used the principle of reflexivity, resulting in “rigorous examination of one’s personal and theoretical commitments” (McMillan & Schumacher, 2006, p. 327). There is no sense that the researcher is an objective observer but, rather, “there is an ongoing examination of how the subjectivities of researchers impact on the research process, and vice versa” (Dockett & Perry, 2007, p. 51). Reflexivity in research is not a single entity but an active, ongoing process at every stage of the research (Schön, 1991). In this section, I discuss reflexivity in research and the potential implications for this research. As England (1994) points out, “research is a process not just a product” (p. 87). Part of the reflexivity process involves reflecting on, and critically re-evaluating, the research I am undertaking. Reflexivity is a familiar concept in the qualitative tradition, and is defined as a “self-critical sympathetic introspection and the self-conscious analytical scrutiny of the self as researcher” (England, 1994, p. 87).

Reflexivity, or being reflexive, is “often claimed as a methodological virtue and source of superior insight, perspicacity or awareness, but it can be difficult to establish just what is being claimed” (Lynch, 2000, p. 26) when the term is used, and there are different interpretations of what is meant by ‘methodological virtue’. Neopositivist empiricism specifies “a strict dichotomy between object and subject as a prerequisite for objectivity” (England, 1994, p. 242) as a methodological virtue. Such an epistemology supports the idea that the researcher is an omnipotent expert in control of both passive research subjects and the research process. Postmodernist research thinking expresses concerns about the naivety of assuming that the interviewee is simply an informant (Alvesson, 2002). Hertz (1997) notes that “the reflexive researcher does not merely report the ‘facts’ of the research but also actively constructs interpretations (What do I know?), while at the same time questioning how those interpretations came about (How do I know what I know?)”

(p. viii). As Guillemin and Gillam (2004) note, “reflexivity in research is thus a process of critical reflection both on the kind of knowledge produced from research and how that knowledge is generated” (p. 274). Therefore, reflexive self-criticism is ‘constructive’ in the sense that it enhances, rather than undermines, the positive status of any knowledge that survived such self-criticism. A more reflexive and flexible approach is not the case in all research methodologies. However, in this research, relationships with the researched were meant to be reciprocal and reflexive self-criticism essential to maintain the principles underlying the study, as I discuss in the next section.

### **3.2.2: Multiple roles of the researcher.**

My role as researcher is multi-faceted. In Chapter 1, I identified that, because of my position as principal of the Boyne Island Environmental Education Centre, I was fulfilling the role of a ‘researching professional’ (Guillemin & Gillam, 2004). My role was one of participated as a teacher, alongside the other teachers at BIEEC. At the same time, I encouraged the children to understand my role as researcher, which was to discuss their experiences of the centre to develop the program for future participants. I was aware of potential power imbalances between the children and myself in the roles of principal / teacher / researcher, and I sought to redress this by encouraging children to contribute their views in a supportive environment where all responses were valued. Hart and Nolan (1999) identify that researchers:

Are increasingly striving to understand young people’s construction of meaningfulness and purpose in the world and a great deal of recent attention in science and environmental education research has been devoted to the study of children’s and adolescents’ knowledge construction, development of environmental sensitivity and of social consciousness. (p. 29)

The qualitative researcher takes on multiple roles, as identified by Stake (1995) and Glesne and Peshkin (1992), including interpreter, evaluator and advocate. However, the process of this study saw me fulfill an additional role of ‘researcher-as-interlocutor’ (Wright, 2010). I assumed this role by taking part in dialogues with children (Wright, 2010), accepting that the children’s knowledge was unique and different to that of the researcher. I explicitly acknowledged my reliance on the research participants (children) to provide insights into the subtle nuances of meaning of the environmental experiences. As researcher-as-interlocutor, a

dialogical process is created in which the research situation is structured by both the researcher and the person being researched. This means that, as researcher, I am a visible and integral part of the research (Wright, 2010).

I have brought together the roles of researching professional, researcher-as-interlocutor, as well as interpreter and evaluator, which arose out of the research process, and finally as advocate for the research findings.

### **3.3: Participants**

The Boyne Island Environmental Education Centre has no permanent student enrolment. Instead, Centre staff work with students visiting from many different schools, drawn mainly from Central Queensland. In this study 54 children (25 boys and 29 girls) predominantly in Year levels 4 and 5 (children aged 9-11 years), although there were some from Year 1-3 and Year 7, were invited to participate. Details of the data schedule are in Appendix G.

In total, I undertook 32 conversations with the children: 18 conversations held with individual children, eight conversations within pairs, five conversations with groups of three students, and one conversation with a group of five children. As Mayall (2002) found in her study of children's everyday lives, group sessions offer "discussion, swapping of experience and development of themes... there were more sparks between them because there were more people to spark off" (p. 166). I sought similar outcomes and so chose to have varying group sizes. However, a benefit of engaging in a conversation with one child is that it allows for greater self-disclosure (Fontana & Frey, 2005). Therefore, a range of perspectives is more likely to be provided by participants because of differing group sizes.

There was no set procedure for determining group sizes, although I was guided by Mayall's (2002) view that group discussions allow for the children to have interactional opportunities to participate in the conversations. My decisions for determining group sizes were based on what the children were drawing or what they had indicated in the teaching sessions and that this prompted me to seek to explore these discussions in more depth. However, sometimes children asked if a friend or group of friends could participate as a group. Usually, groups of approximately five children were involved, although sometimes conversations happened in pairs as well.

The research was to focus originally on a single one-week program of approximately thirty students in Years 5-7 from one school. However, many children did not participate as they had not provided consent and only a small sample was obtained. Additional students were sought from four additional schools. The schools were selected on the basis of operational convenience for this research. The five schools attended the Centre in four camp programs at different times for their one week experience over a three month period. The children were from a diverse range of backgrounds. Two schools were local schools from Gladstone. Gladstone is an industrial port city, where there is a broad spectrum of social groups.<sup>12</sup> These range from highly paid trades-people in large industries to those supported through social security. Overall, the area is characterised by high degree of affluence. Two schools were from rural towns that support the surrounding rural industry as well as nearby coalfield mine populations. These schools also reflect a broad social and economic spectrum. The fifth school was a small country school located within a rural area that predominantly had families who grazed cattle. The children came from properties surrounding the school. However, in this research, I did not attempt to break down information based on the children's diverse backgrounds because it was beyond the scope of information that I was seeking.

When undertaking the data collection, I felt uncertain that my sample of students would be sufficient to provide meaningful data for a study at a Doctoral level. However, as the conversations continued, I recognised that there were no new messages or themes coming through. I achieved a level of data 'saturation' (Guest, Bunce, & Johnson, 2006; Morse, 1995). That is, later conversations reinforced the themes of the earlier conversations. Therefore, the size of the sample of conversations provided a valid set of data.

### **3.4: Data Collection**

In the next two sections of this chapter, I discuss how the collection and analysis of data was undertaken for the reader to gain an understanding of the

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<sup>12</sup> The average wage and salary income in Gladstone Regional LGA was \$54,438. This was higher than the average annual personal income for Queensland (\$44,239) (Office of Economic and Statistical Research [OESR], 2012).

research “in such a way as to make it accessible to subsequent critical assessment” (Dillon & Reid, 2004, p. 25). The research plan and process are in Table 3.1.

**Table 3.1: Plan for research process**

TASKS	OUTCOME
<b>BIEEC Document Analysis</b> Strategic Plan & Curriculum Framework	<b>Examine policy and curriculum documents to identify priorities</b>
<b>Pilot research methods</b>	<b>Informal conversations with a focus group are conducted to develop data collecting methodology</b>
<b>Develop Data Folio</b>	<b>Audio tape conversations Children complete journals, take photographs and drawings of their experiences at the Centre</b>
<b>Analyse Data Look for Themes</b>	<b>Identify what aspects of their experiences the children identified as important</b>
<b>Identify Implications</b>	<b>Develop new understandings of Centre practices</b>

I describe three sources of data: site generated documents, audio-recorded conversations with the children and children’s journals. Generation took the form of:

- Generating particular accounts of experiences through conversations oriented towards the research question.
- Encouraging children to articulate ideas, beliefs, and opinions in their journals.
- Encouraging and supporting children’s reflection about aspects of their experience through their drawings and photographs.

As a consequence data folios were developed.

**3.4.1: Centre curriculum documents.**

Documents drawn upon included the Centre’s Prospectus (BIEEC, 2009) and its Environmental Education Curriculum Framework (BIEEC, 2005). These documents were used to understand the setting, and later were used when considering the implications that arose from the study. The Prospectus (BIEEC, 2009) provided brief descriptions of the Centre and its location at Boyne Island. However, most importantly for this research, there was a description of the Centre’s interpretation of environmental education and the programs conducted at the Centre.

Documents can highlight discrepancies between how a situation is and how people would like it to be (Wadsworth, 1997). This ability to highlight discrepancies was particularly valuable with the *Environmental Education Curriculum Framework* (BIEEC, 2005). The Framework provided a detailed description of environmental

education and its implementation as it was understood at the Centre. The Framework commences with a definition and history of environmental education and a description of environmental education in terms of *in*, *about* and *for* the environment. The knowledge, values and ways of working in environmental education were detailed and related to the National Key Competencies (Mayer, 1992). The pedagogy used at the Centre is described in terms of *Principles of Effective Learning and Teaching* (Queensland Department of Education [Education Queensland-EQ], 1994) and through examining models of learning that included experiential and action research. The Framework also described incidental, interdisciplinary and multidisciplinary approaches to environmental education.<sup>13</sup> Having described the Centre's curriculum framework, the document goes on to provide information to assist the teacher in developing a visit program and planning a visit. Finally, the Framework contained a discussion of assessment and best practice in environmental education.

These two key documents are not discussed in detail in any one section of this thesis, but have contributed to discussions in various relevant sections throughout the thesis. For example, the Prospectus (BIEEC, 2009) and personal observation contributed to the description of the Centre provided in the Context section (see Chapter 2, Section 2.1.6.1). These documents are discussed again in Chapter 7, the concluding chapter, to show how the study has transformed the policy and curriculum. The Environmental Education Curriculum Framework (BIEEC, 2005) contributed to my discussion of a pedagogic approach of children's environmental experience at the Centre (see Chapter 7, Section 7.2.2) and the role of a teacher in the experience (see Chapter 7, Section 7.2.2.1).

### **3.4.2: Research conversations: Children's accounts of their experiences.**

In my research, I aimed to employ a range of methods that were interesting and meaningful for children, while at the same time promoting reliability. Dockett and Perry (2007) suggest that "there is often tension between developing interesting methods to engage children, while at the same time avoiding a gimmick approach"

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<sup>13</sup> The Framework describes 'incidental' as conducting regular activities in class on issues as they occur in the media or locally, interdisciplinary as integrating more than one subject at a time into single environmental activity and multidisciplinary as where environmental education components are infused into other established disciplines where appropriate (BIEEC, 2005).

(p. 50). The primary source of data was audio-recorded interviews with the children participating in the environmental education program. Traditionally, both qualitative and quantitative researchers tend to rely on the interview as a basic method of data gathering (Denzin, 2001; Fontana & Frey, 2005). At its simplest, interviewing is about asking questions and getting answers, however the interview should seek to “obtain a rich, in-depth experiential account of an event or episode in the life of the respondent” (Fontana & Frey, 2005, p. 646).

Roulston (2010) identifies that there is a growing array of theorizations of the qualitative interview. The significance of this array is that there are different ways in which quality might be demonstrated, reflecting each perspective. Within a traditional understanding of the interview process, criteria of success at interviewing include such matters as whether good rapport was developed between the researcher and the respondent and whether they provided what the researcher was seeking. Within this understanding of interviewing, there is an assumption that there is pre-existing information that the interviewee has that can be extracted by the researcher. Alvesson (2002) describes the research interview in the light of postmodernist concerns, describing as naïve the assumption that the interviewee is simply an informant, expressing his/her experiences. Interviews are an interactional experience (Baker, 1997). As such, any questions cannot be regarded as neutral invitations to speak and are a central part of the data. Baker (1997) suggests that interview responses should be “treated as accounts more than reports” (p. 131). From this perspective, the process of interviewing is one of data generation rather than data collection. This interpretation draws on the work of Silverman (2006) and his analysis of interview data. Both the interviewee and the researcher must be viewed as competent participants of the interaction in which they are involved. Therefore, within the interviews of this research, there is more occurring than asking for and receiving information or opinions. As such, the interview is a narrative device that allows people to tell stories about themselves. In this story-telling, teller and listener share an experience. Data generated within the interview context is a collaborative achievement by the researcher and interviewee where meaning is created. It is for this reason I use the term ‘conversations’ to describe the type of interview that I carried out with the children. This reflects the perspectives of the sociology of childhood that interviews be thought of more as a conversation between active

participants, a much harder task than it may seem at first. In this study, children, “through their talk and interaction [are] active participants [and] competent interpreters” (Danby & Farrell, 2004, p. 36) of their experiences and are provided the opportunity to express these interpretations.

Silverman (2006) suggests that a researcher can treat interview questions in a variety of different ways. For example, one way is through the administration of standardized questions with multiple-choice answers. However, if an instrument were to have standardized questions this would result in the child confining ideas and feedback to these questions and the interview not meeting the goals of this research “to generate data, which give an authentic insight into people’s experiences” (Silverman, 2006, p. 118). Although this research adopted a modification of unstructured, open-ended interviews it is “somewhat naïve to assume that open-ended or non-directed interviewing is not in itself a form of social control which shapes what people say” (Silverman, 2006, p. 118). Questions are a central part of the data and cannot be viewed as neutral invitations to speak; rather they shape how a respondent does speak. The nature and scope of the questions asked are an important aspect of conversations, as was the need to stress to children that there were no right or wrong answers.

Talk is social action (Baker, 1997). Far from being a report, the children’s accounts offered useful and opportunities to tell about themselves and their environmental experiences. Meanings are contextual; that is meaning is created in the conversation with the teller (the child) and listener (the researcher) participating in an experience that constructs a shared account of the experience. The conversation is a collaborative enterprise. Therefore, in my interlocutor role, I sought to exercise a fine balance of reciprocity. Ideally the child’s content should take the lead the majority of the time of our conversations, with me responding rather than directing. I sought to make open-ended comments and to be responsive to the child’s agenda rather than lead it. In encouraging the child’s free narrative, I used reflections such as paraphrasing and words of encouragement to show empathy and understanding. The excerpt of a conversation in Appendix H gives some idea of the process. What is evident is that the child set the conversation direction. The discussion about the tent in the storm contributes information that can be used in other parts of the researching, helping, for example, to identify if the child was uncomfortable or

scared during the storm. The information about remaining dry during the storm gave an insight into attitudes about the camp-site.

Children's accounts of their experiences in their designated status as children are the basis in this approach since "the crucial distinction that makes children is that they are not adults" and taking account of children's perspectives, of their contributions, of respect for children, and of their rights is essentially political" (Mayall, 2002, p. 2). The essence to these conversations was listening to and involving the children. Listening is defined as "an active process of communication involving hearing, interpreting and constructing meanings" (Clark, 2005, p. 491). Therefore, for this researcher, listening begins with the understanding that it is an active rather than a passive process and is a necessary stage in participation. Active listening and active watching techniques were employed. Active listening meant listening and responding to children's comments rather than waiting to move on. Active watching meant checking for such signs that indicated the children were anxious or bored and so on.

The timing of conversations varied. I needed to think about when, where and how to conduct the conversations with the children. These conversations provided an opportunity for me, as adult, to enter the child's world. Some conversations were held with children at the end of the day. This meant that children drew on experiences during periods varying from one to five days. However, the majority of conversations were held on the final evening or last day of the visit. Three conversations were held for one school on the first day back at school after their visit to the Centre, so that these children were able to draw on their entire camp experience. Children in one school were talked to three weeks after the event over a period of two days, with eight conversations being conducted.

When establishing conditions for the conversation, it was important that I thought about the preparatory processes well before encountering the child. While aspects of this thoughtful approach hold true for all research, it was particularly pertinent when working with children and using an approach that is child-focused. To address a concern that the children may have limited understanding about the reasons for their involvement in the conversation process, meetings were held with the children when they first arrived at the Centre.

Negotiating the research space with the children had both physical and social aspects (Dockett & Perry, 2007). First, physical aspects, such as undertaking the research in locations that are comfortable to the children are important. Social aspects include providing the children input in deciding which particular elements of the experience to investigate. General ‘interviewing’ techniques required such strategies as sitting diagonally across from children and showing interest by engaging in general conversation. To get the conversation started, procedural processes needed attention including gaining a sense of shared purpose, establishing ground rules to help the child know what to expect and managing the consent process. Many of the procedures for the conversation were set during the introduction. Sometimes, this introduction lasted for two minutes. At the beginning of the conversation, a period of free narrative was allocated as “a period of free narrative facilitates both the child’s settling in, this researcher’s grasp of this child’s communication and concerns” (Cameron, 2005, p. 601) and contributes as a ‘door opener’. The children’s free narrative was encouraged by paraphrasing and offering words of encouragement to show empathy and understanding. Listening to children tell stories that were not directly relevant to the research also helped reinforce the value of what the children had to say and to establish the tone of the conversation was being set by the researcher. Appendix H is an excerpt from the beginning of one conversation. This excerpt sought to find out from the child the story they would likely tell a person who had not been to the Centre. It is indicative of how the conversations with the children occurred.

Research into child consent is a relatively new phenomenon and “relatively little is known about how the researcher engages with the child in those initial moments of the research interview before the interview proper begins” (Danby & Farrell, 2005, p. 53). Danby and Farrell (2005) suggest that examining openings to conversations shows the ways in which participants display awareness of the particular interactional context. Therefore, in the opening moments of the research conversation, I reviewed the consent form with the child to ensure that they still wanted to participate, and reminded them of their right to withdraw at any time without any questions being asked. This research orientation allowed the children to act as gatekeepers of the research (see Appendix I). Danby and Farrell (2005) argue for children giving their own consent. I invited the participants to provide their

written consent (see Appendix N). All were face-to-face conversations and involved the audio-recording of these conversations. Both at the beginning and conclusion of each conversation, children were thanked for giving their time and views (see Appendix I).

In attempting to identify what I hoped to discuss within our conversations, I went back to my original research questions. I used these topics to develop a set of ‘conversation starters’ (see Appendix J), modelled on a semi-structured interview schedule. This was used as a means of maintaining focus throughout the conversations. Questions acted as invitations to begin the story; therefore prompts such as “*Can you tell me about something that you...?*” were open-ended and invited the child to respond however they wished. Responses sought information about the experience and not if the child simply liked an activity. To such a question, a possible answer may be swimming but the activity contributes little to an understanding about the experience other than its popularity. The Conversation Starters did not constitute the actual questions, and acted only as a very loose guide to the direction of the conversation. During the conversations, prompts were only used sometimes to encourage conversation.

This study’s conversation starters were trialled in a pilot, consisting of a small focus group (N=3). The role of this group was to make a contribution to the design of how I could engage the children. Their input helped ensure that the conversation starters were reasonable and sensible, and the concepts and language understood by children. Focus groups are used in qualitative inquiry within several distinct epistemological traditions and, while focus groups have always been a critical part of qualitative research practice, their use seems to be expanding. While Bourdieu and Wacquant (1992) believe that focus groups offer unique insights, Kamberelis and Dimitriadis (2005) warn of false universalism, where researchers assume that groups purport to speak for all. Therefore, the starters acted as a flexible guide for initiating the conversations.

#### ***3.4.2.1: Conversations prompted by children’s drawings.***

Children were invited to draw a picture of a highlight of their experience at the Centre as another means, to the ‘conversation starters’ to establish conversations. Historically, psychotherapists have analysed children’s drawings as a powerful tool

in communication as art allows children to say and write what they think and feel (Bowker, 2007). In this research, however, the drawings were not to undergo visual analysis. Although drawings can be an “effective method for revealing children’s emotions and cognitions” (Bowker, 2007. p. 80), in this research, the drawings were to encourage the children to reveal the elements of the experiences that they identified as important. Children’s drawings provided a naturalistic way to witness children’s creative meaning making because the source of the content emerges from the child’s own thoughts, feelings and imagination. Art and thinking are closely connected, but art can be also an advanced way of thinking (Vygotsky, 1978). Because drawing is a mechanism that not only elicits more information, but one that evokes a different kind of information, this data collection mechanism was seen to be beneficial. As a researcher, I hoped that showing my interest in the meaning of the drawing was an open-ended way to give the child the opportunity to explain elements in the drawing from their perspective.

A second advantage of drawing is that many children find it comforting to do something with their hands while they talk and a child’s drawings in particular, may be a means of getting better insight into the topic under discussion (Cameron, 2005). It was intended originally that, during the conversation, children engage in drawing a scene relating to their immersion experience (see Appendix K). Early attempts at having the children participate in drawings as part of the conversation process were not as successful as Cameron (2005) implies they can be, with some children having difficulty in identifying of a theme for the drawing. Further, the extra time that this activity added to the conversation resulted in it becoming extended. My first response was to encourage the children to complete a drawing before a conversation; that is, while I was conducting a conversation with another child. This process was slightly more successful. Finally, I had all the children from the visiting school complete a drawing as part of their final night reflection on their experiences of their residential immersion program. I then used the drawings from the children who had agreed to be part of the research. I found that this process was highly successful, because, I believe, the drawing became part of the experience rather than the research process and with all children completing drawings. There was a fun atmosphere, with the research task now viewed as a group camp task. I subsequently was able to commence the conversations with the children talking about their drawings. In other

words, the drawings provided a focus for conversation, providing a more child-centred atmosphere for discussion and acted as a means of initiating discussions. This process was more successful than engaging in the free narrative that was originally intended when designing the research process and that was used in the early stages of the research.

### ***3.4.2.2: Conversations prompted by children's photography.***

Children were invited to take photographs of highlights of their experience at the Centre, as yet another means to establish conversations, the process of 'photo elicitation' (Alderson, 2005). This methodological tool is a combination of photography and ethnography. The camera was considered as a creative instrument (Einarsdottir, 2005; Graue & Walsh, 1998) and from a socio-cultural perspective children's photographs were viewed as part of empowerment (Loizou, 2005). The aim of this approach was to "involve the children as researchers in two of the stages of the research project – the data collection and analysis phases – supporting the view that "children are the primary source of knowledge about their own views and experiences" (Alderson, 2005, p. 287). Photo elicitation techniques involve using photographs as part of the conversation and asking research subjects to discuss the meaning of photographs. This is different to photo interpretation where the content of the photograph is critically examined. In addition, unlike the research of Cook and Hess (2007), photography was used by children as a data collection method and presentation tool. In this research, the images were taken by the children so they belong to the child. The idea of using them was to elicit information about why the child felt that image was important enough to take. Photo elicitation is "based on the simple idea of inserting a photograph into a research interview" (Harper, 2002, p. 13). Harper (2002) argues that the difference between interviews using images and text, and interviews using words alone lies in the ways people respond to the two different forms of symbolic representation. Therefore, Harper (2002) suggests that an enhanced vocabulary is provided for the children as they retrospectively reflect on their experiences. Harper (2002) argues that:

Exchanges based on words alone utilize less of the brain's capacity than do exchanges in which the brain is processing images as well as words. These may be some of the reasons the photo elicitation interview seems like not

simply an interview process that elicits more information, but rather one that evokes a different kind of information. (p. 13)

Children were invited to use a digital camera and asked to take photographs of their various activities. The intent was to use these photographs to assist the conversation by providing focal points for discussion. In this context, the camera is analogous to any other data recorder. At the time, some of the children commented that there were problems involved with taking of photos, linked to not having access to cameras. Unfortunately, I allowed myself to be swayed by the children's accounts of difficulty in managing the process of having too few cameras, and this resulted in not continuing with this means of data collection. However, I identified later in the research process, aspects that the children raised in their conversations illustrated in the photographs. Photos showed children with smiles on their faces, engaged in activities, and in team work. Although it was not my intention to engage in photo interpretation, based on subsequent conversations I recognised that the numerous photographs of their peers represented the importance the children placed on being, and working, with their peers. This outcome is supported by the finding of Sharples, Davison, Thomas and Rudman (2003), drawn from a socio-cultural perspective, that children of all ages like to photograph people. Loizou's (2011) study identifies that children who feel comfortable and secure within their group feel empowered to explore them in order to respond to the demands of an activity" (p. 160). Here, the children felt empowered to respond to the demands of identifying what was significant for them in their experience.

It was not until the data analysis stage that I recognised the valuable role the photographs played as another means of capturing the children's voices and perspectives on their experiences during their camp. The photographs provided a valuable contribution to the data and to the discussion, and a number of photographs were subsequently included the Thesis.

### **3.4.5: Children's journals.**

The final source of data was the children's journal. As Murray (1995) explains in *The Sierra Club Nature Writing Handbook*, "a journal can be a mechanism for recording and organising experience, a tool for processing events as they occur" (p. 5). This is the genre of 'Personal Writing'. This approach can help

children understand and express their feeling, make sense of thoughts and ideas, and to question the basis of these thoughts and ideas. Personal writing can lead the individual to discover much about themselves; perhaps, even aspects they would rather not know. Personal writing also can help the individual rethink their beliefs, values and behaviour, and, as a consequence, increase environmental literacy (Bain, Mills, Ballantyne, & Packer, 2002; Balgopal & Wallace, 2009). This may be achieved through a process of reflection. Put simply, reflecting is thinking about an event or person or experience afterwards. As children progress through their environmental experience, they assimilate events in relation to the environmental ethos that is the overall goal of camps at the Centre and their journals act as an instrument that logs their progress during this period (Marsh, 1998). The writings can reveal descriptions of critical thinking and provide the child with the basis for any subsequent development of environmental attitudes or of self.

Personal writing is an aspect of the ongoing pedagogy at the Centre and the children's reflections are recorded in a journal reflecting Posner's (1993) belief that children may learn more through writing about an experience than through other reflective approaches. Ordinarily, the journal is written for no audience other than the child unless they choose to share its contents with others. Because a person is meant to look deeply into their own beliefs, ideas and behaviour, the writer must have confidence that anyone who reads it will empathise with them; even if the reader does not agree with what they have to say. However, in this research, the children were asked to share their work before they undertook any writing. The children were encouraged in this sharing process by making it clear that any comments would be valued and the ideas of the children were important if programs were to improve. My goal was that children, as writers, must have confidence that as I read their work, I would empathise with the children's comments.

Each evening, children were guided through a process that encouraged them to reflect upon their learning experiences from the day. These reflections were then written in a journal. In their journals, children were asked to reflect on questions such as:

- What did I learn from this activity?
- How has this experience affected me?
- Why did I react the way I did?
- How do I feel about this issue now? (BIEEC, n.d.)

Although all children participating in the research were required to sign an agreement that the journals would be handed in at the end of the camp, sometimes, I did not remind the children that they had agreed to this when we started the writing process on the first day of their program. Because the children had not been reminded, I made it voluntary for children to hand in their journals. While most children were happy to contribute their journals to the research, some chose not to do so and this desire was respected. Some, while happy to contribute to the research, requested that I take only a copy of their work as they wished to share their journal with their parents on their return home. Dockett and Perry (2007) identify that this situation reflects another power issue relating to artefacts produced by children who are participating in research, such as drawings and photographs. All such artefacts are the property of the children who produced them and it is they who must choose whether or not they will be available to the researcher. They warn that “too often, the power differential is used to rob children of their hard work. Such actions do nothing to develop a sense of equity in research” (Dockett & Perry, 2007, p. 59)

### **3.5: The Data Folios**

This study generated a large volume of data including:

- Curriculum documents from the Centre,
- Conversation notes and transcripts with drawings and/or photographs,
- Children’s journals.

These materials are referred to as data folios. Having collected the data, it was then necessary to organise these materials into useable data folios. Management, analysis and interpretation of qualitative materials are complex processes (Huberman & Miles, 1998; Patton, 2002). Therefore, organising and documenting the data emerged as a significant issue. Hence, there was a need to develop a comprehensive and efficient way of organising and documenting data. The management of qualitative materials should be seen as a means for increasing the reliability of the written report. “A systematic, coherent process of data collection, storage and retrieval” (Huberman & Miles, 1998, p. 180) makes the process of data analysis, interpretation and report writing a much easier process. In addition, such organisation allows for opportunities to rework the data from new perspectives at a later date, or for other researchers to consider the research (Huberman & Miles, 1998). In this study, data were transferred from digital recorders to computer (and backed up),

drawings scanned, and journals transcribed. This electronic data folio was then indexed in a 'Data Schedule' (see Appendix G).

### **3.6: Data Analysis**

In the previous section, the data collection and organisation processes were discussed. Now I examine the data analysis process. Berg's (2001) 'Criteria of Selection of Data Analysis' provided a framework for this process. Berg (2001) identified a set of analytical activities which he arranged in a general order of six steps that a researcher could use in content analysis. In this section of the chapter, I describe how I implemented the first five of these steps in this research. The sixth step undertaken will be described in chapters 4, 5 and 6. However, first, I discuss the concept of content analysis in order to situate the data analysis process.

This study set out to generate children's own accounts of an intensive, but short-term, outdoor, environmental education experiential program. There are a number of possible procedures qualitative researchers can use to analyse their data. My aim was to develop a response that met two analytic principles suggested by Guba and Lincoln (1996). First, any analysis must attend to the links between claims made by the researcher and the evidence and second, the analysis must be oriented towards the research questions and focus only on the data relevant to these questions (Guba & Lincoln, 1996). Guba and Lincoln (1996) argue that if all analysis followed these two principles, it would contribute to ensuring that outcomes were valid, trustworthy, and relevant to the research question. The following questions were asked throughout analysis as one way to ensure a balance between grounded and researcher-directed analysis, "*What are the data telling me?*" and "*What do I want to know?*" However, it is acknowledged that data are not analysed free of prior values. Through asking these questions, I was able to make decisions about which data were relevant to the research questions and which were not. In some cases, qualitative researchers may not follow any predefined protocol in executing their analysis (Peräkylä, 2005). Researchers with a particular agenda in mind may well interpret data to fit with this agenda, failing to recognize data that do not fit a particular pattern. To address Peräkylä's concern, content analysis was adopted in this research. This approach also enabled this study to address Finley's (2005) concern that many studies that use unstructured interviews are not reflexive enough about the

interpreting process. Content analysis was adopted despite Roberts (2000, p. 229) arguing that focusing only on certain aspects of the discussion to categorise children's responses presents a very simplistic view of conversations. What was important was that I used some categorical scheme suggested by a theoretical perspective. Broadly defined, content analysis is "any technique for making inferences by systematically and objectively identifying special characteristics of messages" (Holsti, 1968, p. 608). In content analysis, data are analysed by means of "criteria of selection" (Berg, 2001, p. 240) which must be sufficient in scope, rigidly and consistently applied so that other researchers, looking at the same data, would obtain comparable results. This provided a degree of reliability of the process, and a validation of eventual findings.

A controversy concerning the use of content analysis is whether the analysis should be limited to manifest content, "which are those elements that are physically present and countable" or extended to latent content, "an interpretive reading underlying the physical data" (Berg, 2001, p. 242). Rather than being drawn into this debate, the best resolution was to use both whenever possible. Indeed, "content analysis can be fruitfully employed to examine virtually any type of communication" (Abrahamson, 1983, p. 286). As a consequence, content analysis may focus on either quantitative or qualitative aspects of communication messages. Content can be quantified, for example, by looking at the number of times a particular response is given. Within this research content analysis focused on qualitative aspects of communication messages. That is, I focused on the nature of responses given. Using this approach provided a degree of reliability of the process, and a validation of eventual findings.

The categories a researcher may use in content analysis can be determined inductively or deductively (Strauss, 1987) and this research used an inductive approach. Categories that emerge in the analysis should reflect all relevant aspects of the data and not be merely arbitrary. It is recognised though, that categories are not neutral resources of description (Eglin & Hester, 1999). Therefore, this research needed to consider the basis on which categories were selected to minimise the extent of researcher bias. An inductive approach begins with the researchers immersing themselves in the texts (Abrahamson, 1983). Categories may emerge in the course of analysing the data. The development of these inductive categories are

special sources of classification because their specific substance allows the researcher to link or ‘ground’ these categories to the data from which they derive (Schatzman & Strauss, 1973). The use of inductive categories reflects the sociology of childhood perspective of this research. Accepting that children are the gatekeepers of knowledge, some categories can only be identified after completing conversations with the children. This process contributed to the credibility of the research.

Although this research was not an exercise in grounded theory (Glaser & Strauss, 1967), analysis did have ‘grounded qualities’ with the emergence, through analysis of the data, of categories or ideas that had not previously been considered. Although the interpretation of the data has grounded qualities and was based on evidence, it also reflected the researcher’s creative judgements and interpretations; that is, “findings or outcomes of an inquiry are themselves a literal creation or construction of the inquiry process” (Guba & Lincoln, 1996. p. 3). The categories used will be discussed in detail in chapters 4, 5 and 6. This research adopted Berg’s (2001) set of analytical activities, (Table 3.2) as the process of analysis.

**Table 3.2: Process of analysis**

STEPS	TASKS
STEP 1:	Data are generated and made into text
STEP 2:	Codes are analytically developed or inductively identified in the data and affixed to sets of notes or transcript pages
STEP 3:	Codes are grouped into categorical labels and themes
STEP 4:	Materials are sorted by these categories, identifying similar phrases, patterns, relationships, and commonalities or disparities
STEP 5:	Sorted materials are examined to isolate meaningful patterns and processes.
STEP 6:	Identified patterns are considered in light of previous research and theories, and a small set of generalisations are established.

(Berg, 2001, p. 240)

In addition, Shank (2006) suggests five questions when using content analysis:

- What sorts of findings did you get that you expected to get?
- How can you best organise these expected findings?
- What sorts of findings did you get that you did not expect to get?

- How can you best organise these unexpected findings?
- Which three findings do you feel are the most important? (p. 145).

As I progressed through each of Berg's stages, I used these questions to assist my thinking and interpretation. In the following sections, each of Berg's (2001) steps is examined in the context of this research.

### **3.6.1: Step 1: Data are collected and made into text.**

Conversations were audio recorded. From these recordings, transcripts were completed. Initially, transcripts were a record of the complete conversation. However, given the nature of the conversation, it was identified that there were large segments of conversations that did not relate to the research. Subsequent transcripts omitted these segments. In other cases, brief summary notes were completed to identify the message or the relevance of the issue or of the story to the research topic. For example, later recordings were made with a portable media player. It was a frequent source or topic of conversation with the children as they either owned one or wished to acquire one. Conversations were carried on about the types of functions that these pieces of equipment could carry out and what the children hoped to do with them. This type of conversation, or free narrative, while it played an important role in the conversation because it often helped to relax the child allowing them, in turn, to talk more freely about those matters that related to this research, was not relevant to the research and were not transcribed. Some children related activities, events or new knowledge gained to past experiences. For example, Fred compared many of the incidents that had occurred during the residential program with a previous camping trip that he had with his family. In this situation, only the fact that he had been on a previous camping trip and how he was able to relate the new experience to previous situations and the events was recorded. Funny events such as getting bogged, while making the conversation more interesting, did not contribute to the research and only the incident was recorded. When simply logging that these extra topics were mentioned in the conversation, I was conscious of concern of qualitative research using what Seale (1999) calls the 'low inference descriptors'. Seale (1999) describes researchers using "reconstructions of the general sense of what a person said, which would allow researchers' personal perspectives to influence the reporting" (Seale, 1999, p. 148). Therefore, I paid particular care that

this did not occur. In the next section, I describe Steps 2 and 3, codes are analytically developed or inductively identified in the data and affixed to sets of notes or transcript pages and codes are transformed into categorical labels and themes.

### **3.6.2: Steps 2 & 3: Codes are identified inductively and categorised into themes.**

Given the nature of the data, I chose to manually analyse the data rather than use a software program. The transcripts were read a number of times to increase my familiarity with the children's accounts. Then, using Shank's (2006) five questions as a guide, codes were identified inductively. These codes were messages contained in the children's accounts. A list was developed. As I read an account that contained a new message, I added that message to the list. Noting the nature of a message enabled me to reuse that message when I encountered another story that gave a variation of that message. If the story contained a new message, then that in turn was added to my list. When I completed this process for all the transcriptions, and I reviewed my list of messages, I found it was now around 100. I noted that as the list had extended in length, I had more freely entered new messages that were similar to ones that I had entered earlier in the process. Therefore, I reviewed and reworked the various messages until I came to a final list of 36 (see Appendix L for details of this process) which are listed in Table 3.3. It is acknowledged that the resulting categories and analysis based entirely on my interpretations may be open to criticism in terms of validation by other researchers but is consistent with the methodology.

In the next stage, these messages (codes) were analysed and grouped into categorical labels and themes (Berg, 2001). This process was necessary as 36 different messages (see Table 3.3, p. 83) were too broad to enable detailed analysis. The identified codes were transformed into themes. During this process, some messages were moved from one grouping to another and sometimes back again. As well, the titles of the themes were altered to enable better grouping. I identified 10 themes that captured the children's perspectives (see Table 3.4, p. 83).

**Table 3.3: Messages contained in children's accounts**

<p>Good resources          Access to new equipment          Feel safe          Help by staff          Treated with respect /responsibility          Program excitement          Different experiences          Finding something special          Funny incidents          Specific incident          Recollections          Individuals          Friends          Team work          Behavioural change          Personal difference</p>	<p>Having fun          Having fun - about learning          Exploring nature &amp; actually touching animals &amp; plants          First time encounters with an aspect of nature          Nature as a curiosity          Positive reinforcement          Enjoyed the physical activity          First time activity          Preference for well known          Nature Deficit Disorder          Cultural fears</p>	<p>Variety of pedagogy          Informal learning processes          Typecast learning          Knowledge – pre &amp; post visit work          Knowledge - Acquisition          Knowledge - Links with previous knowledge          Experiences - Links with previous positive nature experiences          Environmental awareness &amp; attitudes          Environmental action</p>
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**Table 3.4: Themes of children's messages**

- **Location**
- **Staff**
- **Program**
- **Social**
- **Positive Engagement**
- **Barriers**
- **Pedagogy**
- **Knowledge**
- **Awareness & Attitudes**
- **Action**

**Table 3.5: Dimensions used to organise data**

- **Location**
- **Social**
- **Engagement**
- **Learning & Teaching**
- **Environmental Ethic**

However, on further reflection and rereading of the children's accounts, I decided that these themes in turn could be grouped further and developed five new categories (see Table 3.5, p. 83), which I termed 'dimensions'. They are: Location, Social, Engagement, Learning and Teaching, Environmental Ethic. These five overarching categories or 'dimensions' provided a basis for analysing the data.

Therefore, in this analysis process, I established a sequence of terms with 'texts' being the accounts, which repeated variations of 36 different messages. The 36 different messages can be grouped into 10 themes. These 10 themes in turn were grouped into five dimensions. The categories were developed from the data, the children's accounts, and were not my own arbitrary categories.

I then undertook a similar process of data analysis for the children's journals as with the conversations. Despite searching for new messages, and possibly themes, none arose and I found I was able to categorise the stories in the journals under the existing messages, themes and dimensions. In the next section, I discuss Step 4, where materials are sorted by the themes.

### **3.6.3: Step 4: Materials are sorted by these themes.**

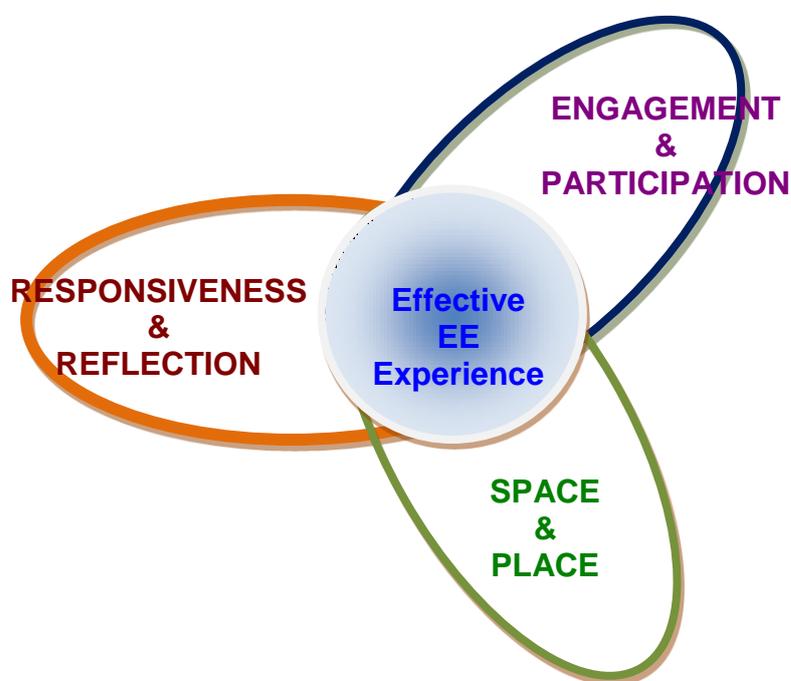
Given the open-ended structure of the conversations, the conversations ranged quite widely in terms of topics. Unlike semi-structured interviews, the accounts could not be grouped under, for example, a Question 1 or a Question 5. Sections of transcripts were regrouped according to the dimension relevant to that section of the transcript. For example, the issue of 'Barriers to Learning' exists under the dimension 'Engagement'. A child may have mentioned this as part of a response to what they disliked about their visit or in a tale they would tell their parents; however it was grouped under Engagement regardless of its source question. Where there were multiple messages in the a single section of a transcript then that section of the transcript was placed under multiple dimensions, for example, Site and Engagement.

With a new category structure and transcripts broken up to reflect this structure, I was able to find key passages and choose quotations that made a relevant point briefly and in a clear way. In the next section, I discuss Step 5, how sorted materials are examined to isolate meaningful patterns and processes.

### **3.6.4: Step 5: Sorted materials are examined to isolate meaningful patterns and processes.**

The fifth step in Berg's (2001) analytical activities is to examine the sorted materials to isolate meaningful patterns and processes. The five dimensions listed in Table 3.6 were grounded in the accounts of the children

From the children's accounts, practices at the centre were discussed in terms of three interrelated and co-dependent issues: place and space, engagement and participation and responsiveness and reflection. When these aspects co-existed, they appeared to create the conditions for effective experiences in environmental education for sustainability at the Centre. If one aspect is missing the approach is unbalanced and less effective, illustrated in Figure 3.1.



**Figure 3.1: Framework of children's accounts of their experiences**

While there was some overlap of the issues in Figure 3.1, the separation of the issues was one for conceptualising the framework. This discussion is Berg's (2001) sixth step, where the identified patterns are considered in light of previous research and theories, and a small set of generalisations are established. I completed this sixth step by examining these three aspects. The structure to this sorting can be seen in Appendix L with the process by which this was achieved illustrated in Figure 3.2 (p. 87).



**Figure 3.2: Content analysis process**

### **3.7: Validity and Reliability of the Research: Ensuring Trustworthiness in the Research**

Silverman (2006), when writing on qualitative methodologies, uses the terms ‘validity’ and ‘reliability’. Guba (1981) proposes four criteria that should be considered by qualitative researchers in pursuit of a trustworthy study: dependability, credibility, transferability, and confirmability. This section explores these methodological matters further to show how the study conceptualised and addressed these issues.

In relation to claiming that a study has reliability, Wiersma and Jurs (2005) describe ‘reliability’ as the consistency of the research and the degree to which studies can be replicated. In addressing the issue of reliability, a positivist researcher is capable of employing techniques to show that, if the work were repeated, in the same context, with the same methods and with the same participants, similar results would be obtained. Qualitative research, however, does not work from this position. Rather, the field of qualitative research works from a premise that, because social contexts are always changing, it is more useful to discuss the dependability of a study (Shenton, 2004). The dependability of qualitative research is derived by its capacity to show how evidence obtained is credible by examining the procedures by which it was produced (Freeman et al., 2007; Roulston, 2010; Schwandt, 2001). Discussions of validity and reliability in qualitative research encompass how studies are designed and conducted, and how the methodology adopted fits with the underlying theoretical and epistemological assumptions about knowledge production.

Debate exists around rigour in qualitative research, and particularly in the use of qualitative interviews (Dick, 1999; Roulston, 2010). Considerations include how interview questions are asked in practice, and how interviewing as a method fits with the underlying theoretical and epistemological assumptions about knowledge production. Roulston (2010) believes that the validity and reliability in relation to qualitative interviewing requires that the use of interview data must be an appropriate means to inform the research questions posed and the interaction within the actual interview/conversation generates quality. Roulston (2010) argues that research validity and reliability is achieved through quality research design, conduct of the research, and the analysis, interpretation and representation of research findings. Roulston (2010) continues: “the methods and strategies used to demonstrate the

quality of interpretations and representations of data [must] be consistent with the theoretical underpinnings for the study” (p. 203). Reliability also refers to the quality of the field notes or transcripts based on raw data such as audio-recordings that are available for public viewing (Silverman, 2006).

According to Merriam (1998), credibility is an equivalent concept to validity. Lincoln and Guba (1985) argue that ensuring credibility is one of most important factors in establishing trustworthiness in research. This can be achieved by incorporating correct operational measures and Yin (1994) suggests using five quality control criteria for case studies, such as this research. The five criteria are: theoretical basis and case-study protocol, triangulation in methods and procedure, documentation of a case-study research project and case-study report, designing a chain of evidence and the logic of generalization. These five criteria are discussed in Section 3.1. Qualitative studies open the opportunity for developing future research questions, and for consideration of professional applications arising from the studies.

Dockett and Perry (2007) suggest that “traditional concepts of reliability and validity are often problematic when seeking to involve children as participants in qualitative research” (p. 48). There are cautionary and advisory voices about theoretical and practical issues in research with children (Danby & Farrell, 2004; Roberts, 2000, Spyros, 2011). One concern about research with children relates to the ‘trustworthiness’ of data, in the sense that children will tell researchers what think they want to hear, or that their responses change often (Cohen, Manion, & Morrison, 2000). However, Danby and Farrell (2004) and Dockett and Perry (2007) believe that this is a question for all research participants, not just children. From a methodological stance, Roberts (2000) believes that, as researchers, we are still learning ways of “involving children fully in every stage of the research process, from identifying meaningful research questions, to collaborating with researchers and disseminating good practice” (p. 225). Roberts (2000) suggests that researchers are still not good at hearing children, in the sense of taking full account of what they tell us. Further, she warns, “that listening to children, hearing children, and acting on what children say are three very different activities, although they are frequently elided as if they were not” (Roberts, 2000, p.238). Spyros (2011) argues that researchers need to reflect on the processes that produce children’s voices in research and the power imbalances that shape them. Being aware of this advice, I

actively attempted to follow that advice of listening, hearing, and acting during the research.

. What serves a research agenda may not always further a participant's interests. The researcher cannot assume that the issues that we, as researchers, find gripping will hold quite the same interest for children. However, the goal of this research (making programs more relevant to children) was made very clear to the children with the hope that the goal may act as a motivating device. As an environmental education "researching professional" (Guillemin & Gillam, 2004), I recognised that I readily accepted some of the children's ideas on a number of occasions and gave them increased importance. This ready acceptance occurred when the ideas appeared as a simple solution to my practitioner goal of improving the environmental experience at the Centre or if they appeared to reinforce my own beliefs. It required the academic discipline of constant reflection of my interpretations as an environmental education researcher to control this desire. An example of this reaction was evident when the children commented that using the camera and taking photographs was difficult due to logistical reasons, such as having enough cameras to share around the group. As a result, I stopped asking children to take photographs as part of the data collection. However, when I analysed the data, I found that the photographs that the children had taken were invaluable in contributing to understanding the context, and added to understandings developed from the study.

As with any research, there is a need for the researcher to be aware that there is not one set of views or one voice. Roberts (2000), for example, warns that no survey finding can be taken as a precise statement about children's attitudes and that "without asking children and young people for their views directly, it is all too easy to fall into imputing views to them, and stereotyping 'youth' on the basis of small samples or anecdotes" (Roberts, 2000, p. 235). As a reflective researcher, I needed to move beyond claims of authenticity and account for the complexity behind children's voices. I followed Warming's (2011) advice to recognise the multi-layered and non-normative character of the constructed accounts. If one 'voice' is a concern, children 'without a voice' should be viewed by the researcher equally as a concern. It is an easy error for the researcher to exclude those children who have problems

completing the process and, for example, “very profoundly disabled children are excluded as participants from almost all research” (Roberts, 2000, p. 237).

A strategy that adds rigour, breadth, complexity, richness and depth to the inquiry can be the use of a combination of multiple methodological practices, empirical materials, and perspectives. The credibility of the findings is established by demonstrating that I have gathered sufficient data through the use of multiple data sources (documents, conversations and journals) and checking interpretations across the different data sources. I attempted to address this issue by including a diversity of schools, some urban and some country, and by talking to equivalent numbers of boys and girls. The danger in a researcher using preconceptions was highlighted when I talked to one child with Autistic Spectrum Disorder. Although staff took special care of him during activities, he contributed some of the most incisive accounts during his conversation. One pleasing aspect for me, personally, was that his father, who visited daily to check how the boy was coping, thanked me for engaging his son in the conversation, as his son had valued the opportunity to have input. Finally, care was taken not to grant the resulting findings of this case study with a ‘false universalism’ where conclusions purport to describe all situations.

In this section, I examined the critical issues in research of validity and reliability. Acknowledging that the credibility of the research resides in part in my skill and competence as a researcher (Angen, 2000), the validity and reliability of the research can be enhanced by using quality control criteria such as suggested by Yin (1994) for case studies. Finally, the theoretical and practical issues in research with children were discussed. In the next section, I examine the second of two critical issues in research, ethical considerations.

### **3.8: Ethical Considerations**

Ethical research requires balancing the values of promoting new knowledge against protecting the emotional safety of research participants (Neuman, 1997). Features of ethical research include acknowledging the role of the researcher and locations of power in their interactions with participants, and establishing a safe environment by promoting equity and wellbeing among participants. Research with children presents serious ethical challenges. When this research takes place in the researcher’s workplace, these tend to be rendered even more complex. The aim of

this section is to illustrate the implications for the researcher in a study in which close relationships were developed with children. As a framework for thinking through these implications two different dimensions of ethics in research are discussed: methodological ethics and procedural ethics.

### **3.8.1: Ethical considerations in researching with children.**

Some researchers (Danby & Farrell, 2004; Roberts, 2000; Spyros, 2011; Warming, 2011) provide valuable cautionary voices, which may have a basis in important ethical concerns in research with children. These include how the researcher needs to be clear when it is appropriate to ask young people to donate their time to the research. Possible status and power imbalances between adults and children have the capacity to distort the ethical conduct of the research. There are also aspects of the adult-child relationship concerning research in an environmental education centre which may make non-participation difficult for a child. Therefore, there is a need to break down traditional power relations between teachers and children, and adults and children. The researcher, prior to engaging in research, needs to review consent to ensure that the child still wants to participate and must remind them of the child's right to withdraw at any time without any questions or fear of consequences. Children must know that if they withdraw from the research, this will not be held against them in any way. This approach was designed to centre children during data collection by honouring their right to withdraw data and by allowing their narrative to dominate conversations. Gambino, Davis and Rowntree (2009) suggest research strategies that can be usefully and ethically applied when conducting studies involving young children including recruitment and consent.

There is an onus on the researcher to make participation in research an experience, "which is at best fun, and at worst, does no harm, to young people" (Roberts, 2000, p. 238); recognising that the time that children devote to participating in the research is a gift. From a methodological stance, Roberts (2000) argues that researchers are still learning ways of "involving children fully in every stage of the research process from identifying meaningful research questions, to collaborating with researchers, and disseminating good practice" ( p.225). Therefore, my own research was as much a journey into these largely uncharted waters meaning that I had only some guidance (Corsaro, 2005) in how to approach the research. The

participation of children was indispensable to this research as the information sought about environmental education programs was from children's perspectives. I recognised that any interaction between a child and a person in a position of authority may cause stress to some children. However, I was surprised to find that this was not the case. I took efforts to ensure that conversations were conducted outdoors or in places that were neither threatening nor formal such as an office. The children displayed an enthusiasm in sharing their thoughts and appeared to appreciate an opportunity to have an input into centre planning.

The issue of being able to identify participants from the data collected is real as the intended use of audio-visual technology to collect data may compromise the anonymity and confidentiality of participants. The audio-recorded conversations with the children were used as a data collection tool, and they were later transcribed. Participants were offered the guarantee of confidentiality and anonymity. There was a need to take precautions in relation to the security and confidentiality of data during the study, in the publication of results and in the storage of data after the study. Collected data were stored securely in a locked filing cabinet and/or on a computer with password access and accessed only by the researcher and supervisors. Participants were given clear assurances in relation to how the data would be handled and how it would be stored. To further ensure security only transcripts of conversations were used in the thesis and reports, pseudonyms were used and photographs were digitally altered so that the faces and any identifying features of children blurred.

A researcher conducting a project in their own workplace faces additional ethical issues and challenges. First, I participated as a teacher among the other teachers at BIEEC rather than choosing a more withdrawn role and not interacting as usual with the children during the week. This had the potential that the children may be less inclined to express criticism about particular parts of the program, reflecting power imbalances between the children and the principal / teacher / researcher. I addressed this issue by reminding the children to tell us in the neutral terms of what they liked or disliked rather than expressing comments in personal terms. The children were encouraged to recognise that as a researcher I sought their opinions and not whether they simply supported my opinions. I recognised that a more withdrawn role in the camp program may have created an appearance for the children

that I was detached from the program. This detachment may have helped create a greater willingness for the children to make negative comments about the program. However, this outcome was uncertain and the practical need for specific skills and knowledge required me to participate in the camp programs. Perhaps the most challenging issue was my desire to implement immediately any suggestions that the children made rather than allowing the research process to be completed. To avoid my desire to implement immediately any suggestions required constant discipline on my half to ensure that this did not happen. The danger here was the ease with which data could be interpreted through practitioner's lens rather than allowing that data to speak for itself.

Finally, the published text is the construct and responsibility of the researcher. It was I who ultimately chose which quotes to include and, therefore, whose voices are heard. My ethical intent must be to minimise appropriation by avoiding misrepresentation and extending the idea of a reciprocal research alliance between me and the children. This can be achieved by writing what England (1994) calls “‘multi-vocal’ texts that ‘give voice’ to the researched by, for example, including lengthy quotes from their interviews” (p. 89). Indeed, she goes on to state that “these practices are vital parts of the research process” (England, 1994, p. 89).

In this section, I discussed ‘methodological ethics’, that is, ethical implications involved when working with children. Issues identified included when it is appropriate to ask young people to donate their time to researchers, possible status and power imbalances between adults and children and the for participation in research doing no harm to children. Data storage and the potential to be able to identify participants were also issues. When the research is being conducted in the researcher's own workplace there are specific ethical issues such as interpreting data through a practitioner's lens rather than allowing data to speak for itself. In the next section, I discussed the procedural ethical implications.

### **3.8.2: Procedures for ethical approval.**

While methodological ethical implications related to working with children, there were also procedural ethical implications that related to the operational aspects of the research, such as working with the ‘gatekeepers’ who controlled access to the children. Two sets of gatekeepers were addressed. The ‘organisational gatekeepers’

included the University Human Research Ethics Committee of the Queensland University of Technology (QUT) as well as the principals and teachers of the students involved in the study. The ‘personal gatekeepers’ were the children and parents of the children. In this section, I discuss these two sets of gatekeepers.

The first of the ‘organisational gatekeepers’ was the University Human Research Ethics Committee of the Queensland University of Technology. Of particular significance to this research is Research Ethics Booklet Number 16 produced by University Human Research Ethics Committee, QUT, *Research involving children and / or young people* (Queensland University of Technology (QUT), undated). My research project was designed within ethical protocols approved by the university’s Human Research Ethics Committee. Ethical clearance was applied for and approved by QUT, (see Appendix M) and addressed four key issues in the ethical conduct of research under its jurisdiction:

- Recruitment.
- Consent.
- Risk management.
- Confidentiality.

After obtaining University ethical clearance, Education Queensland was contacted regarding formal application for participation in the study. In the Queensland context, this required a written application to be approved by the Executive Director, Schools (see Appendix M). Although ethical clearance was obtained from Education Queensland to conduct the research, permission to identify the research site was not initially obtained. Therefore, an additional approval to allow permission to identify the research site was obtained during the period of drafting the research (see Appendix M). Once approval was provided by the Executive Director, Schools, the new set of organisational gatekeepers needed to be approached; the principals of potential client schools. The principals and teachers involved were assured that the study itself focused on children’s experiences at the Centre and in no means set out to evaluate their individual school and classroom practices. This assurance was done through providing copies of the principal, parental and child consent and information forms (see Appendix N).

Having passed through the organisational gatekeepers, a second group the personal gatekeepers had to be negotiated. Therefore, approval was obtained from the child’s parent or guardian and the child. Although the participants were not

screened, participants could feel under pressure to participate and so this process needed to be carefully managed so the child was aware of their right to withdraw at any time without any questions or fear of consequences. All children were volunteers, and there was considerable willingness for involvement by the children.

The principle of obtaining informed consent from participants is an important ethical issue in research involving human subjects. In Australia, for example, informed consent is inscribed in the *National Statement for the Ethical Conduct of Research with Children* (National Health and Medical Research Council, [NHMRC], 2007). Children can give assent for participation (Danby & Farrell, 2005; Gibson & Twycross, 2007). Hill (2005) argues that it is not sufficient for children to simply not express an unwillingness to participate when asked if they wish to participate in research. That is, positive consent is required. Assent means the children understand what is expected to happen to them and that the activity is explained to them. They are asked if they agree to participate. Young children cannot sign their names as agreement though they can give verbal assent. Older children can sign their names in assent. Parents must always give consent for children up to age 16 (NHMRC, 2007). Consent is obtained from research participants if it is voluntary, informed and understood. In this research, the child's parent, or guardian, and the child were each provided with information packages and both the child's parent or guardian and the child were invited to sign an informed consent sheet (See Appendix N). Factors in the information provided to the children included:

- the aims of the research;
- what time and commitment was required;
- who will know the results;
- confidentiality was promised.

In addition, child participants gave verbal consent at the time of the audio-recorded conversations with the researcher. The information packages provided information about the research, and it was intended that they would facilitate opportunities for parents and children to discuss the research project and to establish a foundation for developing informed consent. In the context of qualitative research involving conversations, informed consent is a very important component for fostering a trusting relationship between the 'interviewer' and the 'interviewee'. According to Glesne (1999), informed consent also may "contribute to the empowering of research participants" (p. 116). Through the details that I provided, the children appeared to

understand that they had the potential to play an important role in deciding how the Centre would operate in the future. Ethical considerations provided only one aspect of the limitations of this research. In the next section, additional limitations are discussed.

### **3.9: Limitations of the Study**

Perhaps the most telling limitations of this study were the skills and knowledge of the researcher himself and the boundaries of time. As a researching professional, the major limitation was the need to juggle time commitments for my work and for this study. The difficulties of undertaking this research in a part-time mode are compounded given the nature of my position. The hours of work in a residential environmental centre are anything but regular. Teaching days may start at 6:00am and extend until 10:00pm. Weekend work is a regular occurrence. Wilderness camps may extend for 10 days. In this situation, simple personal hygiene is a difficult undertaking and the situation is not conducive to study with no power or poor lighting. A second major limitation was undertaking this study in a provincial city six hours by road from the university. Distance created difficulty in accessing resources and meeting face-to-face with supervisors. It was only the dedication of supervisors, modern communication technology and efficient university procedures that enabled this limitation to be overcome.

As I proceeded through the study, on reflection, I identified a number of areas where, if I were to conduct the research again I would make a number of changes.

‘Interviewing’ skills: One matter was not always gaining a clear audio-recording of the child’s conversation. This meant that there are gaps in some transcripts. I had been careful not to intrude on the child’s personal space when I placed the machine for the interview. Unfortunately, by being too careful about this matter, I had placed the machine too far away to gain a clear recording.

Although I was not aware at the time, on examining the transcripts, it is apparent that I missed numerous opportunities to have even more detailed conversations with children and this leads to the next point. Although working within a sociology of childhood perspective and allowing the children to set the nature and cause of our conversations, which allowed for discussions on cattle, water, fishing

and camping trips, I noted that there were numerous opportunities where children provided me with an excellent lead that I failed to take up.

I had recognised during the data collection process my lack of skill conversing with children for the purpose of research. Therefore, I used the principle of data saturation to ensure that sufficient data were collected to allow meaningful conclusions to be drawn. However, these same conclusions may have been able to be drawn from a smaller sample and hence less time and effort.

Use of equipment: The lack of cameras has already been identified as a limitation that impacted on the nature of the research process. This was as a result of the lack of mastery of research methods by the researcher. It was only after the use of cameras was ended and considerable other data were collected and analysed that the value of the children's photographs was appreciated and I realised that I should have continued to use the method. Once again, the principle of data saturation ensured that sufficient data were collected to allow meaningful conclusions to be drawn so that the early cessation of the use of cameras did not have a negative impact on the overall study.

Ethical clearance protocols: I recognised that some messages were being repeated early in the research. Because I used four different cohorts of students (i.e. five schools in four camps), I had an opportunity to examine data from each individual school and use that data as the basis for modify the nature of the next round of conversations. In order to carry out this approach, I would have needed to have gained a separate ethical clearance from the University for each School as the nature of the research would have varied from school to school. Given the operational procedures of the University, such permission would have not been possible to gain in a reasonable time as the ethics committee meets infrequently each year. This would have resulted in the data collecting extending over a considerable period. However, although I had a set of 'conversation starters', these were not fixed questions that needed to be asked. Also, recognising that conversations are a construction between the 'interviewer' and the 'interviewee', I was able to modify my approach to conversations each time. This modification of the conversation process may have also reflected my increasing skill as an interviewer.

### **3.10: Summary of Chapter**

This chapter examined the methodology and research methods of this study. I started by reviewing the assumptions behind the focus of the study to provide a theoretical framework for this study. I discussed what is meant by reflexivity in research and identified that a more reflexive and flexible approach to undertaking research allowed me, as researcher, to be more open to any challenges to my theoretical position that almost inevitably arise. I identified that my role as researcher is multi-faceted. I then discussed my theoretical framework, a case study. In discussing the importance of validity and reliability, I drew on Yin's (1994) suggested five quality control criteria. Ethical issues that arose from working with children and the limitations and dangers that this type of work can produce were discussed. Finally limitations of the study were identified.

After the discussion of methodology and research methods, I described the participants, and the data collection process. In examining the data analysis process, I used Berg's (2001) Criteria of Selection of Data Analysis as the framework.

In this chapter, I addressed the first five steps of the general order of analytical activities identified in Berg's (2001) model. In the following three chapters, I address the first component of Berg's (2001) final set of analytical activities, "identified patterns are considered in light of previous research and theories, and a small set of generalisations are established" (Berg, 2001, p. 240). In these chapters, I discuss, in light of previous research, children's perspectives on the three interrelated and co-dependent issues; place and space, engagement and participation and responsiveness and reflection illustrated in Figure 3.1.

# Chapter 4: Children's Perspectives on Space and Place



Figure 4.0: Wordle of the 30 most common words in Chapter 4

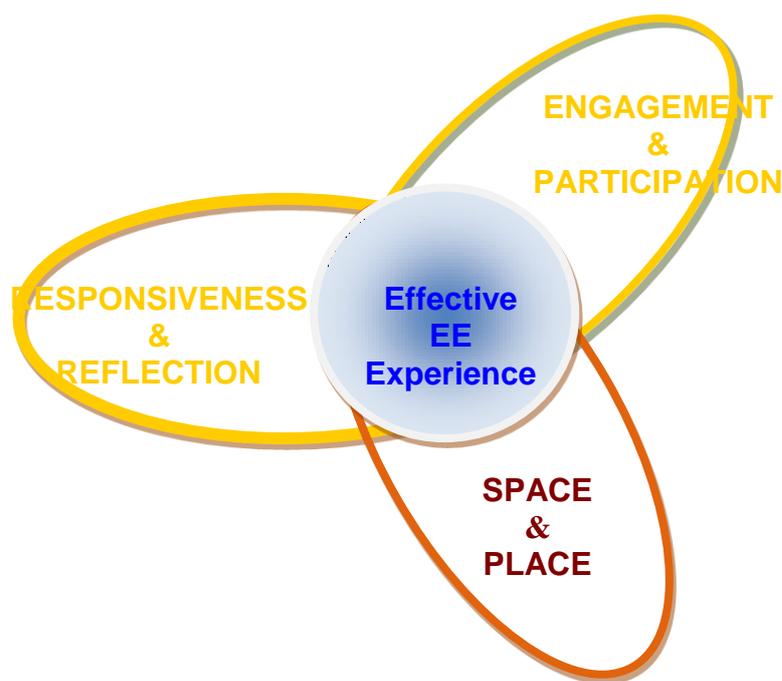


## Chapter 4: Children's Perspectives on Space and Place

This chapter is the first of three data discussion chapters. The discussion in these chapters addresses the three research questions:

- *How did children account for their experiences of an outdoor environmental education program?*
- *How did the environmental education program engage children?*
- *What are the implications for using a methodology that draws on children's accounts of their experiences?*

In these chapters, I discuss, in light of previous research, children's perspectives of three interrelated and co-dependent issues: place and space, engagement and participation and responsiveness and reflection illustrated in Figure 4.1.



**Figure 4.1: Framework of children's accounts of their experiences**

This case study is grounded within one specific institutional reality with an analysis of children's accounts of their experiences at one particular environmental education centre. I drew on an inductive approach to data analysis with themes and categories coming from the data (Berg, 2001). That is, outcomes were grounded in the data. Seen from an epistemological viewpoint, this study was built on

hermeneutics, that is, on understanding a phenomenon (Ricour, 2004). Therefore, as the study progressed, it was necessary for me to undertake a second round of literature reviews as new themes arose out of the data. These literature reviews on the relevant themes are included in the data analysis chapters, 4, 5 and 6. These literature reviews helped situate the children's perspectives within the broader literature, and contributed to better understanding the significance of the children's statements.

The chapter discusses 'Space and Place' (see Figure 4.1) through an examination of children's accounts of their environmental education experiences. I discuss the outdoor classroom as a place where children in the study reported feeling safe and comfortable. In the children's accounts, the concept of the Centre as a place to explore the environment featured strongly in conversations. For the children, a place provides a context for discovering new things, providing first-hand experiences in the environment and where children could feel safe while still engaging in challenging experiences. In the final part of the chapter I examine the diminishing connections children have with the natural world. I revisit the literature to examine the concept of risk as an educational issue and examine contributing factors to these diminishing connections to the natural world. However, first, I examine the literature regarding the context of the research, then the concepts of space and place.

#### **4.1: The Context: The Boyne Island Environmental Education Centre**

Centre documentation states that programs at the research site have as a goal being "enjoyable, exciting, challenging, practical, first hand experiences" (BIEEC, 2009, p. 2). The research site's unique location supports a curriculum that emphasises the natural coastal, marine and reef environments and the human use of these areas. Programs at the site focus on learning how to care for our environment *through* the environment and fostering values that commit participants to act *for* the environment. A visit to Boyne Island enables teachers and students to accomplish this *in* the environment, introduces students to their local natural and cultural environments (past and present), and helps them to realise that they are part of those environments rather than separate from them.

## 4.2: The Concepts of Space and Place

In this section, I discuss the concepts of space and place in order to situate the children's perspectives on their experiences at the Centre. Meek (2011) writes that, "resulting from significant scholarship, the concept of place has come to the forefront of education in recent years" (p. 291). Education that gives particular pedagogical value to place is referred to by a variety of names. These include pedagogy of place, place-based learning, experiential education, community-based education, sustainable education and environmental education.

There is a variety of interpretations about the term 'place'. Wattchow and Brown (2011), believe that place is "not a thing, an object. It is...an unfolding phenomenon" (p. 77). For Gruenewald (2003a), place is "where the world manifests itself to human beings" (p. 625). Relph (1976) sought to understand the identity of a place but also the identity that a person has with a place which he described in terms of being an insider or an outsider. For Relph, to be an insider is to belong to a place, to be an outsider is to have no bonds with a location. Therefore, place is not a fixed concept but is created by beliefs, thoughts and actions that, in turn, help shape who we are as people. There is a connection between place, identity and cultural experience since humans live their lives in places. Therefore, place is the centre of human experiences and helps shape our identities.

Recent research within the field of childhood studies distinguishes between place and space. While the terms 'place' and 'space' can be used interchangeably to refer to some locations, Rasmussen (2004) differentiates between these terms. She acknowledges that although the term may not be particularly precise, 'place' is a "special, more delimited setting than space, a space with specific meanings and attributes" (Rasmussen, 2004, p. 165). The question arises-which comes first, space or place? Wattchow and Brown (2011) believe that the relationship between space and place remains one of the most difficult questions facing those interested in studying human experiences. For place-based educators such as Heimlich (2007) and Gruenewald (2003a), the concept of 'place' is used in a different way to Rasmussen (2004) and Christensen and Prout (2003). In Heimlich's (2007) view, "place-based education draws on the use of the natural and cultural environments to help generate emotional connectedness in learners" (p. 222). Experiences in nature are intended to help participants experience the natural environment, gain direct contact with

ecological processes and acquire skills (such as critical thinking) to investigate how to take action to address environmental concerns. Further, place settings encourage individuals to explore their own ways of reasoning as well as providing opportunities for autonomy and critical thinking within experiences. Place-based educators believe “the study of places can help increase student engagement and understanding through multidisciplinary, experiential, and inter-generational learning” (Gruenewald, 2003a, p. 7).

An inter-play of sensory and sense-making experiences occurs in place-based experiences. Gruenewald (2003b) describes the potential of place-oriented experiences as a gateway into the real-life world “creating those forms of cultural knowledge that nurture and protect people and ecosystems” (p. 9). Somerville and Green (2011) argue that “place-based education is presented as a conceptual framework that supports the educational significance and potential of places outside the classroom, in the school grounds and beyond” (p. 18). The inter-play of sensory and sense-making experiences that occurs in place-based experiences should not be considered as personalised ends in themselves. Instead these experiences provide opportunities for reflexive engagement that might allow children to interact in nature in sustaining ways. There is sensory reciprocity between the individual and place (Cameron 2003). Here, sense does not refer simply to the physical senses, but to the felt sense of a place when one is receptive towards one’s surroundings.

In Rasmussen’s (2004) view, space is labelled as “places *for* children that are made *by* adults *for* children” [emphasis in original] (Rasmussen, 2004, p. 165). The interfaces between place and children should not be underestimated (Cobb-Moore, Danby & Farrell, 2010) as there are social, cultural and political patterns involved in place making. Christensen and Prout (2003) note, “the collective practices of children themselves are important in constructing their sense of place...they make their own meanings about these localities through their own practices and discussions” (p. 152). Children work together to produce shared understandings of place. Cobb-Moore, Danby and Farrell (2010) argue that the concept ‘children’s places’ should be used to describe places that children relate to and talk about. While children use the word ‘place’, they usually do not talk about ‘children’s places’. The significance of place for Nordberg-Schultz (1985) lies in an experience that begins in an undifferentiated ‘space’, but becomes a ‘place’ as the children gradually

experience the setting and attribute certain meanings to it. This attributing of meanings requires the researcher to respect the meanings children give to the specific sites they describe in their conversations and in their journals

Place is argued also to have its own inherent spirit and meaning awaiting to be discovered by those who open themselves to place (Norberg-Schulz, 1980; Read, 2003). This interpretation of place accepts that a *genius loci*, or ‘spirit-of-place’ exists. The various interpretations are valuable in my analysis. Nordberg-Schultz (1985), Rasmussen (2004), and Christensen and Prout (2003) help explain the process by which place becomes valuable to children, while Heimlich (2007) helps explain the role of place in the experience. Place and space, therefore, are not the same. Children make spaces into places. However, place-based education supports the educational significance and potential of place and space to help increase student engagement and understanding. Place-based education can occur in various spatial contexts. For example, Duhn (2012) describes the potential value of place in early childhood environmental education programs. Place-based education is distinguished from main-stream school settings and is defined by its emphasis on the pedagogical value of the children’s environment, both natural and built. “In an educational context, place is best understood as a meeting of learners’ experiences, the ideas and ideals of the group and culture, and the geophysical reality of the learning site of the learning itself” (Wattchow & Brown, 2011, p. 77). I build on these concepts of place and space by examining the significance of place to this study’s participants in providing a context for participating in first-hand experiences, discovering new things, feeling safe and comfortable and being able to explore out-of-bound areas.

### **4.3: Place is Where Children Participate in First-hand Experiences or “All this stuff we found, the coral and plants and stuff”**

In the children’s accounts, they identified three spaces that supported their first-hand experiences. One space was the Centre itself. A second related to the places they visited that had been built by humans while the third related to the natural areas that they visited on Boyne Island. I examine each of these three places in turn, identifying the value the children gave to their primary experiences in each of these three spaces, and how the children were able to create these spaces as ‘places-for-environmental education’ in which they could discover new things.

First, the children talked about the Centre’s campus as a special ‘place’ for environmental education. Given that an environmental education centre is a type of school, it is significant that Keith identified the site as “*sort of like school*” or that Bill felt the grounds were “*cool*”, when describing the grounds such as a rainforest walks and a range of trails or how learning props had been placed around the grounds to challenge students to think about how they interact with the environment. These learning props included artwork, animal statues and places and provided spaces where students could sit and simply take time to relax. One prop that attracted the attention of some of the children was the ‘Thong-a-Phone’.<sup>14</sup> Grace took this photograph of the ‘Thong-a-Phone’ at the Centre (see Figure 4.2). “*It was made from old pipes. When you hit it you could make different sounds [notes of music]*” Grace said. She thought that it was “*strange*”.



**Figure 4.2: Thong-a-Phone (Grace, 9 years)**

Maisie wrote in her journal on the first evening, “*when I first came here I felt happy and excited. I thought it was going to be very boring but it was fun. When I got to my tent I looked at it and it was big*”. She not only described the excitement and anticipation that she had towards her week at the Centre but also her amazement that she was to sleep in a tent. Maisie looked on the tent with excitement while, in my role as principal, I look on these same tents as having reached the end of their life

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<sup>14</sup> A ‘Thong-a-Phone’ is a musical instrument made from pipes cut to different lengths so as when struck at the end of the pipe certain notes can be made. The name derives from the fact that the musical instrument is struck usually with a ‘Thong’. A ‘Thong’ is a colloquial name given to a type of rubber open footwear.

and in need of urgent replacement. At the time, new accommodation in the form of canvas cabins were being constructed, but no children commented negatively about the state of their tents, even when one school group had to endure a storm during its stay.

Piers and Jessie described how *“this place is huge”*. For a child, the place appears *“huge”*, while as a staff member who has worked at the site for many years, I view the campus as being quite small. Only one child commented negatively about the Centre’s campus, stating that there was a need for more showers in the amenities block. The excitement of the children about the Centre’s facilities contrasts sharply with the embarrassment of the staff and the concern of the parents about the Centre’s facilities and amenities, and reinforces the value of listening to children’s perspectives rather than accepting adult points of view as the only interpretation of reality.

The second place that children described as important was the built environment. Isabella identified in her journal that a highlight of her camp was a tour of the coal loading facility at the R.G. Tanna wharf in Gladstone. Lawson was even more emotive in the description of his encounter with the local built environment. *“I also went to the marina which had a coal mine call (sic) RJ Tannum mine (sic) with \$2 million bulldozers; which was amazing!”* Lawson was astonished at the cost of the large machinery that operated at the Port.

Nature was the third place that the children mentioned and the most significant feature of their intensive short term residential experience at the Centre. There were forty-five references to this during the conversations and drawings about nature, as illustrated by Figure 4.3.



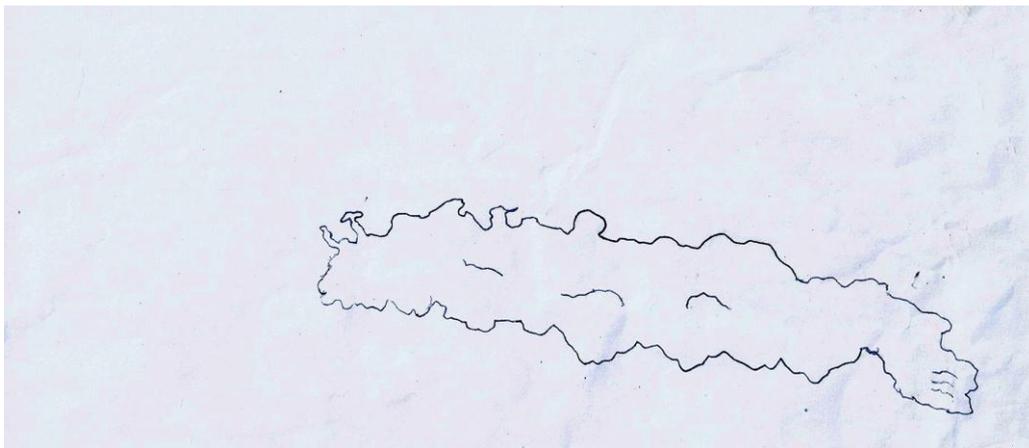
**Figure 4.3: Exploring rock pools (Jesse, 8 years)**

Many children created drawings of themselves exploring a place in nature, with this experience being the highlight of their camp, as illustrated in Figure 4.3. The importance of place was described by many children, such as Jesse, in terms of the curious natural features that they found:

- Jesse            *The drawing is of foreshore.*  
Researcher    *So which one is you?*  
Jesse            *I'm the small one.*  
Researcher    *So what was special about the rocky foreshore for you ?*  
Jesse            *All this stuff we found. We found a shell that was bigger than my hand.*

Jesse discussed the rocky foreshore as a special place because of all the different and new plants and animals he found in the area. Despite expressing a concern that some aspects of nature could be harmful to him, nevertheless he commented that the place was special. Objects found were also of interest. The finding of a shell larger than his hand was a source of astonishment for Jesse. Kay was captivated by the many rocks, both large and small, that created the place she was exploring. Pattern and texture, shape and size combined to create a place that was alive with plants and animals. Kay was drawn into this world and found the experience very enjoyable.

Like Jesse, Adam was so impressed with finding natural objects, such as a marine snail (a Sea Hare),<sup>15</sup> that he drew a picture of it (see Figure 4.4).



**Figure 4.4: Drawing of a Sea Hare (Adam, 10 years)**

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<sup>15</sup> A Sea Hare is a member of the Phylum Mollusca and has no external shell.

Adam went on to explain:

- Researcher *You have had done a drawing like a big slug for me.*
- Adam *It is like a snail out of its shell. It is like a snail without a shell on its back. It can be green, brown and grows to about 20cm.*
- Researcher *And did you or Tom upset it at all?*
- Adam *When Tom first picked it up it squirted the ink.*
- Researcher *And what colour was the ink?*
- Adam *It was pinkish purple.*
- Researcher *I think that colour is pretty cool. Did Tom tell you that you can dye clothes with the ink?*
- Adam *No.*
- Researcher *In the old days they used to dye clothes with the ink and that's why the kings wear purple. It is very expensive because the blue dye came from snails. So why was that very important to you?*
- Adam *Because I have never seen one of those before in my life. I have seen most of the other stuff before but this is the first time I had seen this.*
- Researcher *So it is something new?*
- Adam *Yes.*

Adam had seen most of the other types of animals previously, but the camp provided an opportunity to encounter some new natural features and life forms. This trip was the first time he had seen a particular type of snail and witnessed its strange ability to produce purple ink. As a result, the experience was memorable for Adam.



**Figure 4.5: Photograph of a Sea Hare (Keith, 12 years)**

Keith also found the Sea Hare interesting and took a photograph of it (see Figure 4.5). “*I have never seen a snail that squirted ink before*” Keith told me. For Maisie, the animal that caught her interest was a Brittle Star (see Figure 4.6).<sup>16</sup> “*It was waving its arms around like snakes*”, she related. The movement of the animal’ arms reminded her of an image of slithering snakes and so caught her attention.



**Figure 4.6: Brittle Star (Maisie, 10 years)**

Other children also created drawings of the places that they explored. Louise told of her drawing “*of the rock pools where we went on Wednesday and all the different creatures, animals that were in the pools, it was good fun*”. Louise found that encountering the diversity of wildlife was “*fun*”. Keith, meanwhile, described his picture, “*it’s the rocky foreshore, I like it because I just like going around with wildlife and letting them go then*” and told of his physical interaction with the wildlife. Keith discovered different animals, handled them in a respectful manner, then released the animal without harming it. Kay thought it “*interesting*” the way the place consisted of special opportunities for her to explore. She repeated the theme of ‘place’ as involving fun. Stating it was “*interesting how there were thousands of little and big rocks put together and there were these little pools full of fish and seaweed and stuff like that and it was fun*”.

Having fun, interacting with nature and discovering new things was a theme repeated by Stanley, who wrote in his journal, “*Today I went to tammen sands*

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<sup>16</sup> A Brittle Star belongs to the same group of animals as Sea Stars in the Phylum, Echinodermata

[Tannum Sands] *to learn about rocky foreshore. There were lots of animals, Mr K told us to find five animals and five plants. It was fun finding and learning about the rocky foreshore*". Rebecca also enjoyed exploring the rocky foreshore. "*I really like looking at rock pools and seeing all the plants and animals in the rock pools*", she said. Jeremy, on the other hand, enjoyed the mangroves, "*We went to a mangrove swamp. It was cool*". Karen commented that "*the reason I liked the mangrove so much was because we found lots of little sea creatures*". Children gave excited accounts of exploring nature and physically interacting with nature by actually touching animals and plants. Significantly, they described these activities also as fun. Piers took a photograph of the pools (see Figure 4.7) that we explored as being a memorable part of his experience.



**Figure 4.7: Rock pools (Piers, 10years)**

Piers told me "*they had such weird shapes*". Piers was referring to the complex combination of weathering agents that had created the pools and provided, not only another example of the novelty of new environments, but he recognised the effects of nature in shaping the landscape. Rebecca identified the importance of her interaction with nature when she explained how visiting the rock pools was special for her and she was able to combine learning with fun - so much so - that her environmental education experience was as enjoyable as experiences on her holidays:

Rebecca        *I really like looking at rock pools and seeing all the plants and animals in the rock pools.*

- Researcher *But you have been to the beach before haven't you?*  
 Rebecca *Yes, I have been to the beach for holidays.*  
 Researcher *So what was the difference between visiting the beach for holidays and exploring the pools and learning here?*  
 Rebecca *There is no difference. They are both fun.*

Louise also linked this environmental education experience with previous experiences when she was on holidays, as she attempted to explain why some areas that she visited during her time at the Centre were really special:

- Louise *I like the rock pools because I explore them with my cousin as we go down to you Yeppoon. I've been to the rock pools and mangroves a few times.*  
 Researcher *So was there anything different this time?*  
 Louise *It was a good experience. This time you came to learn other things. You just go down to have a bit of fun so this time it was more of a learning thing.*

In summary, a consistent story unfolds in each example cited above. Louise identified that primary experiences were good experiences that combined fun and learning about the environment. The children identified three places for primary experiences in their conversations that fulfilled these criteria: the centre campus, the built environment and the natural environment. Although children had seen many of the types of animals before, their experiences also provided opportunities to encounter new natural phenomena. Having fun, interacting with nature and discovering new things were themes repeated by most children with some children also able to link this primary learning experience with previous experiences thus building on their existing knowledge. I discuss the value of primary experiences as valuable learning opportunity in the next section.

#### **4.4: Place is an Outdoor Classroom or “This is outside, school is inside”**

In talking with the children about their environmental education experiences, the children contrasted their classroom-based learning as indoors and passive, while their Centre experiences were outdoor, first hand and active. I discuss this contrast here. I discuss more broadly environmental education learning through primary experiences in place, and the value of such primary experiences in learning experiences.

In the statement in the heading above, John contrasted the difference clearly. When I questioned him further, John went on to say, “*well this is outside and you learn something different*”. John saw the outside as providing opportunities to learn and identified that this learning was different to that which occurred at school. For John, being at the Centre was like being in an outdoor classroom. Martina also saw school in terms of being mainly indoors. She, too, described a more sedentary role for the student in school-based educational situations when she said, “*you are inside the classroom, sitting at a desk and work and you get taught by the same teacher*”. Education indoors also meant a physically passive role for Martina, mainly sitting and interactions with those who could assist her in learning were confined to the classroom teacher. Several other children expressed a preference for being in, and learning through, the outdoors, such as Brett and Keyle, who related:

- |            |   |
|------------|---|
| Brett      | <i>Doing hand writing, maths, tests all the time.</i>   |
| Researcher | <i>So is learning the same at school as here?</i>   |
| Brett      | <i>No.</i>  |
| Keyle      | <i>Not really.</i>  |
| Researcher | <i>So what are some of the differences?</i>   |
| Brett      | <i>You don't go snorkelling or going to the beach.</i>  |
| Researcher | <i>You do not have a beach near your town so you'd have to go somewhere else. So do you like to be outside or inside?</i> |
| Brett      | <i>Outside.</i>   |
| Keyle      | <i>Outside.</i>   |

The outdoor classroom provided Brett and Keyle with opportunities to engage in different types of activities and to visit new locations, which they contrasted with school educational activities, such as hand-writing, doing maths and taking tests. Brett and Keyle summarised their discussion by expressing a preference for the outdoors. Other children confirmed this idea when they commented:

- |         |   |
|---------|---|
| John    | <i>We are doing a project on mangroves and coming here gave us more information we were able to go and see the place and be in the mangroves.</i> |
| Stanley | <i>And it taught us more by being in there.</i>   |
| Louise  | <i>At school we can see it in a picture book but here you can get in the mud.</i>   |
| Keith   | <i>Did not have to imagine it as you do at school.</i>  |
| Quentin | <i>We actually get to see the place.</i>  |
| Dane    | <i>We actually got to try things.</i>   |

The value of the outdoor classroom for John was the opportunity to experience first-hand what they have been studying in their school classroom. Although the children had been learning about mangroves in class, they indicated that they had gained much more knowledge about mangroves by visiting the field site than they did through their school-based learning experiences. Learning content is traditionally a significant part of the learning process at the Centre, as identified in the Centre's curriculum documents (BIEEC, 2005, p. 5). This access to content knowledge though has been combined with practical, first-hand experiences that, together, appear to make the environmental education experience more meaningful for the children.

In summary, the children in the study valued real-world, outdoor learning experiences, and their accounts suggest that these provided more powerful educational opportunities than a virtual or classroom experiences. As learners, the children were able to see and be in the place, and did not have to imagine it. Children were able to participate directly in activities, thus identifying that physical engagement was an important element that added to the richness of their learning experience. Overall, the children gave a clear message that they appreciated being outdoors and that the outdoors offered new and different educational opportunities to their usual classroom-based learning. This idea that real-world learning experiences can provide a better learning experience is discussed in the next section.

#### **4.5: Place is Where Children Feel Safe and Comfortable or “It's a lovely place and you feel very safe here”**

In this section, I build on the concepts of place and space by examining their significance for the children as sites that allow them to feel safe. A sense that the Centre and its spaces were safe appeared to be a combination of the reassuring qualities of the centre staff, how activities occurred, and the types of equipment the children used. Kay, when asked what she would tell people about her experience at the Centre when she returned home, replied, *“I will tell them that it's a lovely place and you feel very safe here. And no matter where you are that there are lovely people here”*. People and place were important for Kay, in terms of her being safe. Jonathan related 'being safe' to the concept of trust. He drew a colourful image (see Figure 4.8) and also wrote in his journal, *“Today I learnt not to be afraid of heights*

*because I knew I could do it and the harness made me feel safe. ... I had the most fun on the high ropes”.*



**Figure 4.8: High ropes activity-climbing a tree (Jonathan, 9 years)**

There was a sense of trust being illustrated in that the children reported that they felt safe in the environment. Despite engaging in physically demanding activities, Jonathan relied on the harness, to help him feel safe and to gain the confidence to tackle the challenge. Jonathan is enclosed by a network of technologies to manage risk, such as the harness. Therefore, the situation potentially may prevent the development of autonomy or resilience by the removal of consequences from failure to be competent in a task. However, despite the contrived nature of this risk-oriented activity, growth and learning opportunities occur as detailed in Jonathan’s account.

When children expressed feeling unsafe, their comments generally related to aspects outside of the camp program. Troy told us of his concern. *“It was exploring on the bikes. It was pretty scary crossing the Boyne River Bridge because all this traffic would come up behind you and make a big swish sound”*. For Troy, it was the rush of cars close to him as he crossed a high bridge that made him feel unsafe. For Bunty and Mabel, the sounds and shadows of night time in their city created a scary experience:

- |            |  |
|------------|--|
| Mabel      | <i>At night time when we sleep because it sounds like there is something on the roof and it’s all dark and that makes me scared and you can hear noises.</i> |
| Researcher | <i>And what do you see?</i>  |
| Mabel      | <i>Different shapes.</i>   |

Bunty            *Yes, one looks like an Oompa-Loompas.*<sup>17</sup>  
 Mabel           *Another thing that's scary is hearing the  
 Neighbour's dog bark.*

Bunty and Mabel drew on Roald Dahl's books (1964, 1972) to describe how they responded to shadows in the night. The sound of dogs barking was also a source of concern. Nevertheless, some children, such as Jamie, wrote in their journals about experiences at the Centre that they had found frightening. Jamie, a 10 year old child, wrote, "*this morning I saw an acidna (Echidna) but nobody bellives [sic] that it chased me away from my tent.*" The Echidna is not renowned for its ferocity or speed, which makes Jamie's story all the more significant regarding his concern about the threat from wildlife. Other children's accounts of feeling frightened by their bush setting included Keith's response about potentially being bitten by an animal, "*I was lifting some rocks and saw a big crab and it tried to bite me. It really scared me*". Many children who related an unpleasant experience with the natural environment while at the Centre expressed their response in ambivalent terms. Jonathan related, "*When I was snorkelling I had a bit of seaweed wrapped around my ankle and I thought it was a jellyfish and that scared the 'bejesus' out of me*". However, when asked "Was there a time when you did not feel comfortable about being in the environment?" Jonathan contradicted himself, "*We did a lot of fun things. We went snorkelling and swimming and we went fishing with hand lines, able to look at things a different way and get in the water and look at it up close*". He went on to describe snorkelling as being fun, despite the water being smelly:

Jonathan        *And the sea the water tasted funny.*  
 Researcher      *Yes, it had all that algae in it.*<sup>18</sup>  
 Jonathan        *I remember the smell. It had that really yucky slimy smell.*

In summary, the children's descriptions of their experiences identified that feeling safe was an important aspect of the Centre's outdoor classroom. Feeling safe appeared to result from a combination of supportive Centre staff behaviours, how activities were conducted and what equipment the children used, all elements of the Centre's stated pedagogic approach. These features combined to create an environment in which the children felt they could more fully engage in the

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<sup>17</sup> Oompa-Loompas are fictional characters from Roald Dahl's books *Charlie and the Chocolate Factory* (1964) and *Charlie and the Great Glass Elevator* (1972). They are small men who are orange in colour.

<sup>18</sup> An algal bloom event of *Trichodesmium* species was occurring at the time

experience. Creating this environment reflects Rasmussen's (2004) understanding of place. That is, the combination of staff, activities and resources are combined by the adults to create 'places for children'. There was also a sense of trust in that the environment the children were in was a safe one. Trust allowed some children to test limits of exploring their environment. The children's positive attitudes to risk and challenge contrasted with that of some of the supervising adults who accompanied the children on their visit to the Centre. I examine this idea of adult restrictions in the next section.

#### **4.6: Place is Where Children can Explore Out-of-bound Spaces or "I'm usually not allowed to go on the rocks"**

Overall, the children's accounts of their encounters with nature tended to be more positive than those of the supervising adults. For example, after a night when there had been some rain, I had a conversation with Kaitlin that included the following exchange:

- Kaitlin *No, we had rain and we thought it might be a storm. It so much rain coming through and we thought there'd be a storm, but there wasn't.*
- Researcher *Did we get hail?*
- Kaitlin *I don't know, Mrs K. said we got some hail.*
- Researcher *I know we got showers.*
- Kaitlin *Yes, a bit of rain, yet that was really cool.*
- Researcher *Yes, but as long as you do not get wet. Did you have rain in your tent?*
- Kaitlin *No, we only had a little tiny bit just in the corner where all stuff was to be found.*
- Researcher *But as long as it doesn't get wet. Did you go to sleep quickly?*
- Kaitlin *Yes.*

What is significant about this conversation is that, at the time of the rain, the parents and other helpers of this particular group expressed concerns about the possible impact of rain on the children. The adults wanted the children to be moved out of their tents and into a building. Indeed, there was considerable discussion about whether the children should be moved at the time. The adults' general point of view was that children should not camp if there was rain. Kaitlin, on the other hand, felt the situation was simply "cool". During another weather incident, one parent

demanded that the children be moved from the tents during a storm in case they got wet. The children did get wet when they were moved, so the parent's prediction was accurate!

So far, this chapter has discussed the importance of place and space in environmental education where 'Place' is identified as somewhere where children feel safe and comfortable. Although there is educational value in primary experiences in the outdoors (American Institutes for Research [AIR], 2005; Burdette & Whitaker, 2005; Kellert & Derr, 1998; Lieberman & Hoody, 1998; State Education and Environment Roundtable [SEER], 2000, 2005; Taylor & Kuo, 2006). the children identified that this opportunity to participate in such primary experiences was, at times, limited by adults. The net effect is diminishing connections to the natural world for many children. In talking with the children about their experiences, some related that they appreciated being outdoors because the experience offered new opportunities to explore the natural world in which they lived. For example, Shirley is not allowed to visit mangroves.

- Shirley        *It was about when we went down to the mangroves and all mud. There were heaps of mangrove bushes we had to push through and snorkels above the ground. We didn't get the real names so we just called them snorkels.*
- Researcher    *Since you live around here, have you just gone down to explore the mangroves?*
- Shirley        *No, I am not allowed.*

Quentin also lives locally. When asked if there was one special area for him, he replied "*the mangroves because I've never actually been to the mangroves before*". Shirley and Quentin have lived in this locality all their lives (10 years) but neither child had visited the mangroves, a significant local habitat. It is difficult when visiting the mangroves not to get dirty. Marg said she took the photo because "*Penny fell over in the mud and got all dirty. She was funny*" (see Figure 4.9 on facing page).

Jerome gave a similar story "*Jake got stuck in the mud and lost his shoe. We had to dig it out*" (see Figure 4.10 on facing page). Although it was not my intention to undertake photo analysis in this study, it is apparent from the smiles on the faces of the children that they were finding the experience of getting muddy, and perhaps breaking social conventions that one should not get dirty, while exploring the mangroves, enjoyable.



**Figure 4.9: Girl in mangroves (Marg, 9 years)**



**Figure 4.10: Boy in mangroves (Jerome, 9 years)**

Tanya repeated a message of being restricted by her parents, this time in relation to exploring rock pools. Tanya reported that when she visits the beach, she is not allowed to go on the rocks. Therefore, never having been on the rocks before, she found the experience a significant one.

Researcher *You have mentioned that the mangroves and the rock pools were pretty important for you?*

Tanya *Yes.*

Researcher *Were there any other areas that were special for you?*

- Tanya *Well here, it's pretty cool.*
- Researcher *Do you mean you here at camp?*
- Tanya *Yes.*
- Researcher *So why were the pools and mangroves special?*
- Tanya *Seeing all the different types of animals and seeing the different things. We live out in the country and seeing different things.*
- Researcher *But you've been to the beach before, so what was different?*
- Tanya *I've never been on the rocks before. I'm usually not allowed to go on the rocks.*

Shirley also reported that she is not permitted to explore the rocky areas whenever she has visited the beach. This restriction added value to her beach experience during her visit to the Centre because she was able to participate in something “*different*”.

Some children were prepared to test the limits to which they could interact with the natural environment. I observed, during a rocky foreshore study two children, John and Stanley who each tested themselves against their perception that nature can be dangerous by allowing themselves to be stung by a Hydroid.<sup>19</sup> Their risk-taking behaviour was calculated, tempered by information from the teacher that the effect would not be severe, and were prepared to accept this challenging experiment. They then related how the pain impacted on them. The children were able to use their new found knowledge to explain to other children how the animal was able to catch its food. John thought this experience was so significant that he drew a picture of this as being the most significant aspect of his visit to the Centre (see Figure 4.11).



**Figure 4.11: Boy at rock pool (John, 10 years)**

<sup>19</sup> A hydroid is an animal that looks like a delicate fern. It is a member of Phylum Cnidaria. Cnidarians are characterised by possessing stinging cells that they use to capture their food. The effect of stings from different Cnidarians can range from mild discomfort to death.

John explained further:

- John            *This is of the rock pools when we met on wed and all the different creatures animals that were in the pools it was good fun.*
- Researcher    *What is that?*
- John            *That is the stinging stuff.*
- Researcher    *Did you have a go?*
- John            *Yes.*
- Researcher    *What was it like?*
- John            *It stung.*
- Researcher    *Much?*
- John            *No, not much.*

The Centre provided the children with opportunities to interact with nature that were, not only permitted, but actively encouraged, in contrast with the limitations that the children stated were imposed on them by their parents. As a result of these findings, it was necessary for me to return to the literature in order to situate the children's perspectives, and to better understand the significance of the children's statements. In the next section, I examine the concept of risk as an educational issue by discussing diminishing connections to the natural world. I examine possible causes and consequences of these diminishing connections and the links that exist between diminishing connections to the natural world and biophobia (Hyun, 2005) and 'nature-deficit disorder' (Louv, 2005).

#### **4.7: Diminishing Connections to the Natural World**

In the children's accounts, they raised issues of risk as identified through parents' and other adults' perspectives. The children's positive attitude to risk and challenge was identified as being different from that of the supervising adults. In this section, I examine risk as an educational issue, discussing possible causes of diminishing connections to the natural world and possible resulting consequences. Within possible causes, I discuss how categories of risk change over time and place. This change is driven by numerous interrelated factors, including changes in the built environment, changes in attitudes towards children in public space, and changes in children's freedom to move around their neighbourhoods independently, without an adult (Wyver et al., 2010). In the second section, I examine the potential educational issues from diminishing connections to the natural world.

#### **4.7.1: Possible causes of diminishing connections to the natural world.**

Categories of risk change over time and place, “so that what may have been considered harmless only a decade ago may now be perceived as potentially harmful” (Singh & McWilliam, 2005, p. 4). Singh and McWilliam (2005) argue that perceptions about risky practices and dangerous behaviours are constructed through the stories heard or read about. Put simply, exaggerated negative attitudes to risk, as well as excessive minimising of risk-taking, and resulting disproportionate strategies of risk-aversion, may be ‘talked’ into becoming the norm. This process allows any situation to potentially be regarded as an extreme risk-situation. Restricting children’s activities in the interests of risk minimization makes it possible to read a risk reaction as good professional judgement rather than the product of irrational panic (Singh & McWilliam, 2005). The overly risk-conscious person, therefore, comes to see dangers that others do not. This appears to have produced heightened states of anxiety and concerns about potential risks in relation to children. During the period of this study, worried parents forced the cancellation of a school excursion for older children to the Centre because of a shark attack that had occurred 3000 kilometres away. This attitude reflects Franklin and Cromby’s (2009) study that found parents exaggerate the likelihood of statistically low frequency, but high media profile, events when considering child safety.

Perceptions about risky practices and dangerous behaviours are constructed through the stories we hear or read (Singh & McWilliam, 2005). The media provides a multiplicity of stories telling about new fears for children’s safety. *The Times* columnist Mike Wade writes about America and Britain, “where a parental wish to do one’s best by a child combines with fears over safety to constrain youngsters more than ever”. He also tells how “Stockholm bans children under the age of 11 from cycling to school” (Wade, 2008, p. 31). Risk is no longer about the probability of losses and gains; risk simply means danger (Singh & McWilliam, 2005). Therefore, what constitutes a negative or unwarranted risk is subject to cultural interpretation. *The Queensland Risk Management Code of Practice (2007)* (Department of Employment and Industrial Relations [DEIR], 2007) defines a hazard as “something with the potential to cause harm” (p. 3) and a risk as “the likelihood that a harmful consequence might result when exposed to the hazard” (p. 3). A drum

of toxic waste is hazardous, therefore, whether it is in a well-regulated disposal facility, or sitting in the living room. The level of risk, however, would be very different in these two cases. Unfortunately, the term 'risk' is usually interpreted with negative connotations so that the terms 'risk' and 'hazard' are often seen as synonymous. The result is that childhood generally, and children's experiences with nature in particular, is becoming undermined by risk aversion (Gill, 2007).

Concerns abound about children's safety. In Australia, for example, children are being subjected to unprecedented levels of surveillance and control, driven by rising parental and institutional concern about environmental risk and crime. For example, Cadzow (2004), Irwin (2004) and Malone (2007) argue that children are now living highly scripted lives, marked by pervasive anxiety and the absence of free and independent play in what Malone (2007) describes as 'the bubble wrap generation'. This situation is developing despite evidence showing Australia is a greatly safer place for children than it was three decades ago (Australian Bureau of Statistics, 2005a, 2005b; Gleeson, 2004). For example, Australian Bureau of Statistics surveys show a significant drop in crime in New South Wales between 2001 and 2003, and an increase in the number of people who reported that their neighbourhoods were crime free (Australian Bureau of Statistics, 2001, 2005a).

Some parents appear reluctant to let their children out of our sight. One child was driven to the Centre, despite living only 100 metres away. The child could have been observed from the verandah of their home for her entire journey and there were no roads to cross or the mother could have walked with the child. There is an element of irony in this behaviour. Brooke (2003) identified that incidents with motor vehicles (driving to and from activities) are the largest single cause of fatalities in outdoor activities while unintentional injury that leads to child death is most likely to occur in the child's home or involve a motor vehicle (Australian Bureau of Statistics, 2006a; Borse et al., 2008). Nixon et al. (2003), in their study, estimated injury rate as a proportion of average equipment use and found that for school playground equipment use, the injury rate was extremely low, just 0.59/100,000 uses of equipment and 0.26/100,000 for parks (p. 2).

Australian Bureau of Statistics data (2001, 2006b) identify that contemporary living in Australia apportions large amounts of space to passive recreation and is seen as contributing to a reduction in opportunities for children (and adults) to

interact with nature. Figures from the Australian Bureau of Statistics identify the changing demographics of the Australian population. At 30 June 2004, three quarters of the Australian population (15.1 million people) lived in urban areas. Some 12.8 million urban residents lived in Australia's eight capital cities. The urban population increased by 192,100 people in the year 2003-2004, while non-urban Australia increased by 46,500 people for the same period (ABS, 2006b). These relatively sedentary residential-landscapes contrast with older suburban forms that were premised on far greater levels of outdoor activity, especially for children. The traditional backyard, along with its trees, provided a place where children could interact with the environment.

Even school grounds are not safe from adult fears that limit children's activities. School grounds have become one of the few places where children can interact with peers in a natural, outdoor setting, with minimal adult control (Malone & Tranter, 2003, 2005). Yet, playground segregation is a practice in many schools, usually attributed by adults to the need to protect the younger children from older children. Kel, for example, was part of a multi-age visit group. She told us she appreciated being given the opportunity during her visit to the Centre to play with children with whom she cannot play with when she is at school. *"It's fun to play with other people that you don't normally play with because grade fives play on the top oval and we have to play in the sand pit"*.

#### **4.7.2: Possible consequences of diminishing connections to the natural world.**

The exaggerated perception of risk as something negative that needs to be avoided is a relatively recent phenomenon. While parents should be concerned for their children's safety and wellbeing, an exaggeration of the risks involved in many common childhood pursuits has resulted in children being denied opportunities to engage in many worthwhile activities that can facilitate their learning and development. As a consequence of this exaggerated perception of risk as something negative, parents often are made to feel guilty by sections of society for exposing their children to experiences that may be perceived as risky (Wyver et al., 2010). Therefore, in order to deflect any concern that they are not 'caring' parents, they limit their children's experiences.

The current climate of adults limiting children's experiences in natural environments may not ultimately be in the children's best interests. Indeed, Rivkin (1998) argues that children have a 'right' to play outdoors. At times, such conflict is compounded by educational programming that denies or limits children's voices and their participation in planning their educational experiences. Reduced opportunities for children's outdoor environmental experience and resulting concerns for children's well-being are recurring themes in the research field (Elliott & Davis, 2008; Hawley, 2003; Hyun, 2007; Malone, 2007).

The value of outdoor experiences is well-documented (American Institutes for Research [AIR], 2005; Burdette & Whitaker, 2005; Kellert & Derr, 1998; Lieberman & Hoody, 1998; State Education and Environment Roundtable [SEER], 2000, 2005; Taylor & Kuo, 2006). In Australia, concern has been raised about the impact of the regulatory environment on the experiences available to children, especially experiences that may be risky (Bown & Sumsion, 2007; Little, 2006; Little & Wyver, 2008). Little and Wyver (2008) argue that play (particularly in the outdoors) provides:

A non-threatening context for children to learn about their world and gain skills necessary for adult life and that through their interactions with the environment during play in a variety of social situations, children gain control and ultimately mastery over their bodies with the development of a range of manipulative and motor skills. They learn new skills and concepts, discover the world, and learn about themselves and others through their interaction. (p. 35)

Despite risk having possible negative connotations, the willingness to engage in some risky activities provides opportunities to learn new skills and behaviours. Risk-taking in play is part of normal development and is essential for growth and development of children (Boyer, 2006). Outdoor activities, for example, provide opportunities for children to learn and develop a vast range of motor skills. Physical competence and confidence promote life-long participation in physical activity and hence the enjoyment of the benefits of an active healthy lifestyle. The lack of confidence and competence in performing these skills can be detrimental to a child's social and emotional wellbeing (Little & Wyver, 2008).

Once, "taking risks was seen as a challenging aspect of children's lives" (Furedi, 2001, p. 25), or as Stine (1997) asserts, "by taking risks, by facing a challenge, we learn about our competence and our limitations. Trying to exist in a

world without some measure of risk is not only impossible but inhibits our lives” (p. 29). Stephenson, (2003) asserts that children who are confident physical risk takers in the outdoor environment are more likely to take risks during indoor academic activities.

School play times have also become shorter and school grounds have become more crowded for the past decade (Evans, 1998). Play and playgrounds provide essential experiences for young children’s growth, development and enjoyment of life. However, such play experiences are now limited for many children due to excessive fear of risk, or ‘surplus safety’.<sup>20</sup> This view is supported by Thomson (2007) who argues that the management and regulation of playtime activities restricts opportunities for children to expand their knowledge of their surroundings. Rasmussen (2004) argues that school playgrounds are public and adult-constructed spaces for children where, to be meaningful to children, children must be given opportunities to construct their own places that are important to the children.

Today, many suburban middle class children in Australia are growing up in homes in master planned estates, or what Hawley (2003) terms ‘McMansionland’. ‘McMansionland’ is characterised by large houses on small blocks of land that reduce opportunities for children to interact with other children or adults in their neighbourhood streets, and the design of such houses discourages children’s outside play (Allon, 2005; Farrelly, 2003). These mega-house designs internalise activity, allocating large amounts of space to passive recreation such as home theatres, lounges, rumpus and computer rooms and courtyards. Children spent an average of 20 hours over a school fortnight in the 12 months to April 2006 watching television, videos or DVDs and also spent an average of 8 hours playing electronic or computer games (Australian Bureau of Statistics, 2006c). Hawley (2003) explains, “they love cocooning inside their McMansions, which are like castles, fun factories and mini resorts in one” (p. 25).

The effects of over-protection are also described in the psychoanalytic literature, with ‘bubble wrap’ culture negatively affecting physical and mental health (Australian Bureau of Statistics, 2008a, 2008b; Giddens, 1990; Palmer, 2006). Children are now more likely to become overweight or obese, and to develop a range

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<sup>20</sup> The term ‘surplus safety’ arose from Buchanan (1999) study of playground design. The term refers to the excessive measures adults take to prevent an injury, no matter how minor, from occurring (Wyver et al., 2010).

of health problems related to inactivity such as Type II diabetes (Wyver et al., 2010). Restrictions now imposed on children's play to promote safety may, paradoxically, expose children to more serious short and longer term threats of illness, limit children's life opportunities and negatively impacts on the rights of children and their growth, development and quality of life (Wyver et al., 2010). However, many populations in countries such as Australia, United States of America, and Britain are becoming increasingly removed from nature. A basic dilemma of the modern age in Western societies is whether children still experience enough direct contact with the natural world. Some writers (Miller, 2005; Nabhan & St. Antoine, 1993; Pyle, 1978; Samways, 2006; Stokes, 2006) argue that a disturbing aspect of contemporary life is a profound decline in both the quantity and quality of children's direct experiences of nature. Children are increasingly separated from the natural environment, direct contact with nature being gradually replaced by indirect and vicarious experience. Modern especially urban society appears to rely more and more on indirect and vicarious forms of contact with nature instead of direct, spontaneous experience. Pyle (1978) used the phrase 'the extinction of experience' to describe these tendencies toward diminished and compromised direct contact with ordinary nature. Louv (2005) coined the phrase 'nature deficit disorder' to describe the effect of this tendency on children who have become alienated from nature:

Nature-deficit disorder is not an official diagnosis but a way of viewing the problem, and describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses. The disorder can be detected in individuals, families, and communities. (Louv, 2005, p. 13)

Gruenewald (2003b) suggests that the patterns of leisure, entertainment and life that encourage indoor living contribute to a lack of contact with the ecological life of places. In this way, the scope of experience becomes less diverse (Gruenewald, 2003b). Alienation from nature may result in negative environmental citizenship values and attitudes towards the natural environment (Louv, 2005; Ulrich, 1993). Biophobia is "a negative affiliation with nature that ranges from discomfort in natural places to active contempt/disrespect for whatever is not manmade or managed by humans" (Hyun, 2005, p. 200). This study did not set out to measure the extent of teacher views on biophobia, but teacher actions can have an impact on how children experience the environment. For example, a visiting teacher at the Centre

requested that the class of students be issued with surgical gloves before allowing the children to touch trees while exploring the Eucalypt forest. While a causal link between biophobia and specific actions cannot be made, it is reasonable to assume that negative messages would have been sent to the children if told they should not touch trees unless they were wearing gloves.<sup>21</sup>

In this environment some curriculum documents such as the Early Years Learning Framework (Department of Education, Employment and Workplace Relations [DEEWR], 2009) identifies and lists ways to support healthy, calculated risk-taking as important aspects of children's learning and development as well as social and emotional well-being. The Framework acknowledges that healthy levels of positive risk-taking play a vital role in fostering children's emerging autonomy and agency, resilience and self-esteem (DEEWR, 2009). There is now research literature identifying the importance of active, outdoor play (Bundy et al., 2009; Golinkoff, Hirsh-Pasek, & Singer, 2006; Pellegrini & Holmes, 2006). Therefore, within curriculum documents and research literature the importance of addressing diminishing connections to the natural world through outdoor experiences is identified. It must be acknowledged, however, that an adventurous pedagogy of risk is troubling for place-based educational experiences. Brown and Fraser (2009) argue that the removal of natural consequences due to the need to manage risk prevents the development of resilience in the learner.

In summary, therefore, categories of risk change over time and place, as do attitudes to risk and strategies of risk-aversion and risk-taking. As Fjortoft and Sageie (2000) argue, apparent risky activities provide children with a much deeper understanding of their environment and of reality, as well as promoting motor fitness and motor ability in a more interesting and enjoyable context. The discussion in the preceding two sections has been based on the thinking of adults. Little and Wyver (2010) in their research identified that children were able to identify injury risk behaviours even if their ability to differentiate the severity of the potential injury was less accurate. Furthermore, the researchers identified that the children appeared to use these judgements in their play to inform their behaviour writing "whilst they [children] actively sought out those activities that offered challenge and excitement,

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<sup>21</sup> I did not issue gloves. No children suffered as a consequence of touching trees.

they were aware of their abilities and showed caution in engaging in activities that were beyond their current capabilities” (Little & Wyver, 2010, p. 297).

#### **4.8: Summary of Chapter**

In this chapter, I addressed the first component of Berg’s final (2001) set of analytical activities, identifying patterns in the data relating to the children’s perspectives on the provision of the environmental educational experiences at the Centre are considered in light of previous research and theories. This chapter was the first of three data discussion chapters where I undertook this analysis, examining the concepts of space and place.

The environmental educational experiences at the Centre relied on place-based education. Heimlich (2007) argues that place-based education draws on the use of the natural and cultural environments and, as Gruenewald (2003a) states, place is “where the world manifests itself to human beings” (p. 625). Place-based education can occur in various spatial contexts. The children described the many natural and cultural environments they explored, including mangroves, rocky foreshores, coral reefs and the built environment such as coal wharves. These experiences helped “generate emotional connectedness in learners” (Heimlich, 2007, p. 222) within the children, who used terms such as “cool”, “fun” and “amazing” to describe their experience.

Place-based educators argue that the study of places can help increase student engagement through experiential learning. Children described how they “*did a lot of fun things*” and were “*able to look at things a different way...and look...up close*”, describing how “*It was fun finding and learning about the rocky foreshore*”. Reflexive engagement allowed children to interact in nature with sensory reciprocity between the individual and place (Cameron 2003), with the children receptive towards their surroundings.

Place-based education is distinguished from main-stream school settings and is defined by its emphasis on the pedagogical value of the children’s environment, both natural and built. This distinction was identified by the children. In talking with the children about their environmental education experiences, they contrasted their classroom-based learning as indoors and passive, while their Centre experiences were outdoor, first hand and active. Children saw the outside spaces as providing

opportunities to learn, engage in different types of activities and to visit new locations and identified that this learning was different to that which occurred at school. As John said, “*well this is outside and you learn something different*”.

Gruenewald (2003b) describes the potential of place-oriented experiences for nurturing and protecting people. The children described how the Centre provided such a place, such as, “It’s a lovely place and you feel very safe here”. A sense of trust was shown by the children reporting that they felt safe in the environment. Despite engaging in physically demanding activities, children felt safe and gained the confidence to tackle challenges. The children’s positive attitude to feeling safe, risk and challenge was identified as being different from that of the supervising adults. In the children’s accounts, they raised issues of risk as identified through parents’ and other adults’ perspectives. For some children, Place is Where Children could Explore Spaces that are considered Out-of-bounds by some adults. Such as when Tanya related “*I’m usually not allowed to go on the rocks*”. I discussed how categories of risk change over time and place. This change is driven by numerous interrelated factors, including changes in the built environment, changes in attitudes towards children in public space, and changes in children’s freedom to move around their neighbourhoods independently, without an adult (Wyver et al., 2010). The value of outdoor experiences is well-documented yet reduced opportunities for children’s outdoor environmental experience and resulting concerns for children’s social and emotional wellbeing are recurring themes in the research field. From the children’s accounts, the opportunity, and the willingness of the children, to engage in some risky activities while at the Centre provided them with opportunities to learn new skills and behaviours. In the next chapter, I discuss the second of the children’s perspectives; engagement and participation.

# Chapter 5: Children's Perspectives on Engagement and Participation

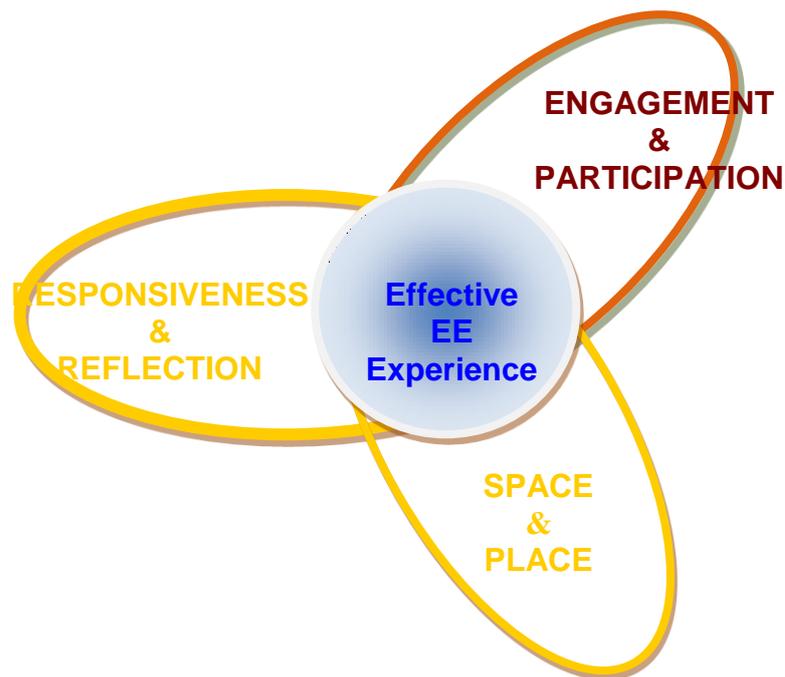


Figure 5.0: Wordle of the 30 most common words in Chapter 5



## Chapter 5: Children's Perspectives on Engagement and Participation

This chapter is the second of three data discussion chapters and follows on from the previous chapter examining 'Space and Place'. In this chapter, I discuss the second of the three interrelated aspects identified in Figure 5.1, 'Engagement and Participation'.



**Figure 5.1: Framework of children's accounts of their experiences**

This chapter examines engagement and participation (see Figure 5.1) by discussing children's accounts of their environmental education experiences. I discuss engagement in the experience, when children in the study reported the value of novelty and first hand experiences. The children's discussions highlighted the importance of participation through co-operative processes with peers and teachers. However, again, in order to situate the children's perspectives, and to better understand the significance of the children's statements, I review the literature regarding engagement and participation and discuss these concepts in the context of environmental education

## 5.1: Engagement and Participation

The Centre's Curriculum Framework (BIEEC, 2005) identifies the importance of engagement when it stated:

Engagement is identified by on-task behaviours that signal a serious investment in class work; these include attentiveness, doing the assigned work, and showing enthusiasm for this work by taking initiative to raise questions, contribute to group tasks and help peers. (p. 7)

However, it does not discuss how to engage the children. This research has adopted a sociology of childhood perspective in which the child is seen as an active agent and eager learner (Corsaro, 1997, 2005; Danby, 2009; James, Jenks, & Prout, 1998). From this perspective, the child gains knowledge from their environment and constructs their interpretations of the world through collective, communal activity (James, Jenks, & Prout, 1998). Researchers, such as Waksler (1991); James, Jenks and Prout (1998); and Danby (2002) argue that children are 'competent practitioners' who engage in complex interpretations of their own experiences and actions. Children do not simply imitate the world around them but interpret and participate in it.

In the context at the Centre, primary experiences involve direct, personal contact with flora and fauna. An outdoor experience is a primary experience that cannot ever be replicated fully through secondary encounters (Kellert & Lovejoy, 1996). Secondary experiences are vicarious representations of nature, such as television programs and are constructed by others. Kellert and Lovejoy (1996) argue, "confronting nature through television does not provide children with intimacy, adventure, or surprise which form the basis for substantive learning" (p. 148). A nature experience, however, is more than a personalised end in itself, it is a reflexive engagement. Chawla (2006) suggests, "we encounter the world through an ongoing stream of pure experience which contains many-faceted possibilities for knowing" (p. 63) and goes on to explain that it is through the first-hand experiences in nature that a child encounters a dynamic, multi-sensory flow of diversely structured information that provides inexhaustible possibilities for learning. The natural world is captivating because of its potential to provide conditions that can hold children's attention. As the child moves about in their environment, they are acting on the world, while taking in messages and information through all their senses.

There are challenges to offering such primary experiences in natural spaces. The trend towards bubble-wrapping children has been noted. In addition, as Payne (2003) notes, there appears to be a shift away from pedagogies that historically have attached great importance to direct human experiences of various environments, to pedagogies that increasingly employ vicarious, second-hand, and virtual learning experiences. Computer-driven learning is but one example of a form of experience, as is a child playing and exploring their local environment. Although Kirchen (2011) suggests, some on-site experiences are not safe, practical, economical, or logistically possible, Gleeson (2004) warns that “the problem with simulated worlds is that they are pretty poor training grounds for real life” (p. 3). As Elliott and Davis (2008) suggest, “once on a time, educational theorists, such as Froebel, Dewey and Rousseau espoused the importance of learning outdoors in natural settings for children” (p.6). These authors argue that natural space for learning, such as visits to a centre, can be justified in terms of enhanced connections with nature and the promotion of sustainability:

The ‘aliveness’ of a natural outdoor play space ensures that, with each new day, there are new discoveries for children. It might be the caterpillars in a tree, the changing colours of leaves or the types of visiting birds; all provide a focus for children's innate curiosity. Discoveries become rich learning opportunities—not only about particular species, their habitats, food needs and lifecycles, but also about the systems that inextricably connect humans and the natural world and the skills for exploring these connections. (Elliott & Davis, 2008, p. 6)

There are numerous benefits to be gained from primary experiences including physical development and in developing an environmental ethos. The natural outdoor environments provide children with a deeper understanding of their wider environment as well as promoting motor fitness and motor ability in more interesting and enjoyable contexts (Fjortoft & Sageie, 2000; Kaplan & Kaplan, 1989). In order to develop an environmental ethos, children must have “opportunities for fully experiencing the Earth and for understanding the influence of humankind on it” (Moore, 1986, p. 23). Such outdoor experiences are particularly effective in influencing students’ environmental learning (Sobel, 2004) as well as facilitating the role that students play as catalysts of environmental change in their homes and communities (Ballantyne, Fein, & Packer, 2001a, 2001b).

The literature cited above identified that there are numerous benefits from primary experiences, including as learning experiences, physical development and in developing an environmental ethos. A second message of the children was having opportunities to participate in a range of new experiences the environment. I examine this message in the next section.

## **5.2: Participating in a Range of New Experiences or “Learn lots of different, new things”**

The above was Sharon’s response, a message repeated by many children who participated in this study. The children identified that the program had provided them with an opportunity to participate in a number of different activities for the first time. In this section, I discuss how the provision of new experiences for the children helped to engage them. Stanley described that he learnt “*about lots of stuff that we have never done before*”. Bunty also explained, “*It’s very special because this is the first time I been on a school camp and it’s fun*”. It is significant that for many, the visit provided opportunities to engage in many first-time activities such as when Katie told us:

*I think learning means that you get to do lots of things you haven’t done before and you can do it in a fun way. Like how we got to go on all rocks and things and we were still learning everything and it was really fun.*

Katie also attempted to define her experiences at the Centre in terms of novel activities while still being enjoyable. For Katie, bicycle riding was a rare event “*it has been two years since I had ridden one, so that was really scary at first*” and gave a drawing of bicycle riding as the highlight of her visit.(see Figure 5.2).



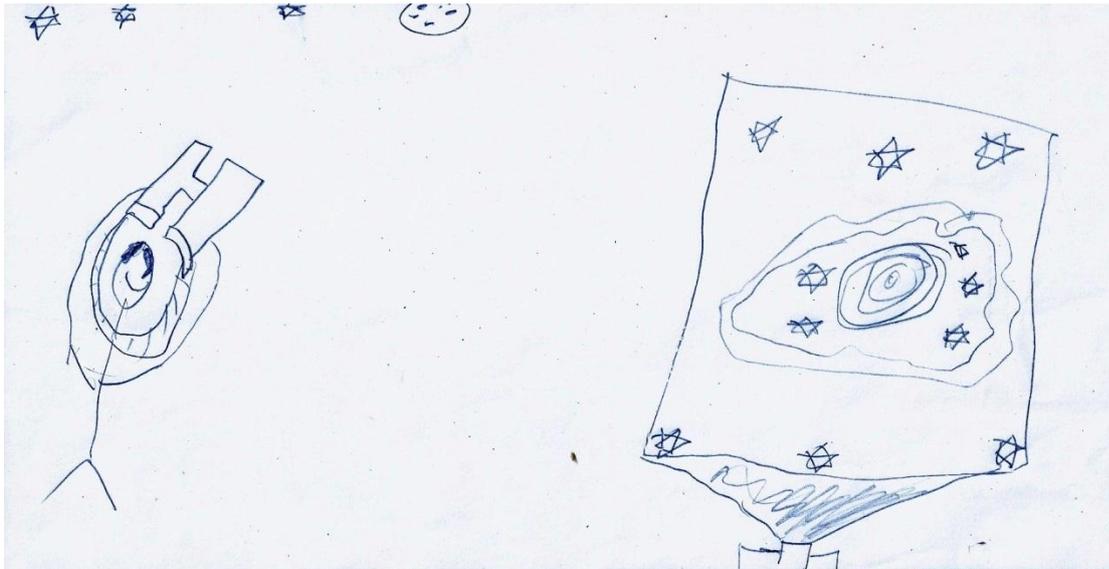
**Figure 5.2: Bicycle riding (Katie, 10 years)**

Other first time experiences, which figured prominently, included being away from parents, activities such as going on camp, fishing or riding on a boat and specialized activities such as canoeing or using high or low ropes. Some of these mentioned activities were surprising to me as I would have expected most or all of the children to have engaged in these types of activities including starting a fire, going to a beach and exploring mangroves or rock pools. “*This is a picture of us swimming...we don’t come to the beach often*” Kirstee said, repeating the message of first time or infrequent experiences (see Figure 5.3).



**Figure 5.3: Group swimming (Kirstee, 9 years)**

For some children, it was the opportunity to engage in an activity for the first time. For Max, using binoculars with good optics, enabled him to see clearly objects in the night sky for the first time. Although he had studied astronomy at school, the experience was significant because he had the opportunity to view images of celestial bodies on a large screen [3 metres x 5 metres] and using good binoculars. Max made a drawing of his astronomy night as being an important first time experience (see Figure 5.4).



**Figure 5.4: Astronomy - using binoculars and planetarium display (Max, 10 years)**

In other situations, it was a novel characteristic of the environment that contributed to the child's engagement. "*I like mangroves because they're all stinky*", Troy explained as his reason why he enjoyed exploring mangroves. Troy also told us that he "*actually like[d] it [composting] because it's all stinky*". For Troy, novelty came from engaging in learning experiences in a situation that challenged social norms of cleanliness and focused on the sensory experience of smell. Many children found nature full of novel curiosities that attracted their attention so much that they were able to relate the details of their experience several weeks later. Lance, for example, made a drawing of the mangrove roots several weeks after the event (see Figure 5.5) as a significant experience of his camp.



**Figure 5.5: Roots of *Rhizophora stylosa* (Lance, 9 years)**

Then went on to tell us:

- Lance            *It's the mangroves. It's all the roots of the mangroves.*
- Researcher      *Tell me about them?*
- Lance            *Because I thought it was differently fun. It was to go to some place muddy and to climb through all those trees. It was different. You just don't get to do that type of thing.*
- Researcher      *So a bit of a new thing for you?*
- Lance            *Yes.*
- Researcher      *Were you scared?*
- Lance            *Yes a little bit. I nearly sunk in the mud up to my knees. Mum was not happy with my socks.*
- Researcher      *What they were a bit muddy? Did she get them clean or throw them out?*
- Lance            *She threw them out and she had to scrub all of the mud out of the washing machine, and it dyed all the other clothes.*

These children engaged in new physical activities too, such as climbing over the tangled prop roots of the *Rhizophora stylosa* in order to make their way through a new and strange mangrove forest. These roots give the forest its unique character but they are a novel feature compared to most forests with which the children may be familiar and created a lasting memory for Lance.

The characteristics of certain animals that the children experienced were also a source of novelty. Penny thought that “*the worms were pretty cool*” when she talked about the slithering mass of worms in a worm farm that she saw for the first time. Jesse was attracted to fauna that could be poisonous or was impressed due to its size, telling us, “*All this stuff we found, the coral and plants and stuff that looked like it was poisonous*”. Keith, when asked if he found anything interesting, replied “*not interesting but big, it's the biggest crab I have ever got. It was as big as my palm or even a little bigger*”. Genny recorded how “*in a worm farm, do you know that this stuff on the worm farm that looks like soil is actually worm poo and pee*”. Bunty also described some of the more base aspects of nature, “*I learnt that Starfish's bums are on the top and their heads on the bottom. Sea cucumbers are related to the Starfish and when you squeeze it white stuff comes out of its bum*”<sup>22</sup>. Sometimes it was just a feature of ‘Place’ that engaged the children’s curiosity. Kay thought it was

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<sup>22</sup> Holothurians are slug like members of the phylum Echinodermata. In Asia they are known as Trepanng and in Europe as Beche-de-Mer. The situation described here is the start of a Holothurian’s defence mechanism that sees the animal eventually eviscerate itself to confuse potential predators.

*“interesting how there were thousands of little and big rocks put together and there were these little pools full of fish and seaweed and stuff like that and it was fun”.*

Engagement may arise from novel situations. For Cody, a novel overseas context contributed to his engagement in learning about waste management. In tropical Queensland, rubbish starts to decay, and smell, within hours. However, when told about waste management in Canada, where rubbish can be stored for months in a shed without starting to decay, Cody commented:

*My favourite thing about recycling was that people in Canada store their rubbish in a big shed and wait for it to freeze then they move it to the dump. There are many different ways to recycle rubbish like reusing.*

What engaged Cody was not the first-hand experience of waste management in Canada, but the comparison of practices with his own understandings. Not all experiences, and opportunities for learning therefore, were first-hand. New experiences also offered opportunities to extend learning and understanding beyond the children’s immediate context.

However, being in the natural environment was not the only aspect of the experience that was new. The industrial environment of a busy port was also effective in stimulating the children’s interest. Stanley thought that *“it was awesome seeing how the ships load up”*. Bill recorded, *“Did you know that aluminium can be made back into one without adding anything extra?”* Louise thought that *“it was cool having a tour of a coal mine”* (in reality, it was a wharf). Writing in her journal, Sharon showed her interest in the industrial environment by commenting:

*We learnt how to start a train if you lived in the old days. But instead of using coal we used fuel tablets. It was amazing. I never knew you could use that little coal to make such a big noise. And I learnt about how to use the sun to make electricity in a hat, fan and calculator.*

Sometimes, novelty was in the nature of activities. When Shirley was asked to give an example of learning at her school, she related:

Shirley            *Writing and sometimes experiments and sometimes assignments. Sometimes we write, sometimes we draw and even sometimes we can make models.*

Researcher       *Do you like experiments?*

Shirley            *Yes, I really like them.*

Researcher       *What’s so special about experiments that make you like them?*

- Shirley *Sometimes they can fizz up or change colour or make sounds.*
- Researcher *So lots of whizz bang things that you don't expect?*
- Shirley *Yes.*

For Shirley, experiments engaged her because they had the capacity to create the unexpected, “*can fizz up or change colour or make sounds*” or “*things that you don't expect*”. This attracted her attention and contributed to her engagement.

Sometimes, novelty was in the array of activities on offer. “*We don't do many things like BIEEC at school*” Karen said, describing her experience at the Centre in terms of comparing it with her school. Penny repeats the message, “*It was a great time. There were lots of things to do*”. Jessie concurred, “*You do lots of really cool stuff; you do lots of different experiences*”. Sharon believed the Centre is “*a really great place and you had lots to do and you never get bored*”.

However, other children described the Centre in terms of what they learnt such as the statements by Jesse, Shirley and Sharon.

- Jesse *I learnt about different rocks. Different types of animals. I learnt how to care for others.*
- Shirley *I didn't know the things that lived under the mud.*
- Sharon *Well, I've never learned about the night sky.*

Novel experiences were identified as one aspect that had a power to engage children in the environmental experience because they had the capacity to create the unexpected. Many children related that their visit provided opportunities for many first time experiences.

Children's expectations of what a school camp would be like were often challenged by the reality and this contributed to their engagement in the Boyne experience. Therefore, encountering the unexpected was important in adding value to the children's experience at the Centre. Shirley identified that her experiences at the centre did not conform to her expectations of what a school visit should be, “*I just thought we would go down and walk through them*” she said:

- Researcher *Was there a point during the day when you realised that you were learning something?*
- Shirley *At the mangroves, I just thought we would go down and walk through them. Then I realised that we were learning things and all the animals and things that live there. I didn't know the things that lived under the mud.*

Researcher *And when you were jumping on the mud was that what you expected?*  
Shirley *No.*

Shirley expected that she would simply be walking among the mangroves (see Figure 5.6). However, she participated in climbing trees, digging in the mud in search of organisms living in the substrate and jumping on the mud. This last activity was just one way of explaining fluid dynamics concepts that underpin the anaerobic environment that characterises the mangrove substrate. By jumping up and down, Shirley altered the state of the mud from a solid to a fluid. In this example, Shirley identified that engaging in learning could occur when she least expected it.



**Figure 5.6: Group exploring mangroves (Shirley, 10 years)**

The importance of the unexpected in adding value to the experience at the Centre was explained further by Thea, who also made comparisons between the centre and her school. Thea identified that, both at school and at the Centre, you learn things, and indicated that the Centre extended her learning in novel ways she never imagined when she said:

*I know we've been doing a lot of school work here but it's not like school. At school you learn different types of stuff that you don't know but here we are learning stuff that we never thought we would learn in our time.*

Finally, novelty was in the total experience of the camp with some children believing that they would have a boring environmental education experience:

- Maisie *I thought it was going to be very boring but it was fun.*
- Katie *There are [sic] those that didn't want to go because they thought boring. I would tell them that they should go because it's fun and to go and use everything and use a lot of group effort and I think that's really cool.*
- Adam *I would probably say you do not have to worry about having a bad time. It's pretty good fun canoeing, going to the rocky foreshore, playing in the mangroves, playing volleyball with your friends, yeah, it's all pretty good fun.*
- Kay *It's fun they won't be just sitting here doing work but will be having fun they will be out doing activities outside.*

Opportunities to use a variety of novel tools, such as telescopes, to participate in a novel range of contexts, such as working in groups outdoors, to engage in a novel repertoire of activities, including canoeing, were identified by the children as reasons why the environmental education experience was not boring. As Shirley identified, some children's accounts show the significance they placed on how their expectations (that the experience would be boring or like school) were challenged. Experiences were re-evaluated as 'fun' and 'exciting' as exemplified by Bill's comment, "*today was the best day ever because we got dirty*". Activities such as exploring mangroves, pools and forests at the Centre encouraged the breaking of social restraints such as that the children should stay clean and tidy. Bill found that being able to break from these social expectations helped make the day "*the best day ever*".

Sometimes it was not the Centre environment but the content of the experiences that did not conform to children's expectations or existing knowledge. Adele, who lives locally, came to the centre believing that mangroves "*really stunk*". Her Boyne experiences, though, challenged this previously-held belief, so that now she realises that "*the mangroves are special*". Jesse gave the following example of how new knowledge challenged his existing ideas that was so noteworthy that he intended to share his new learning with others.

*When we went to the mangroves it really stunk and you think it's not worth anything but when we went through it and you taught us why the mangroves are special, I basically realised mangroves are really special and caring for the environment and we need to care for it.*

Specifically, this related to the common myth that Sand flies (actually the Biting Midge<sup>23</sup>) breed in mangrove forests. When asked “*When you go back to school, what would you want to tell the students who haven’t been yet about your time here at BIEEC*”? Jesse replied, “*all the stuff like we all thought sand flies breed in mangroves and they do not*”.

Encountering the unexpected was valuable in engaging the children in the experience at the Centre. Children’s expectations were often challenged by the reality and this also assisted in engaging the children in the Boyne experience. Further importance of the unexpected was in adding value to the experience at the Centre. Opportunities to use a variety of novel tools, to participate in a novel range of contexts, to engage in a novel repertoire of activities or the content of the experiences that did not conform to children’s expectations or existing knowledge were identified by the children as reasons why the environmental education experience was not boring. Learning in nature, where nature is a pedagogical resource, contributed to the children’s engagement with the field experience (Brody, 2005; Cook, 2008). Having discussed how the provision of new experiences helped to engage for the children in that new experience, in the next section I discuss how children participated through first-hand experiences.

### **5.3: Participating in First-hand Experiences or “At school we can see it in a picture book but here you can get in the mud”**

The children identified that the program had provided them with an opportunity to be active participants in first-hand experiences. First, I undertake a critical analysis of the data and then, in order to situate the children’s perspectives and to better understand the significance of their statements, I discuss the concepts of primary and secondary experiences in the environment and their value as learning experiences.

When asked, “*What do you think learning means here at BIEEC*?” Jonathan described learning as students being active participant in first-hand experiences such as when he told us how “*you can get in the mud*”. The educational value of

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<sup>23</sup> Biting Midge is a group of small insects with piercing and sucking mouthparts that belong to the family of flies *Ceratopogonidae*. In Australia, these flies are commonly known as Sandflies. Only female midges feed on blood. Female midges may attack humans in large numbers, biting on any areas of exposed skin. Biting midges are responsible for acute irritation and severe local reactions.

participating in first-hand experiences was identified as an important component of their experience by all the children with whom research conversations were held. One aspect of this participation involved the children's physical contact with their environment using a variety of their senses. Jessie said in her conversation that learning at the Centre meant, "*You're learning different things by touching and feeling, by actually doing, not by sitting in the classroom and writing things down like our normal teacher*". She then gave an example:

*For example the canoeing, we could have just sat down in a room and asked us to write down all the steps of how to do canoeing. Instead you got us out in the canoe and made us do the thing. So we learnt that better because it actually sticks in your long-term memory.*

A key element of this participation was its physicality, which Jessie compared with a more physically passive role that she experienced as a student at school. Jessie believed that a more active approach to experiences was better for her for long-term learning. Tanya also identified that participating in first-hand experiences was a characteristic that contributed to the value of her experience at the Centre:

Tanya            *Well experience first-hand. Going to the mangroves and the rock pools. Actually seeing the things.*

Researcher      *But you can see nice pictures on the Internet?*

Tanya            *But you can go in there and see things you can turn rock over even if you have to turn it back. On the internet you only see the photograph, this is much better.*

When challenged by the researcher that it is possible to look at photographs (a secondary experience), Tanya identified that there are other important components for learning, such as visiting a site, seeing things for real, and having hands-on experiences. Tanya's account shows that participating in real-world educational experiences have a more powerful impact, perhaps more than a virtual experience on the Internet or from books. These accounts described learning experiences that were active, concrete, first-hand and involved the children using their senses. The result was that the experience "*taught us more by being in there*". Other children confirmed the value of participating in primary experiences when they commented:

John             *We are doing a project on mangroves and coming here gave us more information we were able to go and see the place and be in the mangroves.*

Stanley          *And it taught us more by being in there.*

Louise	<i>At school we can see it in a picture book but here you can get in the mud.</i>
Keith	<i>Did not have to imagine it as you do at school.</i>
Quentin	<i>We actually get to see the place.</i>
Dane	<i>We actually got to try things.</i>

First-hand experiences also offered opportunities for the children to benefit educationally from serendipitous events that arose out of the experience. That is, although the teacher may have designed particular activities, additional unexpected opportunities were taken up. For example, Bridget had an impromptu lesson on the concepts of wind chill, latent heat and thermoclines<sup>24</sup> when she went swimming. Even though she did not know these terms, she “*realised that when I got deeper it (the water) got warmer*”. Bridget discovered the effects of thermoclines through the physical activity of swimming.

The experience was so noteworthy that Bridget recorded it in her journal as a significant event. Jonathan explained the advantage, for him, of being able to explore nature through snorkelling, “*We’ll look at the reefs rather than looking at it from above we were able to look at it at a straight line. Get in the water and look at it up close*”. The ability to get up close, and at the level of the natural feature being studied, allowed Jonathan the opportunity to explore reef ecology from a personal perspective.

At the rock pools, John was an active participant through being involved in experimentation. John was able to interact with fauna to learn about, and identify, its characteristics. Not satisfied with the teacher’s description that a Hydroid belonged to a phylum of animals that possess stinging cells [cnidocytes], he tested the statement by brushing his wrist against the animal colony to see if the animals would sting him. John could be described as a risk-taker who chose a challenging experience to maximise his participation (Linnenbrink, 2006). This was personal experimentation, which is aimed at discovering relations, rather than the more utilitarian experimentation that is aimed at solving practical tasks. “Personal experimentation increases children’s knowledge which in turn increases the complexity of experimentation and the role of goal setting within it” (Poddiakov, 2011, p. 55). In the process of experimentation, children develop new skills and also acquire indefinite or emerging knowledge which is flexible and volatile. For John,

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<sup>24</sup> Thermocline is a thin but distinct layer between two layers of fluids of different temperatures.

experimentation was a key factor in understanding the nature of the animals he was examining, or, as Jonathan said so well, “*by looking at the evidence*”. These examples of primary experiences provided children with opportunities to initiate actions during the total experience and become active participants in the experience. In the previous two sections, I have discussed the children’s participation in a range of new and first-hand experiences. In the next section, I discuss the third aspect of participation identified by the children; that of participating in collaborative experiences.

#### **5.4: Participating in Collaborative Experiences**

The children identified the importance of participating in collaborative experiences or social interactions as a key element of their experience at the centre. The children identified that this participation can also involve collaborative learning experiences which had positive effects on the children. The children discussed how the experiences at the Centre provided opportunities to develop communication, leadership skills and the ability to work with others (Cobb-Moore, Danby & Farrell, 2010; Monroe, 1999). Collaborative experiences involved children working in small groups to explore new ideas, gather information, discuss ideas, apply concepts and solve a problem. Cobb-Moore and her colleagues (2010) highlight the significance of social interaction when they suggest that “children engage collaboratively in interactions as they establish shared understandings around objects and places” (p. 378). This message was repeated in the Centre’s curriculum framework (BIEEC, 2005), which discussed the concept of ‘substantive conversation’ (p. 7). In the Framework, ‘substantive conversation’ is described as being evident when “there is considerable teacher-students and student-student interaction about the ideas of a substantive topic; the interaction is reciprocal, and it promotes coherent shared understanding” (BIEEC, 2005, p. 7). In their discussions and in their journals, the children identified two key types of collaborative interactions during their camp; with their peers and with the Centre teachers.

### **5.4.1: Interacting with peers or “Working in groups is a good example of how you’ll learn at Boyne Island”.**

The children identified, in their conversations, the importance of social interactions with peers as a key element of their total experience at the centre. In the Centre’s curriculum framework (BIEEC, 2005), the importance of group work is identified, “group identity is manifested when differences and group identities are both positively developed and recognised while at the same time a sense of community is created. This requires going beyond a simple politics of tolerance” (p. 7). However, it did not discuss how to develop group work between the children. Interacting in socially positive ways provided a means of assisting one other to successfully engage in activities and created opportunities to more fully participate in an activity; even to achieve success. Finally, the children discussed the importance of trust and acceptance and learning the skills of patience and tolerance when interacting with peers.

First, the children identified the importance of interacting in socially positive ways. During the research conversation, for instance, Kay told me what learning meant for her in response to the question, “*What do you think learning means here at BIEEC?*”

*Getting to know our friends and getting to cooperate. At school you might just say hello to them but here you get to work with them and to learn a little more about them and their ideas. It’s not like they are right up your ideas and there is secret and not share them. Here you share your ideas with other people and see what they have.*

Learning how to interact in socially positive ways was recognised by Kay as a necessary and core component of her experience. She detailed a number of key ideas involved with social interactions. She pointed out that social interactions involved having a relationship with others or “*getting to know our friends*”. Kay elaborated on what she meant by commenting that she had had the opportunity of “*learning a little more about them and their ideas*”. In other words, she identified that social experiences offer opportunities to build relationships with others that rely on deeper understanding of other ideas. Kay recognised the importance of interacting in a way that displays mutual respect, so that a person does not get “*right up your ideas*” or be hyper-critical of one person’s ideas.

Kay also elaborated on the behaviours she considered necessary for positive social interaction, including cooperative behaviour, sharing your own ideas with other people, and seeing what ideas they may have. From Kay's comments, it appears that she recognised that building relationships takes time and requires opportunities for social interaction to develop. Penny supported the idea that working together was a key element in her experience; that is, it contributed to the children's engagement in the activity. She identified that what helped her was "*most probably being split up into teams or groups. It was kind of fun because we learnt more*". Penny also identified the importance of interacting in a team or group and suggested that this type of organisation offers additional benefit, that the process was "*fun*". Penny described that learning and fun were not exclusive entities and that fun activities can be inherent in learning experiences.

Second, the children identified that social interactions provided a means of assisting each other to successfully engage in activities. An important aspect of this was the importance of trust and acceptance, which I discuss later in this section. For example, the extract from Tanya, below, identifies how the children were able to support their peers to complete a task:

Tanya	<i>When people are telling you things, you keep it in.</i>
Researcher	<i>So it is more the telling that helps you learn?</i>
Tanya	<i>The telling and the listening, and then showing other people how to do things.</i>

Here, Tanya described herself as sharing the experience with other people. In this situation, after initial scaffolding by the teacher, the experience offered an opportunity for children to adopt a collegial role with their peers, to help them co-construct knowledge. Adopting this approach allowed Tanya to process and internalize the information as she, in turn, took on the role of sharer of knowledge with her peers. For Sharon, this approach helped her in a climbing task, "*When I was doing the tree climbing lots of people helped me learn by telling me to put my left foot up or my right foot up and helped me learn*".

Denis relates in his conversation that social interactions with peers "*helped me learn a lot of different things that I haven't done before*". Kay told us that when she caught a fish "*and you don't know what it is and that could be dangerous you would have to get someone to check it out*". Kay's account showed how she relied on other children in her group to provide information that she did not possess. Being

able to rely on other children in her group was important for Kay, since she felt her safety was being challenged because of her lack of knowledge. Piers, in his conversation, told us that what he learnt most during his visit was that he “*learnt how to care for others*”. For Piers, learning was not merely the gaining of some academic oriented knowledge, but the development of the skills that enabled him to interact successfully with others. Michael identified the significance that peers could have on his experience when he told me that “*even though we have been camping before, it will be different with your school friends*”. Social interactions provided opportunities to engage as members of a team as exemplified by Jake when he related, “*We also played some games. I learnt that you have to work as a team to complete them*”. Jake believed that one “*had to work as a team*” if the task was to be successfully completed. He recognised that he was unable to solely complete some task and had to become involved with others. “*This is us doing the team games. It was fun. We had to get everyone over to the other side using the bits*” Bunty (10) told me (see Figure 5.7). Although it was not my intention to undertake photo analysis in the study, the photograph does appear to show a group that displays a capacity to work as a group.



**Figure 5.7: Group work (Bunty, 10 years)**

Connor related that “*I felt like the only way to do the rope challenge is to use teamwork and trust your team mates*”. Penny also identified the importance of working together in teams. When she was asked, “*Why did you like low ropes?*”, she replied, “*it was just a team effort, if someone didn't do it the whole*

*group sort of failed, so we were all sort of pushed a little bit further”*. Penny found that, with the support of her peers, she was able to extend herself past her current boundaries of achievement. Jake recognised that, besides successfully completing the challenge of the game, there were other aspects to the games. He said, *“After everyone had woken up we play a little ping pong game. Our group won, but that’s not the important thing, it was us working together”*.

Furthermore, when Penny was asked if there anything specifically that had helped her learn, she responded:

Researcher *So let’s think about mangroves. How did being in the team help you learn about mangroves?*

Penny *Lots of people got stuck in the mud and people would help you get out.*

Researcher *Did you get stuck?*

Penny *Yes, I got stuck up to about here* (indicates her knees).

Penny’s example of someone helping to pull a peer out of the mud demonstrates a supportive team approach of many activities undertaken at the Centre. The significance of a supportive approach was suggested also by Jonathan, who said that he was able to get through an unpleasant experience because of the support of his peers. He described the experience, *“The worst was the itchy grub. The good thing about the itchy grub was that my friends helped me”*. Penny’s and Jonathan’s comments too suggested that, not only was peer support valuable, but that there were different sorts of group support that contributed to their experiences. These different sorts of group support included organised teams around a specific activity (such as playing games) and also ad hoc teams (working together to solve a real-life matter, such as getting stuck in the mud) The ad hoc groups were peer initiated and represented another aspect of social interactions where the activity was not planned by the teacher. Being stuck in mud was the cause of Genny receiving help:

Researcher *So why was it so special to you?*

Genny *It was just amazing to see all the roots just come out and it was really cool. It was good. It was fun that we got stuck in the mud and I didn’t think that it would get that sticky.*

Researcher *Did you lose your shoes?*

Genny *It got stuck but Amanda pulled it out.*

Amanda, in turn, told the story of a practical joke played on her by her friends in her tent, including Genny:

- Amanda *We had a goanna in our tent. It had its tail on my head and it moved and woke me up.*
- Researcher *Are you sure? Are you sure that someone didn't just wipe you with a towel and call it a goanna?*
- Amanda *No everyone was asleep.*
- Researcher *But you had the tent zipped up didn't you?*
- Amanda *But there's always a little hole at the bottom.*
- Researcher *So what happened?*
- Amanda *They couldn't find anything so we went back to sleep.*

Cody told of some serendipitous event that resulted in him helping a classmate, *"I didn't know that shells were sharp. Our friend found that out the hard way because he took his shoes off just one minute and cut his foot and I had to help him"*. Although both Cody and his friend appeared not to have known that rocks could hurt them if they walk bare-footed, Cody felt obliged to assist his friend, *"I had to help him"*. For Amanda, Genny, Cody and others discussed in this section, interacting with the environment created challenges for them that required the assistance of their peers. With peer support, these children felt more secure. Indeed Amanda was able to go *"back to sleep"*. The agenda was one of cooperation and support and not one of competition. These accounts identify the value of peer initiated interactions as distinct from those where the grouping was under the control of the teacher.

When on the rope challenge course, the trust of a friend and the feeling of having a friend trust you, were important. These factors enabled challenges to be overcome that might otherwise impede successful completion of a goal. Consequently, the experiences became a positive and rewarding one for Jonathan as he *"had the most fun on the high ropes"*. One result of this trust was a sense of 'acceptance' that social interactions create. Piers made a drawing of canoeing *"because it was fun and I went together with Tim"*. For Piers, it was not only the activity but sharing the experience with a friend. Bill *"felt happy about today because everyone is nice"*. Marg attributed her learning to peer support and talked about how the camp's different environment to that at school had also changed her behaviours:

*My friends they help me in a lot of different ways. Normally I don't get along with friends because I always want my own way and my friends just get up me. On this camp my friends in my tent had been absolutely nice to me.*

Maisie also found value in peer interaction. *“The best part (of the camp) was I liked everything, like how to be nice to each other and to work with everybody”*, she related. William told us in his conversation that one thing that he had learnt during his stay was *“there is no ‘I’ in team”*. This was a phrase used by the Centre teachers during many of the team activities. When Keith was asked if there were any aspects during the camp that were really special, he replied, bike riding because *“you don’t really get to bike ride with your friends very often if you don’t ride to school”*. Bunty put the value of group work simply, *“it is funner [sic] to be with your friend than being alone”*. All these accounts illustrate that the children valued being able to have fun with their friends. Keith discussed how, during a day back at school, he had limited free time to interact with his friends, particularly in activities such as bike riding. These children valued the additional opportunities the camp provided for them to interact with their peers. Fun was an essential element of being with friends and contributed to the experience. In summary, the children identified that, in order to more fully participate in an activity, working with peers was important.

The third point raised by the children was the importance of trust and acceptance and learning the skills of patience and tolerance when interacting with peers. When asked what was important for him during the camp, Denis simply replied *“trusting people”*. Cody suggested that trust was required in order to successfully complete an activity. He says, *“I felt like the only way to do the rope challenge is to use teamwork and trust your team mate”*. Penny also supported the idea of trust as a significant component of successful social interactions and explained how it specifically helped in her learning. Penny wrote in her journal:

*Today I learnt about worm farming, group work and how to trust a friend. When you are trying to achieve something like when we did today team work is very important. When we were on the rope challenge course it was important for us to trust your friend and for your friend to trust you.*

Jonathan too, acknowledged the importance of trust. He wrote in his journal, *“Today I learnt not to be afraid of heights because I knew I could do it and the harness made me feel safe. I could trust my friends. I had the most fun on the high ropes”*. Here, the cooperative nature of the task fostered Jonathon’s sense of competence. Kaitlin described the combination of trust, group cohesion and fun:

Kaitlin            *Oh, yes the low ropes, they were cool.*  
 Researcher       *The low ropes were fun were they?*

Kaitlin *But for the fact you practically fell everything.*

Researcher *Did you fall off?*

Kaitlin *Only about twice, but my group kept on falling off because we were laughing so hard.*

Researcher *Was that because you were having fun?*

Kaitlin *Yes.*

Researcher *Were you learning lots while you were laughing?*

Kaitlin *Yes.*

Researcher *So what did you learn?*

Kaitlin *Balancing will help your body and that when you go into the vine area, it is like the ropes and you can trust your friends.*

Researcher *Trust is an important thing?*

Kaitlin *You have to have trust in your friends with secrets and all your stuff.*

The children recognised that cooperative behaviours required learning the skills of patience and tolerance. Cooperation involved listening to one another's ideas and to consider all participants' views in group decision making. Adele identified that engaging in cooperative behaviour was an emotional experience, requiring patience to overcome her anger that occasionally developed towards other members of the group. Adele wrote in her journal the frustration that she sometimes felt when working in a group:

*Then we had a group activity game. It was pretty hard but basically it's about team work and achieving your team work. I learnt today that working in a team can be hard but you just have to listen to others ideas and make plans as a team. Sometimes in work in teams you get a little angry if someone doesn't listen to your ideas so you just have to be pashent [sic].*

Piers expressed frustration with his crewmate during his canoeing which resulted in them being towed ashore by the teacher. He related, *"The person at the front always had trouble with this or that and that's why we had to get towed"*. Sharon recognised the difficulty in working together when she said, *"I learnt how to work together it was very hard because lots of people didn't know what to do"*. Penny repeated this message when she told us of her frustration when trying to take photographs:

Penny *I did have the camera, but I didn't see anything really interesting.*

Researcher *Nothing interesting. That's strange, because you just said how you had so much fun.*

Penny *But I was at the worm farm and I didn't get to see much.*

Researcher *So you were taking photos at the worm farm?*

Penny *I tried but someone kept walking in front of me.*

When asked if there was any specific activity or process that helped the children learn while at the Centre, Mabel replied:

Mabel *Yes, but we haven't had a couple of really naughty boys they wouldn't let the naughtiest boy come and that's been a really good.*

Researcher *So Ashton is not the naughtiest boy in the class?*

Mabel *No, but he's being much better here at camp.*

Mabel did not appreciate the disruption caused by some of her peers in her class. She believed that it is “*really good*” that a very disruptive person was not permitted to attend. However, she had recognised that one classmate, Ashton, had behaved much better on camp than he usually does in the classroom. At times, disruption by another classmate can cause irritation. Bunty described her canoeing experience in her conversation, “*We were going up the mangroves with Thea who was really annoying, but it was really easy paddling because we didn't have to do too much paddling because we are going downwards*”. This quote is significant because Bunty and Thea were friends. However, Bunty identified that, even though Thea was a friend, she could be “*annoying*”. Bunty wanted to paddle the canoe but Thea's lack of cooperation annoyed Bunty.

Through participation in collaborative experiences at the Centre, the children were provided with the opportunities to demonstrate their competence in using these experiences as opportunities to manage peer interaction and social organisation. Although Wertsch (1998) claims children learn more effectively from peers, the children involved in this study suggested a wider range of benefits from working with peers. Building ways to develop competency in how to interact in socially positive ways was identified as a necessary and core component of their experiences requiring a suite of behaviours (such as cooperating), skills (knowing how to scaffold an experience) and feelings (such as trust). Children reported cooperative activities as more motivational and contributed to a positive climate including positive emotional support and statements of caring that contributed to their engagement and participation in the experience. Peer interactions encouraged children to undertake both academic and physical challenges where cooperative goal structures meant that attainment was positively linked across individuals rather than negatively linked to individuals.

### **5.4.2: Interacting with teachers or “We have had our teachers here and they have been different to what they are at school”.**

Working with peers is one form of social interaction identified by the children as an important contribution to their experiences. Another form identified as significant by the children was that between the student and teacher. The children described three aspects of positive interactions, being respected and teachers using child-appropriate language.

The children identified that they valued positive interactions with teachers at the Centre. There were two aspects to this. The first related to their relationships with the teachers from the Centre while the second related to their changed relationships with their regular classroom teachers from school. For Thea, positive student-teacher relationships at the Centre were exemplified through her recognition that the Centre’s teacher (Tom) was a kind person who, Thea felt, would care for and protect her, during her absence from home. A supportive emotional climate was fostered by this Centre teacher which also had a positive effect on Kay. When asked what she would tell people about her camp experience, Kay replied:

*If anyone else is coming on a school camp here and may decide not to go I will tell them that it's a lovely place and you feel very safe here. And no matter where you are that there are lovely people here.*

The children acknowledged the importance of teachers having a warm and caring attitude towards their students. Thea felt the need for the teacher to care for and protect her during her absence from home and that this was important before she could fully engage in any activities and was a prerequisite for her participation in the experience.

Maisie and Nigel felt comfortable enough to comment personally about the Centre staff in their conversation:

Nigel	<i>Tom, he's funny.</i>
Maisie	<i>And so is Mr. K.</i>
Nigel	<i>You're both funny.</i>
Maisie	<i>I like your glasses.</i>
Researcher	<i>But we both have glasses.</i>
Maisie	<i>But I like yours.</i>
Researcher	<i>Thank-you.</i>

In relation to their regular classroom teachers, the children identified that the teachers related differently on camp to how they were in their regular classroom. Bunty told how her relationship with her classroom teacher at school had changed during the camp. “*We have had our teachers here and they have been different to what they are at school*”. Denis, too, described how his teacher was different while on camp “*it was more casual*”. During their conversation, Chad and Nicolas gave a detailed and enthusiastic account of how their teacher noisily expelled wind during a game on the beach “*everybody was laughing really hard*”. When asked by the researcher, “*Does he do that at school?*” Chad replied “*no*” while laughing. The camp provided an opportunity for the children to see their teachers in a less formal light way than that at school. When children took photographs of their teachers or parent supervisors, it was usually in some humorous situation such as in Figure 5.8 where Adele took a photograph of their teacher while she was asleep on the bus after a long hot day in the sun. Adele thought it a joke to take the photograph and reflects the less formal relationship that existed between children and their teachers during their time at the Centre.



**Figure 5.8: Teacher sleeping (Adele, 9 years)**

Whether a result of a teacher expelling wind, asleep in a bus, or the ‘funny’ Centre staff, the children described an experience associated with positive student affect intertwined with displays of emotion such as humour. Meyer and Turner (2006) believe that such positive emotions are markers of highly supportive instructional interactions.

A second aspect of student-teacher interactions involved children’s descriptions of being respected during their stay at the Environmental Education

Centre. For example, Kay and Thea sensed respect by Centre staff, by being allowed to use *Textas*<sup>25</sup>:

- Researcher *If I told you that you had been doing schoolwork, did you realise you are doing schoolwork?*
- Kay *Yes, but it hadn't been schoolwork like at school if you are colouring-in, up to Grade 3 you must use paints but here you use Textas. I know we've been doing a lot of school work here but it's not like school.*

They reported that they were not permitted to use *Textas* in their school until Year 4. At the Centre, they were provided with these pens, although they were still in Year 3. It was obvious that Kay saw little reason that they should not be allowed to use *Textas* at school. She felt she was being treated in a more grown-up way by Centre staff, by being allowed to use a classroom artefact that, for her, symbolized greater responsibility and maturity. Being allowed to use *Textas* appears to present a mismatch between student and teacher expectations. Sometimes this mismatch can arise from such simple matters as whether the students should be allowed to use a particular drawing implement. This particular story caused me to reflect on what the child was telling me. There can be more general features of the relationship of the teacher with that child than the teacher may be aware. The teacher can inadvertently have a direct impact on the child's self-image and Kay felt that the teacher had treated her as if she was from an older grade. This created a positive classroom [although an outdoor classroom] climate. A positive classroom climate correlates with teacher support, including positive emotional support, and statements of caring that may have been given at other times during the visit.

A third aspect of student-teacher interactions related to the Centre staff's use of appropriate language and manner that helped connect adults and children. As Doreen relates:

- Doreen *Some people just don't explain it properly but you explained things simply; because we didn't understand the words older people use. But you explained it so that we could understand it a bit more.*
- Researcher *So therefore the explanations were a bit clearer?*
- Doreen *Because some people use words that we don't understand. It was like mum having to explain something to me and she had*

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<sup>25</sup> *Textas* is a brand name for a thick colouring crayon and is frequently used by children in Queensland to describe any similar type of felt-colouring implement.

- to explain it five times before I could understand what she meant. Last year we had a very young teacher and she used really big words that we couldn't understand.*
- Researcher *So a very special thing for you was that you could understand it more easily what we were trying to explain to you.*
- Doreen *Yes.*

Doreen contrasted her experiences at the Centre with a former teacher at school whom the students could not understand because she used “*big words*”. Doreen illustrated that she recognised that some adults (both teachers and parents) do not explain concepts adequately for children and that patience is required sometimes to help children understand. She compared her experience at the Centre to one with her mother who took some time to explain something a number of times, in order for Doreen to understand. She intimated that some regular teachers do not have the attributes of clarity of expression and patience. Shirley supported this idea when she said, “*If I didn't understand something the teachers would break it down into smaller parts so that I could understand it*”. The use of child-appropriate language in effective instructional interactions appears to have promoted learner engagement with the activity.

In summary, the children identified the importance of social interactions with peers as a key aspect of participation in their experience at the Centre. Children participated in two types of interaction, with their peers and with teachers. The children interacted with their peers in socially positive ways rather than potentially a destructive competitive way. Social interactions with peers provided a means of assisting one another to successfully engage in activities and for children to extend themselves. That is, children became more engaged and participated more than may have happened without the social support structure of positive interactions with peers. Children identified the importance of trust and acceptance and learning the skills of patience and tolerance when interacting with peers. The second of the type of social interaction identified by the children, with teachers, contributed to the creation of a positive climate at the Centre. As a result of this a positive climate children were more engaged and participated more in the experience. However, in describing the nature of engagement and participation in experiences at the Centre, many children made comparisons with their school and suggested differing

pedagogies being experienced at the Centre to those they experience at their schools. I discuss this different type of interactional relationship in the next section.

### **5.5: A Different Type of Interactional Relationship or “When you learn at school you have to sit at a table and chair and the teacher writes on the blackboard”**

This research did not aim specifically to examine in detail their school experiences, and it is not the intention here to preference school-based situations nor to unduly use it as a counterpoint to the experiences at the Centre. The children’s comments identified the significance they placed on the experiential approach they engaged in while at the Centre, which they found to be in sharp contrast to what happens at school.

When Nigel gave the above statement, he described the situation at school as being characterised by one in which the child is academically passive, with the teacher in a dominant role and a dispenser of information. Direct instruction or traditional teaching places a heavy emphasis on the transfer of knowledge from the teacher to the student creating a primary role to the sender (teacher) and a secondary role to the receiver (student). Teaching and learning experiences then become one of transmitting information. Not all children, however, agreed with Nigel. Karen believed that “*schools are just as fun but you’re not allowed to go out and get like all muddy in the mangroves and things*”. Nevertheless in 11 of 32 (35%) conversations there were variations of a pedagogy at school where students sit at the desk and the teacher talks while the students write. Comments supporting this type of pedagogy description included:

- |        |  |
|--------|--|
| Maisie | <i>When you learn at school you have to sit at a table and chair and the teacher writes on the board.</i>                                      |
| Jake   | <i>She writes it on the board and then we copy it down into our book.</i>  |
| Jessie | <i>We have to sit there and write things down rather than actually doing things.</i>   |
| Jeremy | <i>Listening to a teacher or writing down what the teacher writes on the board.</i>  |
| Jessie | <i>You listen to the teacher and then write-down things and sometimes she gives examples and sometimes she doesn't use what's in the book.</i> |

For Sharon, school required her to “*memorise them and write them out so that you can remember them and you practice them and write more of the words*”. Sharon and the other children identified that their role was largely restricted to memorising, writing, practice, sitting and listening. Sixteen children out of 54 (30%) identified being in a passive role in a school situation. These 16 came from children in all of the schools that participated in the study.

The use of the chalk board as a central component of what a teacher does in the classroom was mentioned in five of the 32 (20%) conversations. Use of a chalk board can be seen as an instrument that reinforces the passive role that the children are placed in their school experience and the central role of the teacher in the process of classroom interaction. Through the use of a board there is often little opportunity for the children to be actively engaged. Stevenson (1987) describes this type of situation in his critique of mainstream teaching. He describes the teacher’s role as the dispenser of factual knowledge with student participation usually limited. In this situation, the student is ascribed a secondary role, to receive, merely absorbing information. Stevenson (1987) argues that this approach is inconsistent with the goals of environmental education. However, in this study the children are seen as active agents and eager learners, active rather than passive individuals. Children identified in their conversations a preference for first-hand experiences. Jonathan summed up this attitude for others in his conversation as “*experience - that’s what it’s about. Having to learn what everything is about. That’s experience*”.

The children described participation in the camp as an active process in which opportunities were provided for them to come in physical contact with natural materials and the natural environment. Sometimes, a significant aspect arose from the unexpected that occurred during the activity. The children’s accounts describe the spontaneity and unpredictability of experiences, which contributed to the value of the activity for the children. The children’s accounts also highlighted that the habitats they visited were ‘places’ that consisted of a number of elements. These elements included other children, adults, animals, habitat features with which the child actively interacted. Experimentation with, or manipulation of, an artefact also reflected this active approach. This allowed the child to ‘test’ theories or statements offered by the teacher and peers, such as whether Cnidarians possess stinging cells.

Primary experiences provided teachers and Centre staff with the opportunity to give children autonomy in how the child participated in that experience.

The children were involved in a wide variety of experiences; indeed, the children gave a litany of various experiences that were significant to them during their time at the Centre. However, a concern, both as a researcher and as a teacher at the Centre, was what the children did not discuss about engagement or participation. For example, in one activity, children described in an animated manner how they participated in a variety of experiments using different means of generating electricity and identified and discussed the different things that they learnt about power generation. In contrast to the engagement created by the experiments, there was no mention about the formal teacher-led lessons that went with these experiments on how to conduct audits into electricity use. The children described the activities in which they were active participants which had apparently engaged them and did not mention those in which they played a passive role, that is, when the teacher used pedagogies based on transmission models. From the children's comments, it would appear that when the Centre offered experiences that used a more traditional transmission approach to teaching, the children did not identify these as significant components of their visit. Certainly, the children identified that this approach was not valued as an important part of their environmental experiences. Therefore, it would appear that the experiences and the context offered up different sorts of interactional relationships than might be possible in more formal settings.

## **5.6: Conclusion**

Chapter 5 was the second of the data chapters and focused on engagement and participation. Two themes were made evident in this chapter. The first is that the children's accounts identified the natural setting of the centre, along with the program of active hands-on activities involving the natural world, as important for affording opportunities for engagement and participation. The second key theme is that children actively valued engaging and participating in experiences with their peers.

As the children's accounts of their experiences in this chapter show, their engagement with materials and ideas through the centre program offered children opportunities to engage with "*different things*," as Jesse points out when he reflects

on his experiences: *“touching and feeling, by actually doing, not by sitting in the classroom and writing things down”*. The primary experiences offered through the environmental education program encouraged engagement with the environment and participation. As Chawla (2006) points out, experiences contain “many-faceted possibilities for knowing” (p. 63). This perspective was evident in the accounts of the children reporting that they learnt lots of different, new things or, as Stanley described, *“lots of stuff that we have never done before”*. For children, it was the opportunity to engage in an activity for the first time, or to use a variety of novel tools, or to participate in a novel range of contexts, such as working in groups outdoors. The children identified that engaging in experiences where they encountered the unexpected was important in adding value to their experiences at the Centre. This level of engagement reflects Chawla’s (2006) belief that the natural world is captivating because of its potential to provide conditions that can hold children’s attention. An example was when the children engaged in physical activities, such as climbing over the tangled prop roots of the *Rhizophora stylosa* in order to make their way through a new and strange mangrove forest. For Shirley, it was finding *“things that you don’t expect”*. The children’s accounts reflected that learning outdoors in natural settings encouraged engagement and participation in the environmental experience, such as when Stanley reflected that *“at school we can see it in a picture book but here you can get in the mud”*. Moore (1986) suggests that it is through such experiences that children can develop an environmental ethos.

In addition to exploring the natural world, a second aspect of engagement and participation was that the children’s accounts described the value of interacting with peers. For example, Kay commented that *“working in groups is a good example of how you’ll learn at Boyne Island”*. The interactions of peers and friends as they construct their social worlds is an important aspect of any educational environment, as Cobb-Moore and her colleagues (2010) highlight, Corsaro (2005) suggests that children “come to collectively produce their own peer worlds and cultures” (p. 24). Bunty put the value of group work as, *“it is funner [sic] to be with your friend than being alone”*. For others, as Sharon points out, a collaborative approach helped successfully complete a difficult task: *“When I was doing the tree climbing lots of people helped me learn by telling me to put my left foot up or my right foot up and helped me learn”*. Alongside interactions with peers, children also commented on

their interactions with teachers, appreciating that the more informal context supported more relaxed interactions.

The focus of this chapter was engagement and participation. The next chapter discusses the third of the children's perspectives; responsiveness and reflection.

## Chapter 6: Children's Perspectives and Reflections on their Experience

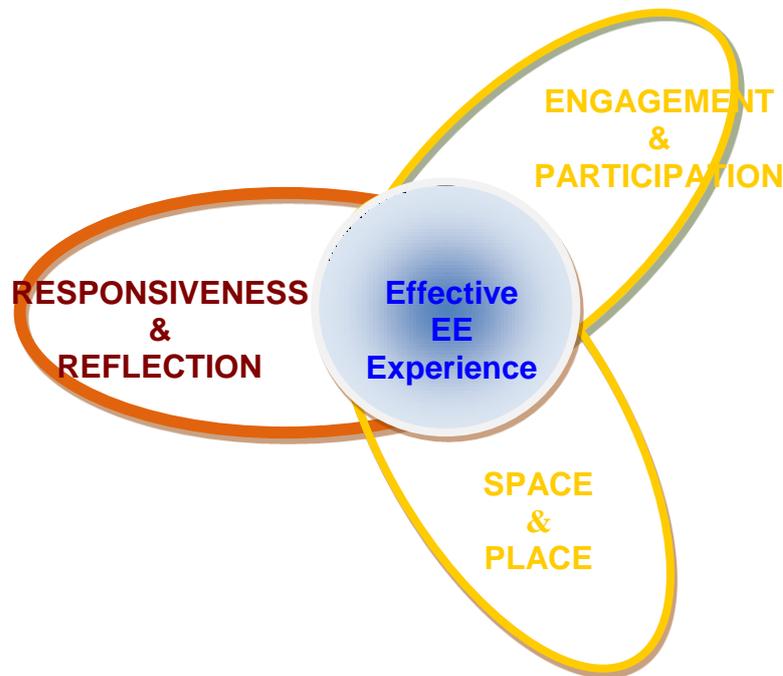


Figure 6.0: Wordle of the 30 most common words in Chapter 6



## Chapter 6: Children's Perspectives on Responsiveness and Reflection on the Experience

This chapter is the final of three data discussion chapters. In this chapter, I discuss the third of the three interrelated aspects identified in Figure 6.1, 'Responsiveness and Reflection'.

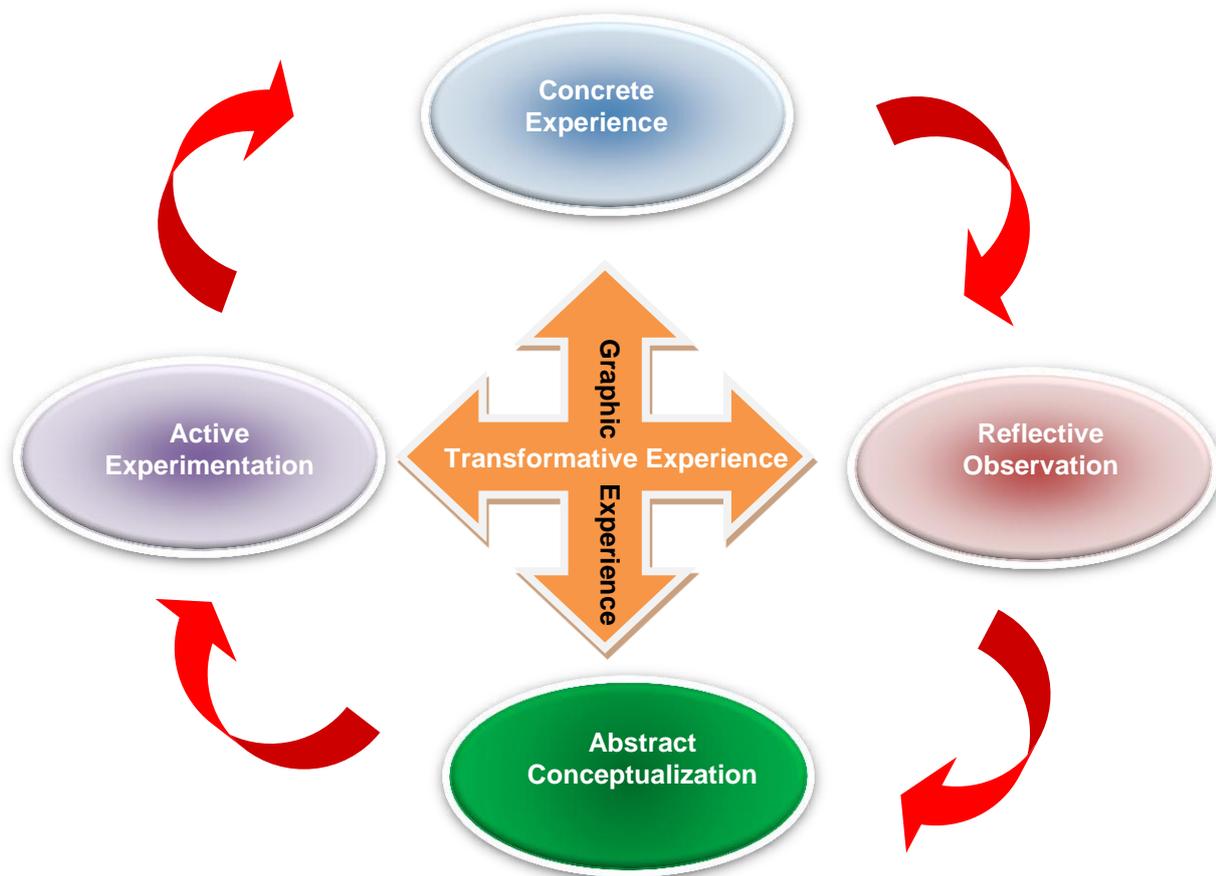


**Figure 6.1: Framework of children's accounts of their experiences**

This chapter examines responsiveness and reflection (see Figure 6.1) by discussing children's accounts of their environmental education experiences. Children described their experiences as being fun and exciting, and they reported feeling confident and satisfaction from their participation in different experiences when at the Centre. The children related that one response to their activities was a need to care for nature. The children also described how their reflection in their experiences was promoted by an incident that was inconsistent with what children were exploring. Again, in order to situate the children's perspectives, and to better understand the significance of the children's statements, I visit the literature to examine experiential learning and its associated teaching cycle developed by Kolb (1984).

## 6.1: Responsiveness and Reflection within the Context of Environmental Education

In this section, I discuss the concepts of responsiveness and reflection within the context of environmental education in order to situate and better understand the children's perspectives. Experiential learning involves all the senses, intelligences, and a range of learning environments (Healey & Jenkins, 2000; Molee, Henry, Sessa, & McKinney-Prupis, 2010). According to Kolb (1984) "learning is the process whereby knowledge is created through the transformation of experience" (p. 38). Kolb's model can be used as a description of the learning process in general but his emphasis on reflection places it firmly in an experience-based learning paradigm where the importance of reflection is emphasised.



**Figure 6.2: Experiential learning and teaching cycle** (Yeganeh & Kolb, 2009)

In Figure 6.2, experiential learning is illustrated as a process of constructing knowledge in an idealised learning cycle where the learner passes through all stages (Yeganeh & Kolb, 2009). Experiencing involves sensing and feeling, then reflecting

on the experience and developing some abstract conceptualisation or plan from the process before finally taking some action or active experimentation. This process is recursive and is responsive to the learning situation and what is being learned. An appeal of this approach is that it provides a rationale for a variety of learning methods, including independent learning, learning by doing, work-based learning and problem-based learning (Healey & Jenkins, 2000). Important characteristics include learning being best conceived as a process and not in terms of outcomes; learning as a holistic process involving the total person, thinking, feeling, perceiving, and behaving; and finally, learning resulting from synergetic transactions between the person and the environment (Kolb & Kolb, 2005). Fenwick (2003) suggests that little consideration is given in Kolb's model to context as part of the learning process with "context or place portrayed as an inert container in which people perform their actions" (p. 124). Where context is discussed, it tends to be viewed as a space separate to the learner. Place and space are not considered important elements.

Place and the primary experience, where children actively experience first-hand aspects of the environment, characterises the view that environmental education at the Centre is something that individuals engage in, not something that is done to them. Strategies of problem-solving, decision-making, and co-operative activity play a role within each phase of Figure 6.2 as implemented at the Centre. The cycle in Figure 6.2 assists in examining the significance of the children's comments about their first-hand experiences with nature during their visit to the Centre. As Heimlich (2007) noted, "Young people generally prefer experience and task-centered learning which is a goal of experiential, as well as environmental education" (p. 222). For example, in the study, after reflecting on their encounter with a litter-degraded beach, the children related a desire to stop littering.

## **6.2: Reflecting on Experiences or "Remembering, thinking about it, thinking where it should be"**

The children's accounts show their reflections on their experience. For example, Jonathan described this process as "*remembering, thinking about it* [why the experience was important], *thinking where it should be and knowing what you're talking about, thinking about what it was*". Jonathan's account chronicles a list of higher order skills such as analysis, synthesis and evaluation that illustrate how he

was constructing meaning of his experiences through a reflective process. Jonathan remembered what he did, thought about that and talked about new knowledge gained, and then he integrated it into the body of existing knowledge. Jonathan's statement identifies that reflection is crucial to his process of making meaning of his experiences.

Diverse activities and individual reflection provided children with different opportunities to experience success. For example, Thea gave an example of the process in action and how the reflective stage linked with her first-hand experiences in the field:

*Yes, it's not like we're coming here and we are given a whole lot of books and told to write down this or do this maths problem. It is being put in a fun way and we are going and doing this stuff but then we come back and we have to write down what we have done. It's like we get our treat and then we have to come back and do a little bit of work so we remember what we have done. So it's not like you are dumping us with all this work and making this do all this work. We are actually having fun and then coming back and writing up what we have done.*

Thea reflected on earlier activities, which she found fun and then reflected on how she internalised the experience using journal writing as a reflective device. Thea described this approach, "*it's not like you are dumping us with all this work and making this do all this work*".

Reflection contributed to the children's post-experience appraisals of their achievement during an activity. For example, Maggie wrote in her journal, "*Today I went to the beach and went fishing. I didn't catch anything but I still had fun. We had to get some squid and put it on our hook and throw it out in the water. My line wasn't going in the water but then I found out I was holding the string too hard*". In this case, Maggie tells us about her successfully casting out a fishing line. Genny noted in her journal how she "*hopped on the low ropes. It was a challenging activity. I really liked it*". Her challenge and success resulted in enjoyment to the extent that, hours later, Genny recorded the experience as a significant part of her day. Jared reflected about his day expressing satisfaction that he had achieved his target on the climb. "*First I did high ropes. It was fun and a bit scary [sic]. I got to were [sic] I was sposs [sic] to go some people didn't. It was a really big tree we had to climb up*".

### **6.3: Responding through Fun and Excitement or “It is not as fun, as having fun and learning”**

Fun was the most commonly recurring response offered by the children, mentioned in 16 of the 33 conversations. Often, having fun and learning were paired together as important aspects of the experiences. In this section, I examine the children’s comments about this aspect of their experience. However, in order to situate the children’s perspectives, and to better understand the significance of the children’s statements, I again visit the literature to consider first the concept of ‘fun’.

Kirk and Harris (2011) believe that the concept of fun is still the subject of some controversy in the educational world. Three bodies of literature may be identified discussing this concept. The first body of literature is for the field of psychology, which describes ‘fun’ as an emotion. Carroll (2004) defines experiences as fun when they “capture and hold our attention and arouse pleasurable emotions” (p. 38). The second body of literature is gaming. Much of the literature around fun for the past couple of decades can be found in the field of educational gaming (Giles, 2010; Malone, 1981; Prensky, 2001; Sim, MacFarlane, & Read, 2006). The final body of literature is educational contexts. Within the educational field, Bisson and Luckner (1996) have written about fun in learning, discussing the pedagogical role of fun in adventure education. Packer (2006) uses the phrase “learning for fun” to refer to the phenomenon in which “visitors engage in a learning experience because they value and enjoy the process of learning itself” (p. 329). Kirk and Harris (2011) argue that gamified tasks are not real fun and that at times, educationally, fun is treated as a sugar-coating of some educational experience.

The educational literature gives a number of examples of fun-in-learning. Kirk and Harris (2011) relate how students have learned that playing is almost as much fun as winning with students learning to share, respecting one another, taking turns, and picking up after themselves through games taking place in a library. Crane (2006) describes children taking environmental action in a Turtle Watch program. Programs are “structured organised educational endeavors that fortify and enhance what is being learned in class. Turtle Watch has all that, plus sand, sun, water and wildlife. It was fun—they didn’t even know they were learning” (Crane, 2006, p. 1). Brooks (2011) writes about science being fun. He writes, “Yes, science is fun! Scientists solve puzzles. Sometimes those are very important puzzles. Inquiry is

about the puzzle-solving part of science, and it's fun" (Brooks, 2011, p. 1). Romano (2009), on the other hand, writes about English. He tells of his love of reading with "piercing ironies, surprising plot lines [and] startling perceptions" (Romano, 2009, p. 30). Tichenor and Plavchan (2010) argue that maths should be fun with instruction planned with two goals in mind. First, students should make sense of maths; that is, to promote conceptual understanding; but second, students to enjoy doing maths, promoting positive attitudes towards maths.

Katie, in her statement, links the idea of learning and fun when she asked to describe her experience told us that "*it [the experience] is not as fun, as having fun and learning*", she goes on to say:

*I think learning means that you get to do lots of things you haven't done before and you can do it in a fun way. Like how we got to go on all rocks and things and we were still learning everything and really fun.*

Katie paired learning about new things that she hadn't done before, such as exploring one particular type of environment, the rocky foreshore, and engaging in learning in a fun way. For Katie, the novelty, the physical aspects and the sharing of this experience with her peers (as implied by the use of the word 'we') combined to create a fun learning experience. In that they both emphasise the physical aspects of the experiences, Katie's account of venturing onto the rocks, and exploring them first-hand, is similar to Jegan's journal account:

*We had fun and want to do it again. Today, I went to the flat and all of the class did this map thing and everyone had things. I had some coral. Then we learnt about the solar panel it is cool. We all weighed ourselves and timed us to run up the stairs. Then we went to the mangroves and got all muddy.*

Jegan's account equates fun with learning specific curriculum content and engaging in a broad range of interesting activities, including working with maps, engaging with artefacts as diverse as coral and solar panels and a physics experiment about kinetic energy. These activities involved participating in physical activities, such as running up stairs, which Jegan identified as being fun for her and that she would like these experiences to be repeated. In this context, the importance of physical activity, including the handling of natural objects or science apparatus, were key elements and, in this instance, their repetition was sought after because of their appeal.

Jamie also identified a direct link between fun and learning when he described the variety of science experiments that he conducted, “*Today, I learned all about energy and how it works, kinetic energy, it was a fun day and I’d learnt heaps*”. Jamie made a drawing of the activity (see Figure 6.3) as the most significant aspect of his visit.



**Figure 6.3: Kinetic energy experiment- Running up stairs (Jamie, 9 years)**

In the experiment, children timed themselves running up stairs and through the grounds, scenes depicted in Jamie’s drawing. After weighing themselves, the children mathematically calculated energy produced from their movements. This experiment required children to measure, use a variety of units of measurements and engage in calculations using a number of mathematical formula. Jamie found this science and maths “*fun*” and he “*learnt heaps*”.

For Rebecca, “*canoeing was really fun*” (see Figure 6.4) and she made a drawing of canoeing activity as the most significant aspect of her visit. Her drawing shows smiling faces, and her with friends. While canoeing, the children explored the mangrove forest and Rebecca includes this feature of the natural environment in her drawing. This inclusion suggests the significance of the environment as an important part of her physical canoeing experience at the Centre.



**Figure 6.4: Canoeing (Rebecca, 9 years)**

Marg and Gloria illustrate a diversity of learning situations in which they engaged that were fun, ranging from physical outdoor pursuits such as canoeing, to using electrical circuits:

- |        |   |
|--------|---|
| Marg   | <i>Circuits - that was really fun.<br/>I learnt that composting can be fun.</i>                                 |
| Gloria | <i>The class did science it was fun. Mr. K. cooked<br/>sausages [using solar power] they were really yummy.</i> |

As well as Gloria enjoying eating the sausages, she understood that it was a science lesson that included discussion about solar power, reflectors, and parabolas. Cody enjoyed making ‘S’mores’<sup>26</sup> using a solar cooker to bake them (see Figure 6.5). Although the lesson was about solar energy, Cody enjoyed the sweet snack that was made and took a photo of his friend Chad licking his fingers after the molten marshmallow and chocolate had run down his hand (see Figure 6.6). “*They were so good*” Cody told me and when questioned about the science behind the lesson answered, “*I know we were doing a science experiment and it was so amazing how we used the sun to cook them*”.

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<sup>26</sup> S’mores are a biscuit, marshmallow and chocolate treat that were originally made over camp fires in the United States of America, particularly during the Fourth July celebrations. They have become now a worldwide camping treat. Folklore consists of the story that the treat was so tasty that people, after one, would ask for ‘some-more’.



**Figure 6.5: S'mores cooking in solar oven**



**Figure 6.6: Boy eating S'mores (Cody, 9 years)**

Cody also took a photograph of the sausages being cooked by the parabolic cooker (see Figure 6.6) for the same reason that he had never seen the sun cook food before.



**Figure 6.7: Sausages cooking in solar cooker (Cody, 9 years)**

Marg found that learning how compost bins operate, with their decaying material, was a “*fun*” experience. For others, including Kay, the fun arose from engaging in activities that were not physically located at the Centre. Kay completed a drawing of bicycle riding (see Figure 6.8) as a highlight of her visit and she explained that it was “*fun... to ride your bike with your friends*”.



**Figure 6.8: Bicycle riding (Kay, 9 years)**

Even disappointment did little to stem the children's sense of fun. For example, Meghan and Lawson wrote in their journals about a bicycle ride to the beach for an anticipated afternoon of swimming and fishing. Although the surf conditions were too rough to allow the planned activity to continue, Meghan commented, *"I was feeling excited about going for a swim and going fishing. When we got there, we couldn't go swimming because the beach was dangerous. It was fun!"* Lawson wrote, *"On Tuesday when we went to the beach to do fishing and swimming, I learnt that where there are no waves crashing. There is a rip. It was very fun"*. Lawson's account identified that fun can arise in educational contexts such as the Centre. He comes from a school in a rural area, inland from the coast. His account shows that he had learnt to identify a dangerous situation in the surf, which he rarely visits. This experience was significant enough for him to enter this description into his journal. However, the novelty of new experiences was not necessarily a pre-requisite for fun. Rebecca described her visit as being *"fun and doing things even if they had done them before"*. Repetition, in itself, was not an issue of concern. While the idea of fun was the most commonly recurring description mentioned by the children, the children also identified the excitement that they experienced while participating in different activities. Jesse, in reflecting on the high ropes course, illustrates this sense of excitement. He said, *"Wow, how thrilling was that"*.

Different aspects of the environmental immersion experiences were the source of excitement for different children. Meghan, for example, in discussing bush cooking, commented that “*it was exciting when we made twists on a stick.*”<sup>27</sup> After we made it, we got to eat it with honey, jam or syrup. I ate it with syrup. It was yum”. When Louise wrote in her journal, “*On my first day, I felt nerves and excited at coming,*” she displayed a range of emotions including excitement and apprehension, about the forthcoming camp. In her conversation, she identified only positive outcomes from her visit, “*Pretty much everything was special for me... While I have seen crabs, but it’s good to see them with other animals. And it was the same with the mangroves it was a good experience*”. When some of the children were asked about the photographs that they took, they simply replied that they took them because they had ‘fun’ being engaged in the activity, such as Piers for fishing (see Figure 6.9) and Brett for canoeing (see Figure 6.10).



**Figure 6.9: Fishing (Piers, 10 years)**

**Figure 6.10: Canoeing (Brett, 10 years)**

Fun could arise as a consequence of learning specific curriculum content, engaging in a broad range of interesting activities or participating in a diversity of learning situations. These examples indicate that fun is a major criterion in the children’s assessment of whether they valued the experience. Fun had a positive effect on the experience by inviting intrinsic motivation so that the experience itself was considered rewarding. Middlebrooks (1999) discusses another aspect of fun, which he describes as “a complex notion that includes feelings of mastery and control” (p. 25). Therefore, there are links between fun, mastery and control,

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<sup>27</sup> A ‘twist’ is a dough mixture that is rolled out into a long thin sausage shape then ‘twisted’ around the end of a stick then cooked over an open fire. When cooked, the pastry is removed from the stick and the hollow core is filled with honey, jam or syrup.

confidence, and satisfaction. I will discuss confidence, satisfaction and intrinsic motivation in more detail in the next section.

#### **6.4: Reflections on Confidence and Satisfaction or “I felt very good”**

When the children gave accounts of their experiences or wrote journal entries about their experiences, they consistently mentioned having positive, emotional responses to having successfully engaged in difficult activities. Sometimes they reported that it was a first time experience and, at other times, it was because they reported feeling good when they had persevered with a task until they had succeeded. Jonathan, for example, faced one of his fears when he attempted the high ropes activity of climbing approximately 12 metres up a tree. Jonathan reported that being up high was a challenge and he described how he overcame his fear when he found himself at the top of the climb, he *“felt very good. Because heights was one of my most unfavourite things. But when I started climbing I just said to myself one step at a time and then I found myself at the top”*. In his account of this activity, Jonathan displayed autonomy and self-regulation. He explained that he *“just said to myself one step at a time and then I found myself at the top”*. His account shows his sense of competence, positively influencing his affective state. In our conversation, Jonathan explained that *“the high ropes, they looked easy but they were harder than what they appeared”*. For, Grace, it was going on the low ropes that was a challenge which she successfully met, *“We hopped on the low ropes. It was a challenging activity. I really liked it”*. In these situations, Jonathan and Grace described themselves as risk takers who chose challenging tasks and successfully completed them. Perhaps undertaking and successfully completing challenging tasks is why the children took numerous photographs of peers on a high ropes element (see Figures 6. 11 and 6.12). When asked why, the response was always some variation of a *“they asked me to so that they could take it home to show their parents”* theme.



**Figure 6.11: High Ropes**

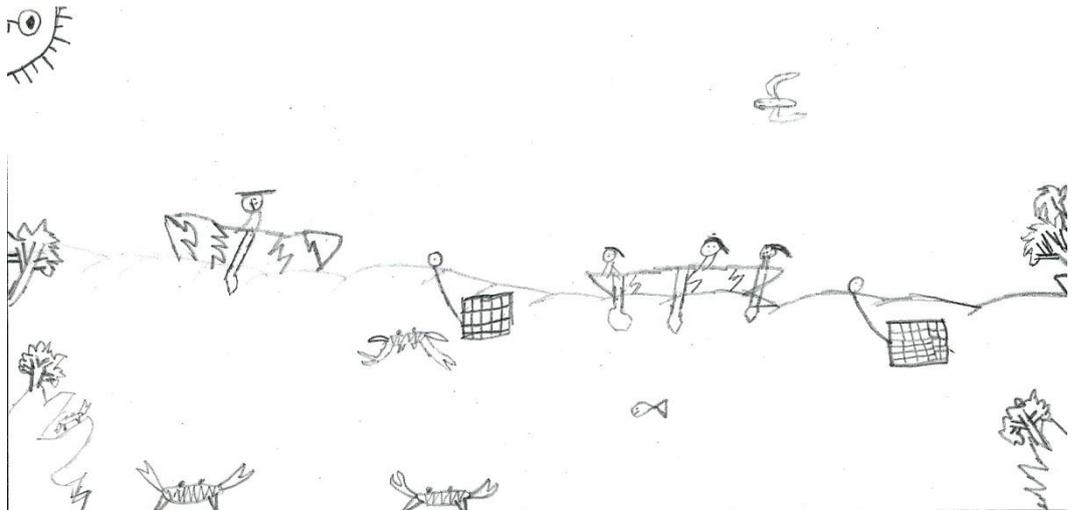


**Figure 6.12: High Ropes (Jesse, 9 years)**

Tanya also wrote about her feeling of confidence and satisfaction that she experienced on the camp. She wrote in her journal:

*Today we went canoeing in the mangroves. It was hard because sometimes we paddled the wrong way and crashed into the mangroves. But we finally got out. After a while we swapped canoes. I got in the single canoe. When I first started in the single canoe it was a bit hard but I got the hang of it after a while. Soon after I went in a big one. It was awesome.*

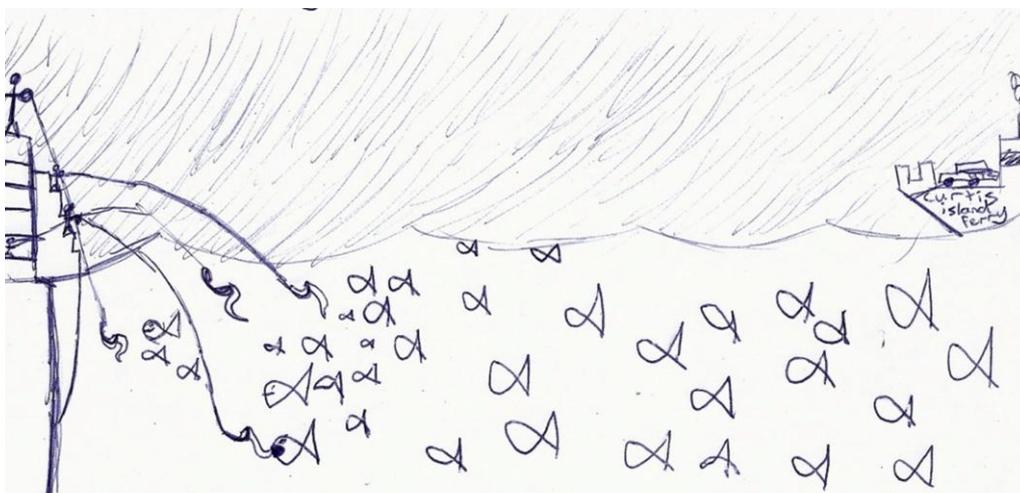
Tanya’s account described how the activity in fringing mangroves, a novel terrain, added to her challenge. Tanya also described an attempt to paddle a single kayak, which she also found a challenge. However, she found that the difficulty of the task and the pleasure of meeting the challenge “*awesome*”. Mabel, for example, drew a picture of canoeing (see Figure 6.13) because “*it was the most fun time I had on camp. However it was pretty challenging*”.



**Figure 6.13: Canoeing-showing natural environment (Mabel, 9 years)**

Mabel's picture is complex due to her inclusion of many of her experience including animals, crab pots, and her peers. Stanley also expressed satisfaction in undertaking a difficult task when he related his canoeing experience. He commented that *"today I went canoeing near the mangroves. We learnt how to steer the canoe. At first it was a bit difficult to steer. But once we got going it was easy"*. It would appear that, as Stanley developed confidence in the task, his levels of satisfaction appear to have increased.

The children's accounts also spoke of their achievements. For Piers, snorkelling provided the opportunity to feel confidence and satisfaction *"because (it was) a good experience for me"*. Keelee described with 'pride' the satisfaction she felt when she caught a crab. Keelee also described the complex interactions associated with the experience, *"After we done some fishing after a little wait I got bored so I pulled in my line and I had a crab. I was very proud"* (see Figure 6.14). From Keelee's journal entry, her outdoor experience had the capacity to rapidly affect her emotional state; enhancing her self-image.



**Figure 6.14: Fishing (Keelee, 11 years)**

Nigel and Jake spoke proudly of the fact that *"when we had the camping inspection we got five out of five each time"*. The teacher had advised Centre staff that Nigel and Jake tended to misbehave in the class. However, despite often being 'naughty' in class, they displayed immense pride that they had been judged so highly each day by their teacher for keeping their tent and personal gear neat and tidy.

Marg believed that the experiences had been important for her personally, as they provided her with an opportunity for *"learning your talents, finding out what's*

*good to your brain*". Adele also discovered that she "*learnt that you had to believe in yourself if you wanted things to happen or to learn*". Her journal presented a telling reflective account of her personal growth. For Marg and the others, challenge plus success appeared to create a 'winning' combination that contributed to their learning opportunities.

On reflection, I recognised that no children commented on their experiences where they felt that they had not succeeded. Their accounts were of successful completion of tasks. I re-examined the data to check if this was the case and found quotes such as:

- |         |  |
|---------|--|
| Shannon | <i>It was just a team effort, if someone didn't do it the whole group sort of failed, so we were all sort of pushed a little bit further</i> |
| Fred    | <i>Team work can get you very far and can help a lot of things.</i>  |
| Mary    | <i>I learnt how to do stuff in a team. We tried to encourage people to go on.</i>  |
| Rease   | <i>We did team activities. We did not always finish but that was not important, it was team work.</i>  |

These accounts describe how the children encouraged each other to go on to higher levels of achievement, reinforcing the role and importance of peer support in the many aspects of their environmental experience.

In the children's accounts of their reflections upon their experiences, they consistently referred to their positive assessments in being engaged in an activity for the first time, and of having persevered with a task, even ones where they felt challenged. They defined this perseverance as a sign of success. As expectations contribute to how children defined their opportunities to attain success and avoid failure (Johnson & Johnson, 1975), they are important links to the concepts of confidence and satisfaction. The quality of what the children had experienced and achieved, and later recorded in their journals and conversations as post- experience reflective judgments were heightened by the level of confidence and satisfaction gained from the experience. Confidence and satisfaction gained represented an internal reward that reinforced the value of the successful accomplishment of the activity and complemented the external rewards given by staff. However, confidence and satisfaction may be described as a personal reward that arose out of reflecting upon an experience, the children also described a pro-environmental ethic of caring

for nature in their reflections on an experience. I examine this ethic in the next section.

### **6.5: Reflections on Caring for Nature or “Poor turtle. Poor turtle. Poor turtle”**

In the previous sections, the accounts by the children were very much focused on what the children said about their emotional states. For example, the children reported enjoying fun and excitement and gaining confidence and satisfaction. The children displayed a capacity to extend beyond self-centred responses by expressing a concern for aspects of nature. For example, during a study of the mangroves, the class discovered a young Green Turtle lying on the mud bank. Although only a couple of yards from the water, the turtle made no effort to return to the sea. As the teacher of the session, I explained possible causes, including how Green Turtles eat plastic bags thinking that they are jellyfish.<sup>28</sup> In the conversation I had later with Nigel, he commented that our presence was one of intruding on the sick animal:

Nigel            *At the mangroves when we went near the stranded turtle we shouldn't have crowded it. It was also stuck in the mud. Poor turtle.*

Maisie           *Poor turtle.*

Jake              *Poor turtle.*

Shirley also expressed sympathy towards the turtle and attempted to think of the turtle in human terms, “*Yet he just kept still when everyone went up and patted him but perhaps he may have been just getting old*”. Marg expressed sadness about the effects of human actions on nature:

*I realised that I really had to care for the environment when I heard what plastic bags can do to animals like the turtles think that the plastic bags are jellyfish and eat them and suffocate. I thought that was sad. I felt sorry for all the things that go wrong in the environment. I feel really sad about that.*<sup>29</sup>

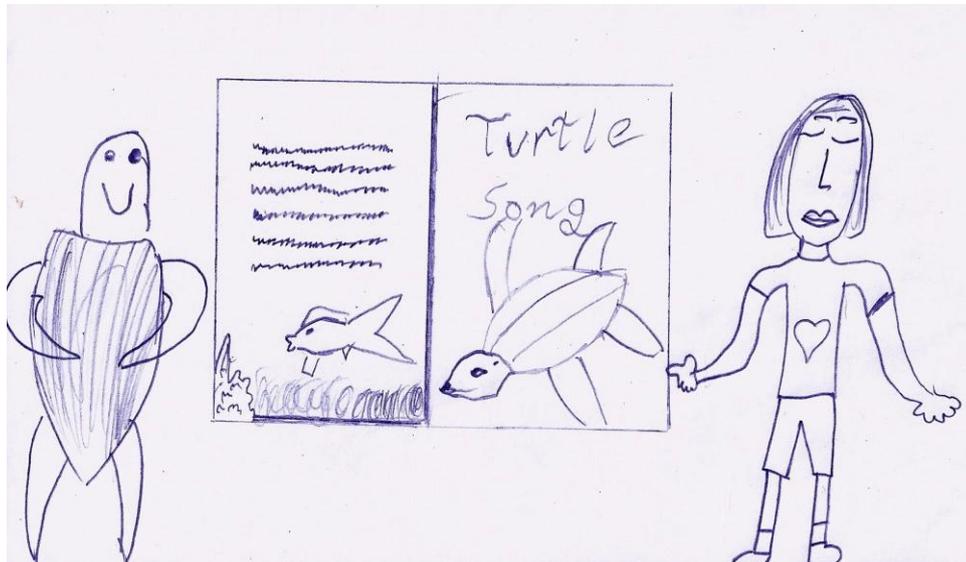
While Marg expressed such sadness, Mabel expressed happiness about the fact that the animals were ‘free’. Mabel, like Nigel, thought of the animals in terms of human emotions and related, “*When we're at Canoe Point and we wanted to look*

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<sup>28</sup> When the plastic lodges in the gut it prevents the turtle from diving in search of food and the turtle slowly starves to death. This is commonly called ‘Floater’s Syndrome’.

<sup>29</sup> This story had a ‘happy’ ending for the children as we contacted Environmental Protection Agency Rangers who arranged for the animal to be collected. These animals are then sent to their facility in Townsville for treatment and rehabilitation and are then released back into the wild.

at the animals and when we are in the mangroves and I think can we let the animals free but they are already free and I was happy”. Marg also made a drawing of turtles (see Figure 6.15) when asked to draw a most significant aspect of her visit.



**Figure 6.15: Classroom scene of Turtle Song (Marg, 9 years)**

In the drawing, Marg included the book *Turtle Song* that had been read to the class earlier that day. Later, during our research conversation, she told me that she was the person in the shirt with the heart, perhaps an indication that she saw herself as a key part of the story and that she identified as being engaged in the message of the story. In the drawing, the turtle and Margaret are co-characters. For Amanda, the agent that aroused environmental concern was a tree (see Figure 6.16):

- Amanda            *When we in the mangroves, and I don't know how to say it, but I was really sad that there aren't that many mangroves left and there's fresh water coming through the pipe and there's only one type of mangrove that's special.*
- Researcher        *Ah, the one tree, our spurred mangrove.*
- Amanda            *That's pretty much what made it really special; because that's pretty amazing that it is the last of its kind that we got to see it.*
- Researcher        *That's very interesting to hear that because sometimes I forget that it's the last one in this area.*
- Amanda            *And we don't have any mangroves out where we are and I have only been to the Gold Coast and I've never been into the mangroves.*



**Figure 6.16: Young mangrove tree and pneumatophores (Amanda, 10 years)<sup>30</sup>**

The children had been exploring the mangroves, which is an area that was once covered by the Spurred Mangrove [*Ceriops tagal*] and now was covered by housing. Only one specimen of the tree that once covered an extensive area now remains. Amanda reported feeling sad that the tree was alone and is all that remains of a once extensive forest. She was also concerned about how storm water is piped into the mangroves after learning that freshwater kills mangroves. Amanda displayed an environmental awareness of the potential for negative human impact on the natural environment and that she felt empathy towards this particular aspect of nature that had survived the effects of humans. This single tree made the experience special for Amanda and valued the opportunity the experience provided for her to see “*the last of its kind*”.

The plight of both animals and plants aroused the children’s concern for the environment. This concern was demonstrated in how they described how ill animals may result from human action such as by broken glass left by people. Children described strong emotional responses to these types of situations and, at times, expressed their response in human-value emotional terms such as animals being free. Tsevreni (2011) identifies that emotions are important aspects in the pedagogy of environmental education. However, he acknowledges that the literature on the relationship between emotions and environmental education has not explored how emotion mediates instruction in and about the environment.

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<sup>30</sup> Pneumatophores are the specialized breathing roots of the *Avicennia* species mangrove.

The underlying emotional links that explain the children's manner of responding to the natural environment is found in the concepts of Biophilia and Anthropomorphism. Biophilia is the term coined by Wilson (1984) to describe the human's innate affinity for the natural world. In his book *Biophilia* (1984), he examines how our tendency to focus on life and lifelike processes might be integral to our development as individuals. Kahn (1997) defines biophilia as "reflect[ing] the human tendency to impute worth and importance to the natural world" (p. 3). As a child's experience of nature exerts a crucial and irreplaceable effect on physical, cognitive and emotional development (Kahn & Kellert, 2002), interaction with nature, particularly during the critical period of childhood, appears to be an especially important time for developing the capacities for creativity, problem-solving, and emotional and intellectual development (Kellert, 2002). Experiencing nature during childhood engenders both curiosity and the passion to know more about nature. By interacting with the natural world, children encounter diverse and stimulating opportunities to engage such affective capacities as wonder, imagination, and joy.

Carson (1998) observes how often a child's capacity for wonder, exploration and discovery begins with, and is encouraged by, an emotional experience in, and identification with, nature. She suggested that feelings of interest, enthusiasm, and joy typically originate in the natural world and become motivating forces in childhood cognitive development, noting how often these feelings precede and motivate intellectual maturation. Sebba (1991) points out that nature is full of animate life. The natural world arouses children strongly and consistently because it is an "unfailing source of stimulation [and] because the natural world is diverse and variable it exerts a stimulating impact on all the child's senses" (Sebba, 1991, p. 61). The children's accounts of what engaged them during their experience reflected the diversity of nature itself and appeared to stimulate the children's desire to participate in the experiences. As Myers and Saunders (2002) explain:

Animals are so fascinating [for children because] they are highly responsive and offer many dynamic opportunities for interaction. A child responds to stimuli with such basic emotional states as like, dislike, attraction, aversion, doubt, joy, sorrow, fear, wonder, and more. For most children, the natural world consistently elicits these and other basic emotional states.

The fascination of animals may explain why the children reacted positively to the nature experiences during their environmental education immersion program. (p.171)

Kahn (1997) suggests that one method of trying to understand young people's fascination is through the anthropomorphic concepts of isomorphic and transmorphic reasoning (Kahn, 1997). Anthropomorphism is "the ascription of human attributes feelings, conduct or characteristics...to the powers of nature" (Marckwardt, Cassidy, Hayakawa, & McMillan, 1976, p. 63). Isomorphic reasoning is present when children compare natural entities (e.g. animals) directly to humans; for example when the children talked about turtles saying, "*They want to be free*". Thea displayed isomorphic reasoning when she argued that "*everyone could care for their environment and looked after their space we wouldn't have to worry about our world getting sick*". For Thea, the world was likened to someone "*getting sick*". Transmorphic reasoning is when children establish moral equivalences based on functional properties (e.g. turtles should be respected). Shirley displayed transmorphic reasoning when she related the story of a turtle, "*Yet he just kept still when everyone went up and patted him. But perhaps he may have been just getting old*". For Shirley, this willingness to remain silent and still was related to how old people may behave. Children responded emotionally to the creatures they found in nature and interpreted that animals feel like themselves. They extended to these creatures presumed capacities to feel and to think, producing an emotional bond and assumption of reciprocity on the part of the animal.

Myers and Saunders (2002) and Myers, Saunders and Garrett, (2002) argue that the behaviour of animals become subjects of children's emotional attachment, which aids their capacities for receiving and responding to information, situations, and ideas. Perhaps Kahn's (1997) interpretation of children's reasoning processes may explain why so many children developed a desire to act against littering, even though this environmental issue had not been targeted as a part of the program. For these children, the discovery of a sick turtle on the mud flats and discussion about how litter may have caused the turtle's illness appears to have struck a chord with the children and had a deep effect on them. Likewise, the discovery of litter and glass in the pools that the children were exploring created a situation where this debris from

human activity appeared in sharp contrast to the natural environment that the children were exploring.

## 6.6: The Value of a Disorienting Dilemma in Promoting Reflection

The children gave a number of examples of how, when they found something that was inconsistent with what they were exploring, created some emotional response that caused them to reflect on how humans were negatively impacting on the environment. Mezirow (1997) called a trigger for reflecting on an experience a 'disorienting dilemma'. He went on to argue that if there was some component of an experience inconsistent with existing knowledge it created in the individual a 'dynamic disequilibrium' in their thinking. The children related a number of examples of disorienting dilemma that created dynamic disequilibria in their thinking. Examples included glass in a rock pool or rubbish floating on the water. Kay and Thea were participating in a study of the biodiversity of the rocky intertidal zone:

- Kay                    *What concerns me the most was that there was lots and lots of rubbish about.*
- Thea                    *Yes, I found bits of glass.*
- Kay                    *There were lots of beer bottles.*
- Thea                    *And I found glass in the pools and the fish could swallow them.*
- Kay                    *When we were walking up here we found lots and lots of rubbish and bits of glass.*
- Thea                    *When I was looking in the pools I thought that if people would just pick up their own rubbish there would be no rubbish around for the animals to swallow.*
- Kay                    *And everyone could care for their environment and looked after their space we wouldn't have to worry about our world getting sick.*

A decaying boat hulk seemed incongruous with the natural area that Max was using when fishing. When asked if there was a time that he could remember when he started to think of caring for the environment, he answered:

- Max                    *First time we went fishing and there was that old trawler there and some of us got our lines caught up in it.*
- Researcher           *So how did that help you to think about caring for the environment?*

Max                    *Because it was just a big old wreck.*

Cody told us about his beach experience, *“I felt like I was really lucky to see those things and I am very happy. If all of us littered, then it would have affected the whole world a lot by killing thousands of animals”*. The impact of humans on animals was also a source of environmental concern for Jake, *“When we went fishing and this crow had this thing around its foot and we helped it get it off and there was a hook near the crow and I chucked it in the bin”*. Here, Jake is referring to the concern he felt for wildlife that was being harmed as a result of human action. Because humans had left fishing line lying about, a bird had become ensnared and this created in Jake a desire to help and take some form of pro-environmental action. Adam told how he felt when as he was canoeing:

Adam                    *I saw a Macdonald’s lid floating in the water coming towards us.*

Researcher            *So why did a McDonald’s lid floating make you want to help the environment?*

Adam                    *For the turtles, they like jellyfish, if they eat plastic because they think it is a jellyfish and they can’t get under water, and they can’t go under to eat, and may starve to death.*

Some children found the behaviours of their peers challenging when there were incidents where animals were maltreated. The impact of these experiences contributed to the children reporting to have developed a pro-environmental ethos. For Karen, it was that *“one of the boys picked up a crab and threw it and I thought that if everyone did that there would be no crabs left”*. For Genny, unacceptable behaviours by other children were the trigger for her claims to have developed a pro-environmental ethos:

Researcher            *Was there a particular time during the week when you thought about doing something about litter?*

Genny                    *I’m not sure. I think it was when I saw one of the boys chuck some rubbish on the ground and I told him he better go pick that up and he did.*

Cruelty to crabs and throwing away rubbish were catalysts for Karen and Genny to take pro-environmental action. From the tone of her account, it could appear that Genny felt empowered by her exchange with the boy. The tone of Genny’s voice rose and she displayed a sense of surprise that the boy did what she asked. As Karen said regarding the mangroves, *“There were milk bottles and stuff.*

*All the stuff gets washed down by the river and the trees will die*". Emotions of sorrow, "*The trees will die*" were based on the child's interpretations and appraisals of her specific situation in the mangroves and finding all the litter. Karen constructed interpretations and appraisals based on the knowledge she had and the beliefs she held. The impact of the litter was 'death-for-trees'. Degradation of habitat or water quality did not appear to be part of Karen's existing knowledge base. Also present are very individual emotions as they are contextualised by each child, as each child created a unique appraisal of the events within the experience. These examples provide support for the idea that, when children found something that was inconsistent with what they were exploring, it made them reflect on how humans were negatively impacting on the environment.

## **6.7: Summary of Chapter**

This chapter, the final of three data chapters, examined the third theme reflected in the children's accounts of their environmental educational experiences at the Centre, that of **responsiveness and reflection**. In the children's accounts of their experiences being fun, exciting and interesting, what came to the fore was their responsiveness to learning opportunities. Experiential learning involves all the senses, intelligences, and a range of learning environments (Healey & Jenkins, 2000; Molee, Henry, Sessa, & McKinney-Prupis, 2010). The children identified different aspects of the environmental immersion experiences that were sources of excitement for them. Katie linked the idea of learning and fun when she asked to describe her experience told us that "*it [the experience] is not as fun, as having fun and learning*". While Kirk and Harris (2011) believe that the concept of fun is still the subject of some controversy in the educational world, the children identified that fun could arise as a consequence of learning specific curriculum content, engaging in a broad range of interesting activities or participating in a diversity of learning situations. These examples indicate that fun is a major criterion in the children's assessment of whether they valued the experience. Middlebrooks (1999) discusses another aspect of fun, which he describes as "a complex notion that includes feelings of mastery and control" (p. 25). The children's accounts showed the links between fun, mastery and control, confidence, and satisfaction. Packer (2006) uses the phrase "learning for fun" to refer to the phenomenon in which "visitors engage in a learning experience

because they value and enjoy the process of learning itself” (p. 329). For example, Jesse, in reflecting on the high ropes course, illustrates this sense of excitement. He said, “*Wow, how thrilling was that*”. Tanya described an attempt to paddle a single kayak, finding it a challenge, but reporting that, she found that the difficulty of the task and the pleasure of meeting the challenge “*awesome*”.

According to Kolb (1984) “learning is the process whereby knowledge is created through the transformation of experience” (p. 38). Kolb’s (1984) model requires an emphasis on reflection and the children described how they reflected upon their experiences. Jonathan described this process as “*remembering, thinking about it [why the experience was important], thinking where it should be and knowing what you’re talking about, thinking about what it was*”. Jonathan’s account chronicles a list of higher order skills, such as analysis, synthesis and evaluation that illustrate how he was constructing meaning of his experiences through a reflective process. Thea described the process:

*It [the experience] is being put in a fun way and we are going and doing this stuff but then we come back and we have to write down what we have done. It’s like we get our treat and then we have to come back and do a little bit of work so we remember what we have done.*

In the children’s reflections upon their experiences, they consistently referred to their positive assessments in being engaged in an activity for the first time, and of having persevered with a task, even ones where they felt challenged. They defined this perseverance as a sign of success. Carson (1998) observes how often a child’s capacity for wonder, exploration and discovery begins with, and is encouraged by, an emotional experience in, and identification with, nature. The underlying emotional links that explain the children’s manner of responding to the natural environment is explained by the concepts of Biophilia and Anthropomorphism. This chapter made evident how reflection led to triggering a ‘disorienting dilemma’ and a ‘dynamic disequilibrium’. The value of a disorienting dilemma is in promoting their reflection within their experiential learning.

The next chapter reflects on, and theorises, the children’s accounts of their experiences at the Boyne Island Environmental Education Centre.

# Chapter 7: Conclusion



Figure 7.0: Wordle of the 30 most common words in Chapter 7



## Chapter 7: Conclusion

In this final chapter, I reflect and theorise on the children's accounts of their experiences at the Boyne Island Environmental Education Centre. I address the second component of Berg's (2001) final set of analytical activities that have provided a guide to this study. Here, patterns are considered in light of previous research and theories, and a small set of generalisations are established" (Berg, 2001, p. 240). This reflection and theorizing also allows me to address the research questions underpinning this research:

- *How did children account for their experiences of an outdoor environmental education program?*
- *How did the environmental education program engage children?*
- *What are the implications for using a methodology that draws on children's accounts of their experiences?*

There are four sections in this chapter. First, this chapter revisits the research topic, the catalyst for this study, the research methodology and my researcher reflections on the research process. Second, the study's key findings are discussed. In the third section, I discuss a framework proposing a pedagogic approach for optimising environmental experiences to enhance practice at the centre where I am principal. In the fourth section, I propose recommendations for future research and for redesigning the environmental educational program at the research site as well as more generally for the field.

### 7.1: Revisiting the Research Topic, Catalyst and Methodology

The catalyst for this research project was to be found in my professional work as principal of an environmental centre and my professional interest in enhancing the quality of environmental education experiences for students visiting the Centre. This study sought children's views of their first-hand experiences of a short-term residential environmental education immersion program. In the study, I adopted a research methodology that invited children to participate by asking them to discuss their experiences of the environmental education program during their stay at the Centre. A research approach that is interested in children's experiences represents a

shift from the more typical outcomes focus for examining the effectiveness of environmental education programs.

Historically, environmental education has been dominated by applied science methods, a paradigm with causal-comparative experimental studies that attempt to connect environmental knowledge, attitudes and behaviours (Hart & Nolan, 1999; Rickinson, 2001). Such a focus has led to a predominance of quantitative research methods for investigating environmental education outcomes and has been less concerned with what the participants themselves have to say about the program. In 1999, Hart and Nolan acknowledged the positive value of visits to outdoor and environmental education centres, and pointed out that “in almost every case, the environment-related experience was found to have a positive effect on knowledge, attitude and predisposition to action or responsible environmental behaviour” (p. 7). Other researchers recognized the lack of understanding of the processes involved in these environmental experiences. For example, the meta-analysis undertaken by Rickinson’s (2001) identified that there were more studies investigating environmental outcomes than the processes involved in environmental experiences. The call for studies that focus on the environment-related experience was reinforced in the Australian Research Institute in Education for Sustainability (2005) recommendation for nature-based programs in sustainability. More recent studies have started to address this imbalance. For example, Ballantyne and Packer (2008, 2009), in their study of outdoor and environmental education centres in Queensland, detected a number of effective pedagogical practices at the centres. They termed these practices the ‘Fifth Pedagogy’, extending the set of four productive pedagogies recognised by Lingard et al. (2001) as contributing to improved intellectual and social outcomes for children. Ballantyne and Packer’s Fifth Pedagogy identified a strategy to generate attitudinal and behavioural change and involved learning by doing in the environment allied with real life learning, sensory engagement, and participation in a local context. This Fifth Pedagogy, however, was not investigated in practice, to show how children actually engage with such learning experiences while at an environmental education centre. The focus on children’s experiences is the research niche that this study sought to fill.

The case study described a context-specific educational situation, the Boyne Island Environmental Education Centre, which has no permanent students of its own.

The research involved fifty-four children from five schools who attended a one week experience at the Centre at different times over a three month period. The children were invited to talk about, draw about, and write about, their experiences while at the Centre. Children participated through face-to-face conversations with the researcher, by drawing images or taking photographs of events that they regarded as highlights of their experience, and by writing in reflective journals. The data were analysed using content analysis (Berg, 2001) to identify key themes raised by the children as they reflected on their experiences. A core focus for analysis was consideration of the perspectives of the children through their accounts of their experiences at the centre, working from a sociology of childhood framework that recognises the agency of children as members of society with the capacities and rights to ‘have a say’ (Connell, 1987; Corsaro, 1997; Danby, 2002; James, Jenks, & Prout, 1998; Office of UNOHCHR, 2005; UNICEF, 1989). The next section provides a discussion of the key findings from the research.

My focus in this study was to examine the children’s accounts of their own experiences in order to show how a child-centred method of research can provide a new lens through which to examine environmental education programs. This study drew on key theoretical assumptions derived from sociology of childhood (Alanen, 1988; James & Prout, 1997; Qvortrup, 1987, 1991, 1994). For environmental education, this represents a “paradigm shift in child research - a shift from a focus on the child as object of to a focus on the child as subject (and actor) in research” (Mason & Danby, 2011, p. 185). Indeed, Danby (2002, 2009) argues that research that recognises children as competent interpreters of their worlds opens up new research spaces for understanding their constructions of their world such as in the area of them engaging about that world in which they live.

New ways of conceptualising children stem from the rise of constructivist and interpretive theoretical perspectives in sociology (Connell, 1987; Corsaro, 1997; James, Jenks, & Prout, 1998). Childhood is seen as being defined in processes of social action with children engaging in sophisticated interpretations of their own experiences and actions. Children are involved in gaining knowledge from their environment and constructing their own interpretations of the world. Constructivist theories provide the researcher with a lens for refocusing images of children as active agents. In summary, therefore, this study departed from mainstream research in the

field of environmental education, through its theoretical commitment to listening to children as reliable informants of their experience (Danby, 2002; James, Jenks, & Prout, 1998; Waksler, 1996). Having revisited the research topic, catalyst, and methodology, in the next section, I discuss the key findings of the research.

## 7.2: Key Findings of the Study

In discussing the key findings of the research, this section provides additional discussion on the three data analysis Chapters 4, 5 and 6. Three key themes of findings were identified that provided the chapter headings for each of Chapters 4, 5 and 6. These themes are children's perspectives on space and place, engagement and participation, and responsiveness and reflection. This section also details how the findings address two of the research questions:

- *How did children account for their experiences of an outdoor environmental education program?*
- *How did the environmental education program engage children?*

The first key finding discussed was the children's identification of the Centre as providing a Place to safely interact with their natural environment and to engage in a range of interesting outdoor experiences. The children clearly articulated that they appreciated being outdoors and that outdoor experiences offered new and different educational opportunities to their usual classroom-based schooling. For instance, John told us, "*Well, this is outside and you learn something different*". Gruenewald (2003a) argues that "the study of places can help increase student engagement and understanding" (p. 7). In Chapter 4, I discussed how Rasmussen (2004) defines place as "a space with specific meanings and attributes" (p. 165). However, Hay's (2002) meta-analysis of the main strands of thought underpinning the Western environmental movement has identified that place has only a little influence on mainstream ecological thought, and yet, the children identified the importance of place and the natural world in this study.

Continuing this discussion of place, two further aspects were identified by the children as being significant: interacting with nature and discovering new things, as discussed in Chapter 4. Adam related excitedly how he discovered a Sea Hare for the first time and the animal's reaction to being picked up.

*It is like a snail out of its shell. It is like a snail without a shell on its back. It can be green or brown and grows to about 20 cm. When Tom first picked it up it squirted the ink.*

This account brings to light the importance of direct experience. As Knapp and Benton (2006) identify, “Although children may readily obtain information about events from a variety of sources, including what they see and hear, memories based on participation are likely to be the most complete, accurate, and organised” (p. 168). While this study does not address the participants’ long-term memories of their experiences, conversations with child visitors to the centre from up to a quarter of a century ago, offer vivid accounts today of their early experience at the Centre.

A third aspect of place was that the children felt safe during their experience, such as when Kay told us, “*It’s a lovely place and you feel very safe here*”. Because the children felt safe, they were willing to challenge themselves to undertake risky activities such as climbing on high ropes courses, canoeing and snorkelling.

A final aspect of the importance of place can be found in the children’s accounts of limits on their previous interactions with nature. For example, Shirley said, “*No, I am not allowed*” in response to whether she had explored the mangroves near where she lived. From such accounts, it appears that some children are limited by adults from having opportunities to interact with various environments and places. Fjortoft and Sageie (2000) argue that nature experiences provide children with a much deeper understanding of their environment than other approaches to environmental education. Therefore, as a consequence of being limited in their interactions with nature, children may be presented with fewer opportunities to develop a deeper understanding of, and appreciation for, their local environment.

In summary, the children identified that their environmental experiences at the Centre provided a ‘Place’ where they could interact with their environment and feel safe to engage in outdoor experiences. This finding reflects Heimlich’s (2007) view that “place-based education draws on the use of the natural and cultural environments to help generate emotional connectedness in learners” (p. 222). The children described how they developed meaningful relationships to Place as a result of their experiences with nature at the Centre.

The second key finding discussed was the children’s perspectives of how they engaged and participated in this range of interesting outdoor experiences. As

explained in Chapter 5, children described participating in and learning “*lots of different, new things*”. For example, a mangrove forest was so noteworthy for Lance that he made a drawing of the roots of the *Rhizophora stylosa*. as a highlight of his visit. He went on to explain, “*I thought it was differently fun. It was to go to some place muddy and to climb through all those trees. It was different. You just don’t get to do that type of thing*”. The unexpected positive experience contributed to the children becoming more engaged. For example, as mentioned in Chapter 5, Blair told us, “*Today was the best day ever because we got dirty*”. Intentionally getting dirty is not perhaps normal practice in mainstream schooling. Another important component was engaging in first-hand experiences. For example, when Tanya told us, “*You can go in there and see things. You can turn a rock over even if you have to turn it back. On the Internet you only see the photograph. This is much better*”, she was describing the value of having experienced, first-hand, aspects of the local environment. Accounts, such as Tanya’s, highlight an experiential approach, that is, where experiences incorporate interaction between the child and the environment (Monroe, 1999). Knapp and Benton (2006) point out that through participation and social interaction, primary experiences are more physically-active contributing to a more ‘complete’ experience. Carrier (2009) argues that experiences that provide authentic, action-oriented activities may better meet the needs of children than experiences that lack this dimension. Through first-hand activities, children encountered new, diverse and stimulating experiences that provided opportunities for developing a relationship with their environment and creating ‘Place’ (Rasmussen, 2004). Therefore, a value of their environmental experience at the Centre was in offering opportunities to actively experiment, be active and create meanings from their interactions.

Another aspect of active participation reported by the children involved co-operative experiences, “*Working in groups is a good example of how you’ll learn at Boyne Island*”. The children reported that co-operative experiences had positive impacts on their social wellbeing. For example, Kaitlin told us, “*You have to have trust in your friends with secrets and all your stuff*”. Active participation at the Centre involved co-operation with peers and with teachers, and such social interactions were identified as a key element of their experience. Additionally, as a result of the engaging affordances of the environment, the children were motivated to

explore their environment further and to interact further with peers. Also, with peer support, the children reported building greater levels of personal competence, encountering challenges that they could master. For example, Penny told us about her low ropes experience, *“It was just a team effort, if someone didn’t do it the whole group sort of failed, so we were all sort of pushed a little bit further”*. Peer relationships provided motivation for achieving as well as being an important source of support for children to attempt more difficult tasks and become yet more engaged. Co-operative practices have positive effects on the children’s social skills and nature of interactions with their peers (Op’t Eynde & Turner, 2006). By incorporating co-operative practices into the environmental education experience, children also have the opportunity to gain communication skills, leadership skills and the ability to work with others (Op’t Eynde & Turner, 2006; Pekrun, 2006).

A second component of co-operative experiences that the children related was interacting with teachers. The children described valuing positive interactions with teachers. In Chapter 5, Bunty told how her relationship with her classroom teachers at school had changed during the camp. She told us, *“They have been different to what they are at school”*, which Denis described as *“more casual”*. Children, at times, described what appears as a mismatch between student and teacher expectations that can impact on the nature of relationships. Sometimes this mismatch can arise from such simple matters as whether the students should be allowed to use a particular drawing implement. For example, the impact of being able to use *Textas* for Kay, who was still in Year 3, while children were not permitted to use *Textas* in their school until Year 4, symbolized being given greater responsibility and maturity by Centre staff and Kay engaged more positively in the activity.

The third key finding discussed was the children’s perspectives of how they responded while being engaged and participating in the range of interesting outdoor experiences and then being encouraged to reflect on their experiences. As explained in Chapter 6, children described how they responded to experiences through fun and excitement. For example, Stanley wrote in his journal, *“Today I went to tammen sands [Tannum Sands] to learn about rocky foreshore. There were lots of animals, Mr K told us to find five animals and five plants. It was fun finding and learning about the rocky foreshore”*. Stanley responded to the experience by combining fun

and learning. Children described how they also responded to experiences with a sense of confidence and satisfaction. Jared reflecting on his day wrote in his journal the sense of satisfaction he felt when he achieved his target height on the High Ropes, “*First I did high ropes. It was fun and a bit scary [sic]. I got to were [sic] I was sposs [sic] to go some people didn’t. It was a really big tree we had to climb up*”.

The children also displayed a capacity to respond that extended beyond personal feelings of fun or confidence. For example, as discussed in Chapter 6, when the children found a sick turtle with Floater’s Syndrome, several children promised to stop littering. They had now seen the deadly impact of littering on wildlife. The importance of emotional arousal in an environmental experience has been identified by Ballantyne, Fien and Packer (2001a, 2001b), who suggest that emotional engagement may be a powerful factor contributing to the achievement of environmental education goals; here, to stop littering.

The children’s perspectives on their interactions with the natural world showed how their encounters with diverse and stimulating opportunities offered opportunities for wonder, imagination, and joy. In other words, the experiences captured their interest. Even moderate levels of emotional arousal produced by novel, surprising, complex or ambiguous stimuli have been found to result in curiosity and exploratory behaviour (Csikszentmihalyi & Hermanson, 1995). The importance of emotional involvement lies in its capacity to engage such affective capacities as fun, wonder, biophilia (Wilson, 1984), joy, excitement, confidence and satisfaction. Researchers (Carson, 1998; Myers & Saunders, 2002; Sebba, 1991) have identified the capacity and importance of emotion in engaging individuals in interacting with their environment.

A second significant aspect of this third key finding of the children’s perspectives was being encouraged to reflect on their experiences. For example, as described in Chapter 6, Blair had written in his journal, “*I thoart [sic] if everyone in the world litterd [sic] the world would be a horrible place*”. Job (1997) explains how reflection may facilitate a deeper level of understanding of the nature of the experience and also may enable children to develop personal relationships with an environment in ways that promote a caring response. Blair has responded in a caring manner as a consequence of his experience of the quantity of litter degrading the

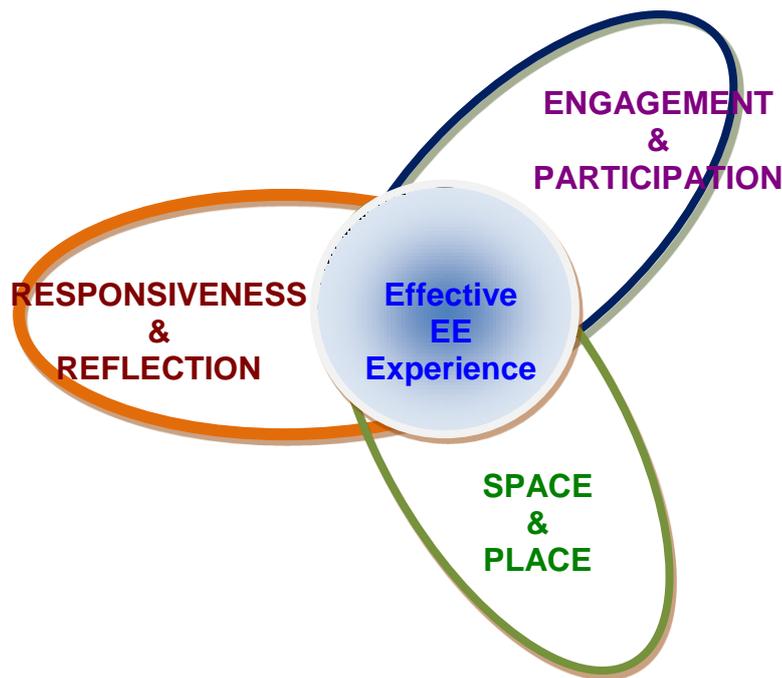
natural place he was exploring. Kolb's (1996) experience-based learning paradigm places an emphasis on reflection, believing that it is an essential component of the learning process. Through the process of reflection, the children had an opportunity to conduct a post-experience appraisal of their responses to the different experiences. Law (2003) also argues that experiential education is best practice pedagogy for environmental education as it develops the capacity for children to reflect and think after an experience. Through reflection and thinking, the individual is enabled to take some form of environmental action.

In the section above, the three key themes of findings were identified. These themes were children's perspectives on space and place, engagement and participation and, responsiveness to, and reflection on, the experience. This section also details how the findings address two of the research questions. The first was, *How did children account for their experiences of an outdoor environmental education program?* This question is addressed by the three key themes of findings. That is, the children accounted for their experiences of an outdoor environmental education program in terms of space and place, engagement and participation and, responsiveness to, and reflection on, their experiences. These key themes of findings allowed the second question, *how did the environmental education program engage children* to be addressed. The children responded that they were engaged because they were provided with opportunities to participate in a range of new experiences, participating in first-hand experiences and participating in collaborative experiences through interacting both with peers, and with teachers who acted in a different manner to what they do at school.

In the discussion above, two aspects of the key themes of findings were not addressed. From Chapter 5, the different type of interactional relationships identified by the children has not been discussed. For example, when Nigel told us that "*when you learn at school you have to sit at a table and chair and the teacher writes on the blackboard*". From Chapter 6, the value of a disorienting dilemma in promoting reflection was also not discussed. I discuss these two aspects in a later section of the chapter.

### 7.2.1: Nested framework of children's accounts of their experiences.

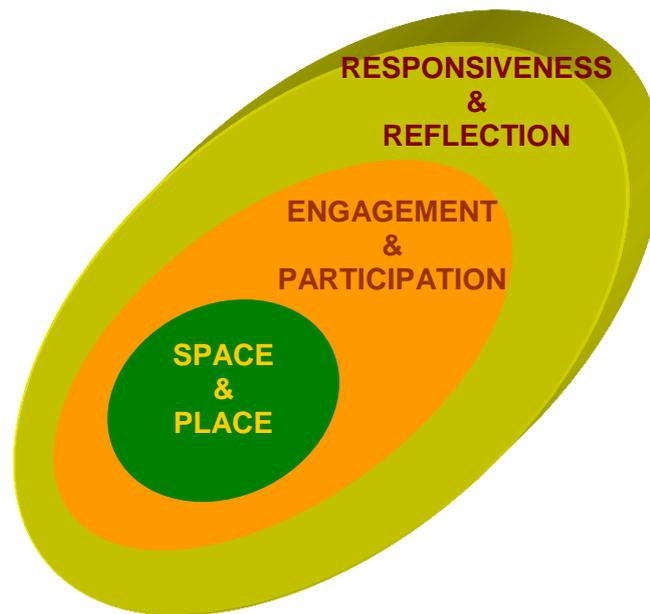
Based on the children's accounts, I conceptualise the nature of the Centre's experiences. An initial interpretation of the children's perspectives was illustrated as a framework (Figure 7.1) which was introduced first as Figure 3.1 in the methodology chapter. This framework developed as a result of the data analysis process.



**Figure 7.1: Framework of children's accounts of their experiences**

In Figure 7.1, the three key findings of space and place, engagement and participation, and responsiveness and reflection, are interrelated and co-dependent. While presented as separate entities, they overlap to signify the key elements of an effective environmental educational experience. However, on reflection, I recognised that there were problems in representing the children's accounts in this way. First, it gives equal weighting to each of the three elements. Second, this representation may encourage the environmental education practitioner to treat these elements as separate entities when attempting to improve the nature of experiences at a particular site. However, the interrelationship between these three elements is much more complex. They are not equally weighted separate entities that, when brought together, represent the requirements for an effective environmental education

experience. In this chapter I refine this framework to present a re-conceptualisation showing these three findings nested together, as represented in Figure 7.2.



**Figure 7.2: A nested framework of dimensions of an environmental experience**

The revised framework (Figure 7.2) overcomes the compartmentalisation of Figure 7.1 by considering the complexity that the children identified when describing their experiences. In Figure 7.2, space and place provide the context for environmental education experiences and so lies at the core of the framework. The concept of Place encourages children to “explore their own ways of reasoning and provide opportunities for autonomy and critical thinking and provide children with intimacy, adventure, or surprise which form the basis for substantive learning” (Kellert & Lovejoy, 1996, p. 148).

At the heart of the experience, the Centre provides a safe space for children. Rasmussen (2004) believes that adults can only provide space *for* children but that it is the children who transform this space into Place through their personal actions. In Chapter 4, I explored how the children identified that the Centre acted as an outdoor classroom where, because they felt safe and comfortable, they confidently engaged in primary experiences in their environment. Gruenewald (2003a) argues that place settings encourage children to explore their own ways of reasoning and provides opportunities for autonomy and critical thinking. This is in contrast to classroom environments where only one type of reasoning may be valued, the teacher’s

(Gruenewald, 2003a; Sterling, 2001; Stevenson, 1987). Gruenewald (2003a) goes on to say that “the study of places can help increase student engagement and understanding through multidisciplinary, experiential, and intergenerational learning” (p. 7).

An inter-play of sensory and sense-making experiences occurs in Place-based learning where children engage in experiences and actively participate. Within this study, the children discussed how their engagement arose out of the novelty and non-conformity of their experiences, many undertaken for the first time during their visit, such as canoeing or exploring rock pools. Space and Place provide preconditions for engagement and participation as well as being an essential component of engagement and participation.

Child engagement is the second sphere or layer of the framework, and is critical to creating a successful environmental educational environment (Keller, 1987; Stipek, 2002). When ten-year-old Tyla who wrote in her journal one evening, “*Tomorrow, we are going to the mangroves and I am really looking forward to it*”, she displayed motivation to engage further in the experience, which Ames (1990) identifies as an important component of motivation. When Ken said, “*I felt very good*” after successfully participating in a high ropes activity, his account exemplifies the confidence and satisfaction that Keller (1987) identifies as important components for engagement. The children’s personal feelings underlie their engagement with, and participation in, the environmental experience. Therefore, it is important for Centre teachers to recognise and value the diversity of personal feelings that children may have towards the experience.

The differing activities in the visit also provided opportunities for all of the children to become engaged and participate with some particular activity. These decisions to engage and participate were framed by the children themselves. Engaging the interest of the children and stimulating their curiosity to participate contribute to meeting their personal needs and encourages a positive attitude in children towards the experience. This recognition and valuing may be of benefit to both educators and participants alike given a need to meet the individual needs of children in the group who are visiting the Centre.

Engagement and participation provide preconditions for responsiveness and reflection. Engagement also may enable students to develop personal relationships

with an environment in ways that promote a caring response (Job 1996).

Responsiveness was, at times, a result of an unplanned event. For Adam, it was when he “*saw a Macdonald’s lid floating in the water coming towards us*”, and for Thea, it was when she “*was looking in the pools, I thought that if people would just pick up their own rubbish there would be no rubbish around for the animals to swallow*”.

These observations altered the nature of these children’s experiences in the natural environment.

The third sphere or layer of the framework, reflection, was identified also by the children as being important. Jonathan explained that “*remembering, thinking about it, thinking where it should be and knowing what you’re talking about, thinking about what it was*” was important for him in making sense of his experiences at the Centre. Overall, the children’s accounts show a complex interaction between each other, environmental educators and the environment.

This framework in Figure 7.2 reconceptualises the three elements and is useful in looking at the broader structures underpinning the children’s experiences at the Centre. Therefore, the framework provides insights into how to enhance the design and implementation of other environmental education experiences, whether at this Centre or at others.

The framework in Figure 7.2 not only reconceptualises the dimensions of the three key findings of the children’s perspectives, but provides an opportunity to revisit two aspects of the key findings not addressed in my earlier discussion. In Chapter 5, the children identified that a different type of inter-actional relationship existed at the Centre. For example, Jesse told us that, at school, “*We have to sit there and write things down rather than actually doing things*”. In Chapter 6, the value of a disorienting dilemma in promoting reflection was identified. In the light of the framework in Figure 7.2, it is timely to address these topics which I do in the next section as I continue to reflect on, and theorise on the children’s accounts of their experiences at the Centre. I also consider a pedagogic approach based on the children’s accounts of their environmental experience at the research site.

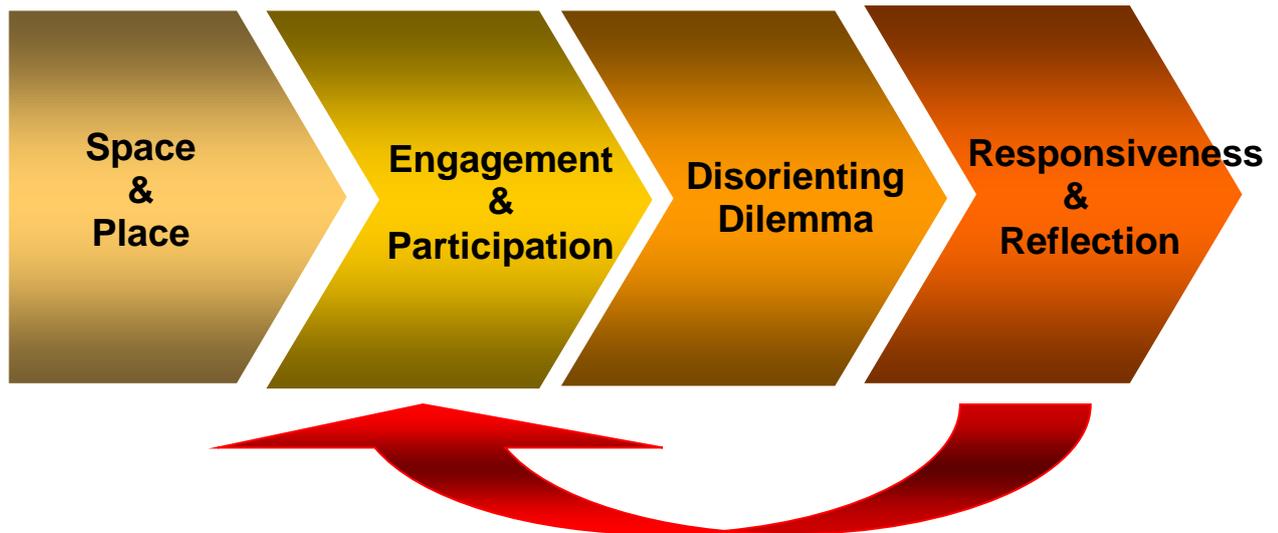
### **7.2.2: A pedagogic approach based on children’s accounts of environmental experiences at BIEEC.**

In the light of the framework (Figure 7.2) that built on the findings of three dimensions of an environmental experience at BIEEC, a BIEEC pedagogic approach was designed. This is illustrated in Figure 7.3.



**Figure 7.3: A BIEEC pedagogic approach**

In Figure 7.3, the dimension of space and place is identified as providing children with access to a safe world offering primary first-hand experiences. This diagram represents a shift from three dimensions of an environmental experience to a model of pedagogy. Figure 7.3, however, does not identify a disorientating moment resulting from a serendipitous event outside the teacher’s direct control or design. For example, when Adam found a Macdonald’s meal pack lid in an otherwise pristine river stretch, he was prompted to reflect on environmental issues. Figure 7.4, then, was developed to propose a pedagogic approach that takes into consideration the children’s active engagement and reflection as a result of the disorientating dilemma.



**Figure 7.4: A pedagogic approach based on children’s accounts of their environmental experience at BIEEC**

The pedagogic approach depicted in Figure 7.4 now identifies four phases with the inclusion of a disorienting dilemma phase. The disorienting dilemma provides a trigger for reflecting on the nature of the experience. Mezirow (1997) called a trigger for reflection a ‘disorienting dilemma’ or what Brookfield (1995) describes as a ‘critical incident’. Mezirow’s concept of a ‘disorienting dilemma’ reflects constructivist underpinnings. The term is used widely in the field of ‘*environmental interpretation*’ (Forestell, 1993). As Poddiakov (2011) states, normal pedagogic situations that involve familiar objects give little stimulus for learning.

As the children interacted with their peers and teachers in making sense of the dilemma, they explored new ideas, gathered information, discussed ideas, and proposed solutions in relation to the disorienting dilemma. The dilemma caused a reassessment of the children’s beliefs and attitudes with the children participating actively in the construction of their own social situations around the experience. The dilemma altered the nature of the children’s engagement and participation to a new level, one of responsiveness and reflection. Consequently, the children became more engaged and participated more fully in the experience. This new level of engagement and participation is represented by the backward facing arrow in Figure 7.4. Kudryavtsev (2011) believes that discovery for oneself is subjective creativity and results in a change in the person and “plays an important part in their [child] development” (p. 45). Through this process of social interaction and discussion, the

event attained deeper meaning. The combination of a disorienting event, interacting with peers and teachers, and reflection leads children to an experience in which “stable knowledge [images and categorical knowledge] is challenged by unstable knowledge [motives, questions, hypotheses]” (brackets in original, Poddiakov 2011, p. 55). Through such actions, the children were competently engaged and better able to manage a complex and confronting environmental experience. This is where it is important that adults engage children’s creativity, because they need adult help to reconstruct the meanings inherent in objects. It is important that helping adults involve children in authentic communication around such dilemmas, as this transformation of the self is an essential part of children’s development (Kudryavtsev, 2011). The children related how they interacted with their peers and teachers to make sense of what they had seen and the negative impact that people can have on the environment. They explored ideas, gathered information, and discussed these ideas, and proposed actions or solutions to the disorienting event. For example, Denis told us his experiences “*all helped me learn a lot of different things that I haven't done before*”. During this phase, peers and teachers provided scaffolding to make the most of the experiences. The children’s active responsiveness and reflection highlights a key theoretical assumption that children are active learners. This final phase consolidates the experience for the children by building greater levels of environmental and personal competence. The children display that they are capable and competent in constructing their knowledge through everyday participation in social experiences.

The pedagogic approach depicted in Figure 7.4 takes into consideration the children’s accounts of their environmental experience at the Centre and contrasts with the assumptions about environmental education and pedagogy as written in the Centre’s curriculum framework (BIEEC, 2005). Within the document, environmental education is described as being able to “lend itself to the use of productive pedagogies which are characterised by having intellectual quality, connectedness, supportive classroom environment, and recognition of difference (BIEEC, 2005, p. 10). The distinctiveness of environmental education at the research site lies in its claim to achieve Martin’s (1993a, 1993b) belief that outdoor experiences have the ability to promote critical reflection and learning focused on human-nature relationships (BIEEC, 2005).

In the research site documentation, it is stated that education out of the classroom “increases awareness of aspects of the environment” (BTR, 1993, p. 22). However, within the document there is no identification about how this could be achieved. The children’s accounts suggest a pedagogic approach that takes into consideration the children’s active engagement and reflection by which the statements in the curriculum framework (BIEEC, 2005) may be achieved. “The interplay of stable and unstable knowledge leads to a creative development of new knowledge, as inner contradictions emerge and transform knowledge which subsequently becomes stable, but at a higher level” (Poddiakov, 2011, p. 55). This is of considerable significance and progresses the discussion regarding environmental education pedagogies. Recent research by Eilam and Trop (2010) identifies four prominent environmental education pedagogies that appear regularly in most environmental education literature. These include: (a) student-centred learning, (b) ‘minds-on’ learning, (c) hands-on learning, and (d) active participation. The pedagogic approach depicted in Figure 7.4 provides empirical evidence to support these categories of environmental pedagogies.

### ***7.2.2.1: The role of a teacher in the experience.***

The second implication of this study is in relation to the social and pedagogical roles of the teacher in environmental education experiences at the centre. The Centre’s curriculum framework (BIEEC, 2005) identified the teacher’s role. It states that the role of the teacher should be “inductive rather than deductive, information managers of the learning process rather than gate-keepers of information” (BIEEC, 2005, p. 10).

The Curriculum Framework also suggests that a teacher should:

- Foster positive attitudes and values.
- Provide for practice in problem-solving, decision-making and the formulation of plans for action.
- Encourage the development of independent thinking.
- Promote the growth of individual sensitivity to the environment and creative responses to it. (BIEEC, 2005, p. 10)

The teacher’s role is described also as fostering, encouraging and promoting sensitivity and positive attitudes towards the environment. Thus the child should

engage in independent thinking and problem-solving with creative responses to environmental issues. Within the framework, it is also stated that:

Environmental education at BIEEC, presents for teachers, real life teaching and learning activities that are activity-based at both local and global levels. A rich interaction between teacher and student, student and student, and student and the environment is encouraged, where learning and teaching are student-centred, teacher facilitated and not curriculum imposed.

(BIEEC, 2005, p. 10)

Further, the framework contains advice on how a teacher can implement Education Queensland's *Principles of Effective Learning and Teaching* (Queensland Department of Education [Education Queensland-EQ], 1994) (see Appendix O). However, there is no description in the Centre document about how such advice given can be achieved. The children had identified that the Centre has been able to achieve some of the elements of the *Principles of Effective Learning and Teaching*, even though the Centre lacked any cohesive plan for this to occur.

Children described what they viewed the role of a teacher in the experience should be if the educational value of the experience is to be maximised. That was that they valued positive interactions where they felt they were being respected. In relation to their regular classroom teachers, the children identified that the teachers appeared to act differently on camp compared with how they appeared in the classroom. The Centre provided an opportunity for the children to see their teachers in a less formal light. Children did not identify teachers in environmental education centres as presenting a traditional position of teacher-is-central in the teaching / learning process. The educational approach illustrated in Figure 7.3 is based on a process that empowers children to take action in their own learning experiences. The pedagogic role of the teacher is one of scaffolding learning experiences. The triggering event becomes the key point of the experience, with the children becoming active through responsiveness and reflection. The role of the teacher, therefore, is one of supporting children as they develop awareness of environmental issues. In addition, the role of the teacher is to empower children as active participants in the experience as well as empowering them for taking action in environmental issues. The challenge for teachers is to finely balance enthusiasm and novel experiences with the challenge of the activity. If the activity is too hard, the children would not have been successful. If too easy, there would be no challenge or excitement. In other

words, the goal is to scaffold the experiences within what Vygotsky (1978) termed the ‘zone of proximal development’.

Another role of the teacher is to model biophilic behaviour. Wilson (1984, 1993) refers to children’s love of nature and positive affiliation with nature as ‘biophilia’. Modelling biophilic behaviour addresses first, the increasing disconnection with nature, and second, the negative implications of biophobia, both issues identified by the children and discussed in Chapter 4. In environmental education, young children’s naturalistic ways of knowing nature and constructing knowledge should be recognized and responded to in a congruent way by adult practitioners of environmental education. At the research site many of the practices the children identified as important experiences for them were also identified as contrary to adult wishes. What emerged from the children’s accounts is a picture of a difference in attitudes to the natural environment between some adults and children. Thomson (2007) suggests that “adults, with the best of intentions, attempt to create an orderly, safe, equitable, hospitable environment for children. However, often the children see these good intentions in a negative light” (p. 500). Therefore, the environmental education teacher has the role of mediating this potential conflict by modelling biophilic behaviour.

The children’s accounts of their experiences may challenge some established practices in some environmental education centres and programs. For example, children did not identify activities which used a transmission approach to the topic, as being a significant component of their total environmental experience.

### **7.3: Implications**

The findings of this research have implications for the field of environmental education and for me as a researching practitioner. These two aspects are discussed in this section.

#### **7.3.1: Contributions to the field.**

This section details how the findings address the third of the research questions:

- *What are the implications for using a methodology that draws on children’s accounts of their experiences?*

First, the use of sociology of children approach in this research has contributed to addressing concerns identified by Hart and Nolan (1999) and Rickinson (2001). These researchers identified that a focus on the student experiences within environmental education was missing from the environmental education literature. The sociology of childhood perspective can present a deeper understanding of what children believe, than an approach that relies solely on using scientific methods to uncover and analyse these understandings. Adopting sociology of childhood provides an alternative foundation to research. The research approach of this study represented a shift from the more typical outcome-based focus of examining the effectiveness of environmental education programs to one that invited children to participate by asking them to discuss their experiences. Thus, this study provides a model that other researchers may learn from or adopt. The method used in this research, listening to children, is a method that has not typically been used in research investigating environmental education and environmental education centres. This study offers an example of how a new lens can be used through which to examine environmental education programs. This research demonstrates the value of gaining children's accounts to assist educators to design environmental education programs as it can offer more than adult and educator perspectives. This research into children's understanding of their own experiences presents an opportunity to gain a deeper understanding of how children engage in, and respond to, the informal setting of an environmental education centre. As Hopwood (2007) states we cannot take what is meaningful to children in terms of the environment for granted.

The second contribution to the field of environmental education is that this study provides understandings of environmental education practice. This study has described how the children engaged with informal learning situations and, in so doing I have created a framework for researchers and practitioners to talk about environmental education pedagogy.

Third, the research contributes to meeting the ARIES' (2005) recommendation for environmental education centres to research nature-based programs in sustainability (Tilbury, Colema, & Garlick, 2005). This study has described how children engaged in nature-based programs in sustainability.

Fourth, the research contributes to a better understanding of practices in Queensland's outdoor and environmental education centres, a process initiated by

Ballantyne and Packer (2008, 2009). This research builds on Ballantyne and Packer's work around a 'Fifth Pedagogy' which involved learning by doing in the environment allied with real life learning, sensory engagement, and participation in a local context. This research also builds on Eilam and Trop's (2010) work that identifies prominent environmental education pedagogies including student-centred learning, minds-on learning, hands-on learning, and active participation. The pedagogic approach that has been developed as a result of this study first, provides empirical evidence to support the pedagogies identified by Ballantyne and Packer (2008, 2009) and Eilam and Trop (2010) and second, details a process by which these approaches may be implemented.

A case study may be useful beyond the immediate context for theorising about practice and for generalising (Cochran-Smith & Lytle, 1993; Fluvbjerg, 2004; Silverman, 2006). As a consequence of this research, teachers may reflect on their practices. This research challenges what MacNeill and Silkcox, (2009) term the 'best practice paradigm' (p. 2). Best practice paradigm is an oversimplification of the complexity of what effective teaching means for different teachers, in different contexts and for individual children and in different interpretations of environmental education (MacNeill & Silkcox, 2009). As a consequence of the children's accounts, a contribution has been made in striving to achieve better practices for environmental education teachers to be more effective in improving children's environmental education learning. My invitation to take up this kind of research is an invitation to improve, based on building on the existing repertoire of teachers' practices, challenging existing practices, and extending teachers' knowledge of what works. Better practice can be achieved. The input from the children involved in this research contributes to better practice.

### **7.3.2: Being a reflexive researching professional.**

In Chapter 3, I used England's (1994) definition of reflexivity as being "self-critical sympathetic introspection and the self-conscious analytical scrutiny of the self as researcher" (p. 244). Being a reflexive researcher means constantly taking stock of my role in the research process and subjecting it to critical scrutiny. Hertz (1997) notes that reflexive researchers constantly ask themselves the questions, "What do I know?" and "How do I know what I know?" (p. viii). This doctoral study

has helped me to construct knowledge about, and better articulate ways of, creating meaningful environmental experiences for the children who visit the Centre. These understandings are already being used by staff in the context of our practices at the Centre. Now, I have research evidence highlighting the importance of pedagogic principles such as practical hands-on, and engaging experiences, thus complementing the anecdotal evidence from past feedback sheets and informal conversations with visitors on which many previous educational decisions were made at the Centre. These principles are now embedded within the practices of the Centre.

The research has affected also how I think about the children's experiences, and about children. As Dadds (2008) describes, "The practitioner researcher [becomes] a more 'connected knower'" (p. 284). Some researchers may find themselves uneasy in their participation in children's peer culture since "the crucial distinction that makes children is that they are not adults and taking account of children's perspectives, of their contributions, of respect for children, and of their rights is essentially political" (Mayall, 2002, p. 2). Recognising Mayall's standpoint has been part of the process of my growth as a practitioner-as-researcher. When undertaking this research, I faced the question of how to manage best unequal power relations between the children and me as teacher/principal/researcher. I managed the issue of unequal power relations in several ways; first, by including open-ended conversations with the children; second, taking account of my own relations with the groups of children who visited the Centre that made me realise that having conversations with the children was a privilege granted to me as a researcher, not a right. Each conversation belonged to the children and me. Conversations connected us and transformed information or data into shared experiences. I had to demonstrate this belief by attempting to make the child aware that I valued and appreciated what they were telling me.

The conversations functioned as narrative devices that allowed the children to share accounts about themselves and their experiences while on camp. In the moment of story-telling, teller (the child) and listener (the researcher), shared the goal of participating in an experience which revealed a shared experience. The conversation meanings were contextual, active text where meaning was created. From this perspective, the conversation was a construction, a method by which the child's personal experiences became known to others. Here, the children set the tone and

direction of the conversation. Evidence of this sharing of personal experiences lies in the extensive time sometimes spent discussing diverse topics, for example, the iPods used to record the conversations before the ‘real’ task of data collection began.

Perhaps most challenging for this ‘researching professional’ (Guillemin & Gillam, 2004) was that the children’s descriptions of the most meaningful environmental experiences were those that were outside the direct control of the teacher. Although sociology of childhood literature describes children as “competent interpreters of their own worlds” (Danby & Farrell, 2004, p. 38), I was presented with evidence that this description was not only accurate but evident in a concrete manner in the experiences at the Centre. This perspective of children as “capable and competent learners” (Hedges & Cullen, 2003, p. 19) required me to re-evaluate my historical attitudes to what we were doing at the Centre. My response to this re-evaluation is detailed in Section 7.4.2: Redesigning the environmental educational program at the centre.

Working cooperatively with their peers, children explored their environment, challenged and supported each other, and constructed meaning through social interaction. Therefore, as a researching professional, I took my workplace role and accessed and built theory in relation to the Centre’s everyday activities. By enhancing and adding value to practices in my workplace, I can now construct myself as “the author or architect of [my] practice, an authority or source of professional ideas and practical developments” (Lester, 2004, p. 761). I feel compelled to continue to improve the learning experiences at the Centre to ensure the best possible environmental experiences for the children who visit. As Stringer (1996) identified, if my research project does “not make a difference, in a very specific way, for practitioners and/or their clients, then it has failed to achieve its objectives” (p. 11).

#### **7.4: Recommendations**

In the final part of this thesis, two sets of recommendations, drawn from this study are made. The first set considers recommendations *about* and *for* future research and the second relates to redesigning of the environmental educational program at the research site.

#### **7.4.1: Recommendations about and for future research.**

The practical outcome for the Centre from this study was to seek ways to improve the quality of environmental experiences for children. Many of the findings of this research have been implemented already at BIEEC. Therefore, the first recommendation for future research would be to review the newly developed programs. This research would use the methodology developed in this research, accounting for children's perspectives. The resulting cycle of future research would start to reflect the characteristics of an action research model. This model involves a spiral of circles in which analysis led to planning of a program of solutions which were evaluated from which new questions emerged. Kemmis and McTaggart (2005) reinforce the idea of the centrality of significant change through research. They note that, unlike other forms of research, which set out to describe or to understand some aspect or problem, action research sets out to change, for the better, a situation. The Centre, therefore, becomes a 'learning organization' (Argyris & Schon, 1978). Yeo (2007) defines organizational learning as "a process in which individuals actively make use of knowledge to guide their behaviors in ways that promote the ongoing adaptation of the organization" (p. 525). Although theorists such as Argyris and Schon (1978) were among the first to discuss the concept of organizational learning, the concept rose to prominence with Peter Senge's book *The Fifth Discipline: the art and practice of the learning organization* (1990). A further understanding of the potential value of this research can be drawn from the world of business and change theory. Organizational Transformation is the application of behavioral science theory to affect paradigm shifts in organizing and performing work. This set of concepts seeks to improve organizational effectiveness (Berg, 2001). The desire to improve the quality of environmental educational experiences reflects Berg's description.

The second recommendation for future research is to recognise children as stakeholders, and to value children's voices as they contribute knowledge for enhancing policy and practice. Hyun (2005) warns that adults may often assume that their view of the world will be the children's view. This adult-centric perspective may result in researchers not pursuing an understanding of young children's culture. As Hopwood (2007) suggests, we cannot take what is meaningful to children in terms of the environment for granted. There is an inherent value in the children's

perspectives and what these perspectives have to offer, supporting the proposition that research in environmental education should be investigated from the perspectives of all key stakeholders. This requires “a paradigm shift away from what has traditionally been considered the ‘correct’ way to conduct research” (Bocarro & Richards, 1998, p. 107).

A third recommendation for future research would be to undertake similar research to this study in other environmental education centres. Boyne Island is one of a network of 26 state government run environmental education centres. In addition to contributing to program improvement initiatives at those sites, a broader understanding of the general nature of the work of environmental education centres could be obtained. I have already conducted workshops with staff from a number of these centres, sharing both the findings and the methodology of this study.

A fourth recommendation for future research would be to undertake a longitudinal study seeking children’s perspectives about their experiences over an extended period of time. Such a study could contribute to an understanding of the long-term influence of such experiences. Although the value of experiences such as visiting an environmental education centre is recognized, studies exploring the long-term influence of such experiences are rare. Smith-Sebasto and Walker (2005) explored student perceptions of the residential environmental education program at the New Jersey School of Conservation twelve months after the experience. Many studies seek this feedback three months after the experience (Fancovicova & Prokop, 2011; Hughes, Packer, & Ballantyne, 2011).

The fifth recommendation for future research is to follow the children who have been to the Centre back at their schools and research whether the experiences continued to have an influence in the school context.

A sixth recommendation is to encourage the use of Clark’s (2005) ‘multi-sensory approaches’ to data collection. For example, this study drew upon children’s drawings as a means of representing their ideas and engagement. While photo elicitation was attempted, and indicated great potential as a means of data gathering, it was used only to a limited extent at the time because of the unavailability of technical resources necessary to make it successful. Despite the reducing cost of digital cameras, they need to be robust and waterproof (given the aquatic environments that characterise work at the Centre). With one camera shared by two

children, conversations with these children have indicated the benefits of two children interacting with each other as they build peer relations and engage in shared decision-making. In Figure 7.5, Jodie said, “*This was my friend Lacy when she found a shell when we went snorkelling*”. No further information was forthcoming in our conversation, so, initially, the photograph appeared to be of limited value as a piece of data. On reappraisal, using the three key findings, the picture took on new significance. These include sharing this moment of discovery and achievement with her peer, themes of satisfaction and confidence that she has been successful in going below the surface of the water and discovering new aspects of nature, she has found a shell that has caught her interest.



**Figure 7.5: Girl snorkelling (Jodie, 11 years)**

Loizou (2011) in her study using cameras, suggests giving children sufficient time to select what they considered to be the most important photographs they had taken and then explain why they considered them to be important. If this study were to be replicated then I would recommend that this stage in the process be given more time. Loizou also gave the children a lengthy period to take photographs and then asked the children to participate in the selection of what they considered to be the 10 most important photographs taken and then to explain why they considered them to be important. Loizou’s goal was to “involve the children in the research process and allow them to voice their views by providing an explanation of their actions and thinking” (p. 149). An alternative to the use of still cameras is the use of video to collect data. This would allow the opportunity to examine key elements of an

experience in a broader context. This advice to include video recording is supported by researchers such as Danby, Butler and Emmison (2011), Fletcher, Price and Branen (2010) and Walsh, et al. (2007).

The seventh recommendation is for others to consider their environmental centres in light of understandings and findings that is made possible due to value of a rich description of the study site as well as the analysis of the case study. Cochran-Smith and Lytle (1993) suggest that a case study is useful beyond the immediate context for theorizing about practice. At the very least, reading about what happened at one research site can make possible other ways for considering research practices, as well as encouraging ways to reflect upon one's own practices.

An eighth recommendation is a response to the current general educational shift towards a more teacher-centred pedagogy and to high stakes testing. This swing creates a preoccupation with styles of teaching and learning that contribute mainly to an improvement in the testing. There is potential for these trends to flow into the field of environmental education and may subordinate ontological considerations in this field (MacNeill & Silkcox, 2009; Sharpe & Breunig, 2009). There is value in research then that examines ontological considerations about learners' participating in primary experiences at venues such as environmental education centres and the role these play in how children engage in the experience and achieve both environmental and educational outcomes. Such research findings may challenge this increasingly dominant preoccupation.

Finally is the need to conduct further research on the children's description that events when they were at the Centre that were the most environmentally meaningful were events that happened outside the direct control of the teacher. This is such an interesting point and perhaps the most challenging description of their environmental education experience by the children for this researching professional.

#### **7.4.2: Recommendations for redesigning programs at the centre.**

Based on this research, I make five recommendations regarding redesigning the environmental educational program at the Boyne Island Environmental Education Centre. The capacity to make recommendations of this nature and to follow through

in practice is a strength of being a researching professional (Guillemin & Gillam, 2004).

The first recommendation is to address statements such as Tanya's, "*I've never been on the rocks before, I'm usually not allowed to go on the rocks*". Tanya's statement indicates children's disconnection from nature and illustrates the need to enhance the role of the Centre to address this disconnection. Since society appears to be limiting many children from interactions with nature, environmental experiences at environmental education centres can allow learners to experiment, be active, and create meaning from nature experiences. This environmental education setting provided an ideal context for children to challenge themselves and take risks safely. Each child was considered individually in terms of personal needs, level of competence, and activity preferences. Therefore, the primary goal for the pedagogical work in the Centre must be to give all children adequate challenges for development and learning, including the possibility to learn risk mastery.

A second recommendation is to enhance those components of the Centre's curriculum that engage children in learning. Engaging the child is a key to creating a successful learning environment (Keller, 1987; Stipek, 2002). When asked about what contributed to their engagement during their stay at the Centre, children described a variety of aspects including, activities offering fun, "*It is not as fun, as having fun and learning*" (Kay); excitement, "*Wow, how thrilling was that*" (Jesse); novelty, "*learn lots of different, new things*" (Sharon ); confidence, "*I felt very good*" (Jonathan ); and how the Centre did not conform to children's expectations, "*I thought it was going to be very boring but it was fun*" (Shirley).

Third, the children should see the learning they undertake during their stay at the Centre as being practical, hands-on, real-world activities, and relevant, such as when Jesse told us, "*You're learning different things by touching and feeling, by actually doing*" and Thea, "*Here we are learning stuff that we never thought we would learn in our time*". The value of physically-active nature of primary experiences that provide more authentic, action-oriented activities contributes to the more 'complete' experience and better meets the needs of children (Carrier, 2009; Knapp & Benton, 2006).

A fourth recommendation regarding redesigning the environmental educational program at the Centre is to acknowledge the educational value of

interacting with peers, and the importance of children engaging in co-operative processes. As Kay told us, “*Here you get to work with them [classmates] and to learn a little more about them and their ideas*”. Knapp and Benton (2006) point out that social interaction contributes to the more ‘complete’ experience. In addition, the value of social interactions is identified as an important component in the pedagogic approach illustrated in Figure 7.3.

A fifth recommendation is in relation to the nature of journals used at the Centre. Roberts’ (2011) research shows the value of using a video diary technique, noting that it was much more successful in capturing student learning than written diaries. She noted that despite some practical difficulties, rich data were generated. Based on the experiences of this research, children’s use of video to capture environmental education experiences is recommended.

A final recommendation for the Centre is to increase the time given for reflection. As Jonathan told us, “*Remembering, thinking about it, thinking where it should be and knowing what you’re talking about, thinking about what it was*”. Jonathan’s statement identifies that reflection was crucial for his learning process. Engaging in reflection is a characteristic of higher order thinking skills (Luke, 1999; Piaget, 1973). There are a number a means by which reflection can occur. At the research site and as part of this study, a ‘reflective journal’ was used. Other possible strategies include *Freewriting*, where children write for a designated period of time about anything that comes into their minds. Letters can serve as a record of experience and as an impetus to reflection. A common letter-writing activity requires students to compose a letter to themselves near the end of the experience, which they then receive via the post six months later. Other letter-writing activities ask children to compose letters to future children in a future course or to their parents. Finally, the Centre could use the Internet to develop web sites such as *privnote* or *buddyschool* to offer reflective writing to the author, other people or schools. Photography, used in this study for children to record significant scenes, can be developed as a reflective tool through *5min*. Drawings, also used in this study, can be recorded using *crayonphysics*. Using *text2mindmap*, children link their random and/or disjointed thoughts into a more cohesive pattern, while a teacher can seek responses from children on an experience, record them and use *Wordle* to create a word picture that

highlights, through size and colour, the common themes identified by the children. There are numerous options available to the site to develop this recommendation.<sup>31</sup>

## 7.5: Conclusion

This research project came about because of my desire as a practitioner to enhance the quality of the experiences at the environmental education centre where I am principal. I sought perspectives about our pedagogical practices by asking children to identify within an environmental education program what contributed to the quality of their experiences.

This research proceeds from quite different epistemological premises to traditional positivist paradigms historically used in environmental education. Research began from a theoretical perspective that all stakeholders, including children, have a say in relation to the experiences of the Centre. The study has shown a way forward for thinking about children as stakeholders within environmental education programs and experiences, and the value of using children's perspectives when reflecting on these experiences. Mason and Danby's (2011) call to "provide examples of the ways in which children's voices make contributions to knowledge for policy and practice, through the inclusion of children and young people as subjects in research" (p. 2) has framed this research.

Finally, in seeking to investigate children's perspectives on their experiences at the Centre, this study has offered opportunities to enhance components of the environmental education program at the research site and has allowed me to become a more reflective and responsive environmental educator who now has a new arsenal of ideas, strategies and approaches to advance my work into the future.

## 7.6: Epilogue

I started this thesis relating the story of children arriving at the Centre for a camp. Their excited anticipation of the experience ahead provided the catalyst for undertaking this research. I identified at the time the many doubts I had about

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<sup>31</sup> *privnote*, *buddyschool*, *5min*, *crayonphysics*, *text2mindmap* and *wordle* are Web2 applications that children can access via the Internet as an alternative means of reflective writing (*privnote* & *buddyschool*); Photography (*5min*); Drawings (*crayonphysics*) and make cohesive patterns of disjointed thoughts (*text2mindmap*).

whether I was providing the children with the best environmental education experience I could. Now, years later, having undertaken this study, I continue to question if I am providing the children the best environmental education experience I can. The answer is a guarded yes. Are there still doubts? Again, the answer is yes. This research has been undertaken by a researching practitioner and has had a dramatic positive impact on the nature of the activities at the Centre. Grounded on the empirical data provided by the children, combined with the academic reading necessary for doctoral research, many aspects of experiences at the Centre have changed.

Centre staff have a keener understanding of the nature of environmental education and environmental education for sustainability, as it is practiced at the Centre. A better understanding of the components of Place and pedagogy that make our Centre has developed. The position of the child as student and participant in the experiences and the role of the teacher have been redefined. Those activities identified by children as not being successful in achieving environmental education outcomes as staff might have hoped have been dropped or changed. Based on these findings, a *Boyne Way* is developing in how experiences are undertaken. The *Boyne Way* includes six undertakings for the children. Children are: encouraged to have fun; get involved; have hands-on learning; work with others; reflect on experiences and share their ideas. This research has contributed to the drafting of a new curriculum framework for the Centre. A weakness identified in the original document was the emphasis on outcomes (see Appendix B) with little written about the learning process.

In the new edition of the Curriculum Framework, there is a much greater emphasis on pedagogy. Headings in the new document are:

- The nature of environmental education
- The nature of this environmental education centre
- The nature of an environmental education experience
- The position and roles of the learner
- The position and roles of the teacher (BIEEC, 2011, p. 2)

Even problems that were encountered during this research have led to positive outcomes for the Centre. The value of using photography to gain an insight to the children's experiences was recognised from this research although the process was not used as well as it could have been during the study. Consequently, a set of

cameras has been purchased. Working in pairs, it is now a regular part of the pedagogy for the children to photograph their experiences and then work of an evening with their images from their day's activities in the computer laboratory. In addition to this class set of water-proof cameras, cameras have been purchased for placing on helmets during high rope activities. Cameras that are suitable for snorkelling and SCUBA diving, night-vision cameras and cameras on cables that can be lowered underwater have been obtained also. Higher resolution cameras have been purchased for teachers so that they may record students in action. This now provides a valuable feed-back mechanism for teachers who are able to monitor achievements of children and give positive support to their children.

Although this section may be the epilogue of this thesis, it is not the end of the journey for either the Centre or for me personally. This research has contributed to the Centre becoming a better learning organisation. Yeo (2007) defines organisational learning as “a process in which individuals actively make use of knowledge to guide their behaviours in ways that promote the ongoing adaptation of the organisation” (p. 525). It is the intent of the Centre staff to actively make use of the knowledge from this research to guide their behaviours in teaching and learning in ways that promote the ongoing adaptation and enhancement of environmental educational experiences at the Centre. The generation of new insights has produced change at the Centre. Change has not been viewed as an additional benefit of the research, but has been fundamental to the research process. Graetz, Rimmer, Lawrence and Smith (2002) warn that the field of change is “littered with contributions which, without warning or explanation abandon the hard ground of research and analysis for the swamp of prescription” (p. 98).

Implementing the findings of this research provides an exciting new chapter in the history of the Centre. In due time, however, it is the Centre staff's intent to research our new approaches, which may, in its turn, lead to further changes. What is certain is that the influence of the findings of this research and the information that children related will continue to resonate on this Centre long after this research is completed and documented as a thesis.



intent of this research to place children at the centre of the research has been achieved. Other words that appear include 'accounts', 'engagement' and 'reflection'. These provide further evidence of the changes brought by this research in relation to earlier research in this field. Children and their accounts of their experiences dominate this research and reflect the sociology of childhood perspective adopted in this study.

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# APPENDICES

## Appendix A: The Research Site's Interpretation of Environmental Education

There would appear to be many different ways of defining environmental education. A poster from the 80s (cited in Fien, 1988, p. 6) suggests it is “what geography teachers do, and English teachers, and music teachers and art teachers, and science teachers, environmental education is all of these and more”. But if environmental education is more than simply a mish mash of subjects, there must be some distinguishing element, ideosyncratic to the field of study that is called environmental education.

Put simply, environmental education is all about learning how to care for the earth, other people and ourselves. The wellbeing of each of these three parts of our total environment is inextricable connected with the others.

Environmental education is designed to develop values, knowledge, cognitive processes and action skills that enhance the care of the earth, other people, and ourselves, and also to recognise that the wellbeing of these parts of our environment is inextricably interconnected.

Learning how to care for our environment involves understanding concepts *about* the environment, developing sensitivities *through* the environment and fostering values that commit us to acting *for* the environment. This last aspect is perhaps the most important; knowledge about and experience of the environment have limited value unless they are accompanied by a desire to actively care for the earth, other people and ourselves. A visit to an Environmental Education Centre enables teachers and students to accomplish all this *in* the environment

Environmental education:

- Promotes:
  - effective learning and teaching.
- Helps students acquire:
  - understanding, skills and values.
- Enables participation as:
  - active and informed citizens.
- Fosters the principles of:
  - ecologically sustainable development,
  - social justice,
  - a democratic society.

(BIEEC, 2005, p. 4)

Writers including Fien (1988) have attempted to understand the diversity of aims and approaches in environmental education by using the phrase “education in, about and for the environment”. Education in the environment is not merely an outdoor education camp. Instead, through education out of the classroom “increased awareness of aspects of the environment can be expected” (BTR, 1993, p. 22).

Education *in* the environment can:

- Give reality, relevance and practical experience to learning through direct contact with the environment.
- Develop important skills for data gathering and field investigations.
- Develop aesthetic appreciation.
- Foster environmental awareness and concern. (Fien, 1988, p. 7)

It can be argued that if people are to understand their environment, then they have a need to know the workings of the systems around them.

Education *about* the environment goes beyond science and can:

- Provide understanding of how natural systems work.
- Provide understanding of the impact of human activities.
- Develop environmental investigation and thinking skills. (Fien, 1988, p. 6)

However, the preposition *for* extends the meaning of environmental education from simply learning about or in the environment. An element of responsibility to the environment is implied; and, inherent in this, the need to take action when necessary. Therefore, education for the environment builds on education in and about the environment and:

- Develops an informed concern and sense of responsibility for the environment.
- Develops an environmental ethic.
- Develops the motivation and skills to participate in environmental improvement.
- Promotes a willingness and ability to adopt lifestyles compatible with wise use of environmental resources. (Fien, 1988, p. 7)

(BIEEC, 2005, p. 5)

## **Appendix B: The Research Site's Knowledge, Values and Skills of Environmental Education**

### **Appendix B.1: Environmental Education Knowledge Concepts at BIEEC**

Environmental Education explores the following knowledge concepts.

**Natural systems** are complex, self-regulating and interconnected. Physical cycles continually recycle energy and matter, though with a constant loss of energy. They support myriad interdependent organisms, whose diversity keeps the natural system resilient.

**Social systems** have political, economic, cultural and religious aspects that are connected with one another and with natural systems.

**Personal ecology** encompasses our sense of self and our sense of place. The way we see ourselves, the way we see the world and our attitudes towards our environment are interrelated.

**Ecologically sustainable development** is development that meets the needs of the present without compromising the ability of future generations to meet their needs. For development to be sustainable, it must also be socially just and appropriate to the culture, history and social systems of the place in which it occurs.

**Citizenship** requires that all people be responsible for their own actions and work together in their local, national and global communities to make the world a better place.

**Sacredness** is a quality that we assign to something to signify what we feel to be its inherent value, regardless of its utilitarian value. A harmonious relationship between people and nature is essential for the wellbeing of both.

**Knowledge and uncertainty** are both necessary conditions for human understanding. Although we know that everything is connected to everything else, there is much that we do not understand, and we should make decisions accordingly. We need to act with honesty and humility and with full use of our capacities for reason and feeling.

(BIEEC, 2005, p. 6)

Productive pedagogies identify essential characteristics of knowledge that teachers should address when engaged in teaching and learning. These characteristics include:

**Deep knowledge** concerns the central ideas of a topic or discipline. Knowledge is deep or thick because such knowledge is judged to be crucial to a topic or discipline.

**Knowledge as problematic** involves presenting an understanding of knowledge as being constructed, and hence subject to political, social and cultural influences and implication.

**Knowledge integration** is identifiable when knowledge is connected across subject boundaries, or subject boundaries do not exist.

**Background knowledge** is valued when lessons provide explicit links with students' prior experience. This may include community knowledge local knowledge, personal experience, media and popular culture sources.

**Deep understanding** is shown when students develop relatively complex understandings and demonstrate them by discovering relationships, solving problems, constructing explanations, and drawing conclusions.

(BIEEC, 2005, p. 7)

## **Appendix B.2: Environmental Education Values at BIEEC**

An environmental education program allows students to develop an environmental ethic based on the values of social justice and ecological sustainability by encouraging them to develop:

### **Awareness**

- Sensitivity to the intrinsic value of social and natural communities;
- Awareness of the interactions between the individual and his or her social and physical environment;
- Awareness for the effects of technology on social and natural communities;
- Awareness that the capacity to change the environment is accompanied by a responsibility to that environment.

### **Attitudes and values**

- a sense of joy in, and enthusiasm for, the environment;
- a respect for nature;
- an enthusiasm for inquiry about human interaction with the environment;
- a concern for the quality of the environment and a preparedness to actively care for it;
- positive attitudes and values towards the care and conservation of the environment;
- a sense of place and an appreciation of the unique character of particular environments;
- a recognition of indigenous peoples' cultural knowledge and experience of the environment and their contributions to a deeper understanding of the environment;
- an appreciation of the need for personal, community, national and global cooperation in preventing and resolving environmental problems;
- attitudes and values consistent with an appreciation of a sound conservation ethic;
- a preparedness to examine and change their personal lifestyles to secure sustainable, healthy futures;
- a preparedness to become informed and participate in making decisions;
- a willingness to work individually and with others to improve, the environment;
- a willingness to be open-minded, challenge preconceived ideas, accept change and acknowledge uncertainty.

(BIEEC, 2005, p. 9)

### **Appendix B.3: Ways of Working in Environmental Education at BIEEC**

Environmental Education provides opportunities for students to display proficiency in the following competencies reflecting their stage of schooling:

- the use all of senses to explore a variety of environments;
- the capacity to evaluate and reflect on these explorations - through the observation and recording of information, ideas and feelings about environments;
- the investigation of and capacity to communicate concern about environmental matters;
- the identification of areas of existing knowledge relevant to the theme being studied;
- the gathering, analysis and synthesis of relevant information in a logical manner;
- the presentation of information in oral, written and graphic form in a variety of mediums;
- divergent thinking skills;
- the capacity to view environmental matters from a variety of perspectives;
- the ability to discuss and debate alternative viewpoints on environmental issues;
- the identification, clarification and expression of value judgments that relate to the environment;
- the recognition of the role of subjective factors in environmental decision-making;
- the display of a healthy skepticism for unsupported opinion and for opinion supported by an apparent imbalance of evidence;
- the recognition alternative courses take a person of action for environmental problem-solving;
- the capacity to consider and predict the consequences (ecological, social, political, economic etc.) of possible courses of action;
- the cooperative and negotiation skills to resolve conflicts that arise over environmental issues;
- the selection, design and implementation of appropriate courses of action on environmental issues;
- the political skills necessary for active citizenship (for example lobbying, petitioning, fanning delegations, letter writing).

(BIEEC, 2005, p. 8)

## Appendix C: National Key Competencies

Environmental Education also provides an ideal mechanism to achieve the Mayer Key Competencies:

**Collecting, Analysing and Organising Information:** The capacity to locate information, sift and sort information in order to select what is required and present it in a useful way, and evaluate both the information itself and the resources and methods used to obtain it.

**Communicating Ideas and Information:** The capacity to communicate effectively with others using a range of spoken, written, graphic and other non-verbal means of expression.

**Planning and Organising Activities:** The capacity to plan and organise one's own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance.

**Working with Others and in Teams:** The capacity to interact effectively with other people on a one-to-one basis and in groups, including understanding and responding to the needs of a client and working effectively as a member of a team to achieve a shared goal.

**Using Mathematical Ideas and Techniques:** The capacity to use mathematical ideas, such as number and space, and techniques, such as estimation and approximation, for practical purposes.

**Solving Problems:** The capacity to apply problem-solving strategies in purposeful ways, both in situations where the problem and the desired solution are clearly evident and in situations requiring critical thinking and a creative approach to achieve an outcome.

**Using Technology:** The capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technology principles needed to explore and adapt systems.

**Cultural Understandings:** The capacity to understand different cultures within Australian society. (Mayer, 1992)

(BIEEC, 2005, p. 10)

## **Appendix D: Best Practice in Environmental Education at BIEEC**

Work at BIEEC exemplifies ‘best practice’ in environmental education because it:

- Introduces students to their local natural and cultural environments (past and present), and helps them to realise that they are part of those environments;
- Involves learners in direct first-hand experience with aspects of their environment;
- Assists students to understand the need for sound management of the environment in order to be sustainable;
- Develops in students an understanding of how people are using and misusing their resources;
- Provides an opportunity for students to develop field skills through environmental problem solving;
- Assists students to develop and review attitudes, values, sensitivities and social skills conducive to enjoyment of, concern for, and wise use of the environment;
- Fosters the ability and commitment to participate in environmental debate and decision making as informed citizens;
- Involves choices among alternative courses of action;
- Is related to the intellectual, physical and emotional capacities of the learners;
- Is inter-disciplinary – information and skills should be drawn from a number of subjects to bear on a common environmental issue;
- Is graded with respect to the previous experience of the learners.

(BIEEC, 2005, p. 17)

## **Appendix E: BIEEC Curriculum Framework**

### **Stage 1: Living Together**

The basis for much of the Living Together Cycle is based on the belief that the solution to environmental issues lies in groups of people working together. Therefore, the necessary skills to enable this to be achieved are developed. These include the initiative to develop innovative solutions; problem solving skills, communication skills, for both within the group and to articulate one's ideas, and how to work in groups. Finally it is recognised that differing attitudes to the environment may lead to conflict. Therefore, peaceful conflict resolution skills are developed (BIEEC, 2009, p. 6).

Individual activities in this stage can involve using the senses to explore the environment of the Eucalypt forest in Perceptions and in Senses Trails. Learn skills to address environmental issues through Games or look at the differences between cultures in a role play, Cross Cultural Role Play or have fun in the environment while developing an appreciation of oneself in Low & High Ropes Courses.

### **Stage 2: Part (a) Living Planet – Natural Environment**

In the Living Planet, students gain the necessary knowledge and facts by studying the various components of the natural and built environments. Using the processes and skills from the traditional subject areas of the sciences and social sciences, students study the physical and natural worlds with an emphasis on the coastal, marine and reef environments (BIEEC, 2009, p. 6).

Individual activities in this stage can involve a hands-on introductory activity to demonstrate links between habitats in the Boyne/Tannum environment in Our Habitat or explore the animals and the plants of the Mangroves forest at Low Water, or Dunes, Rocky Foreshore, Coral and River Mouth. Students can explore mangroves at High Water using canoes or carry out self-guiding science studies of the Eucalypt forest or Rain forest with Forest Trails. Environmental Art looks at messages portrayed by environmental art pieces and recycling through music in the Sound Garden are based on key learning areas other than science.

### **Stage 2: Part (b) Living Planet – Built Environment**

“The social sciences provide the protocols used to examine how people use their environment, examining the urban environments and local industry” (BIEEC,

2009, p. 6). The social sciences provide the protocols used to examine how people use their environment, examining the urban environments and local industry; including a Port Tour exploring coal loading and other facilities, the Gladstone Power Station, watch production of cement at Cement Australia, see the world's largest alumina plant at Queensland Alumina or visit the new alumina refinery at Comalco or see the production of aluminium at Boyne Smelter. Finally visit Tondoon Botanical Gardens.

### **Stage 3: Part (a) Living Lighter – Environmental Monitoring**

The basis of the first component of this cycle is that all human activity has some level of impact on the environment. A person gains the necessary scientific skills to monitor the human impact on both the biotic and abiotic environments (BIEEC, 2009, p. 6).

In a series of Watch programs students can monitor the weather each day and use the internet to store data (Weatherwatch); conduct visual and mechanical monitoring of local air conditions and use of microscopes to examine what is carried by air (Airwatch); Monitor the waterways using chemical and biological assessments as well as Riparian studies (Waterwatch); Measure the distribution, growth and health of trees in the Eucalypt forest (Plantwatch); Examine soils by drawing a soil profile (Earthwatch); Identify and monitor birdlife in the Boyne Island area (Birdwatch).

### **Stage 3: Part (b) Living Lighter – Action Plan**

It is generally accepted that the basis of environmental education lies in actually working to help the environment. This second component leads students through actually helping the environment. For students these activities represent Rich Tasks as they pull together the knowledge and skills gained in the other cycles of their journey to undertake actions to address real life environmental issues (BIEEC, 2009, p. 6).

In LandCare, students carry out actual work in caring for the 'bush'.

Energywise sees students exploring solar and wind power. In Sustainable Schools, they develop environmental audit skills and explore ways of reducing water usage, energy and waste paper etc. at their school or how to reduce household scraps by developing compost in Waste Management. Finally in Fishing, students learn the

regulations as well as the skills of how to carry or degas fish to ensure their survival when returned back to the water. The framework is outcomes-based learning through tasks that each form a whole, integrated stage in the journey. Each task represents demonstrable and substantial intellectual substance and educational value; involving the examination of the environment using the methodology, processes, values and assumptions of the traditional disciplines and fields of study.

## Appendix F: Programs of Visiting Schools in Study

<p><b>Arrive/ Lunch</b>            * Orientation            * Set up Camp            * Problem Solving  <b>Afternoon Tea</b>            * Daily Debrief            +Recreation Time/            Fishing            Showers / Dinner            Prep  <b>Dinner</b>            +Journal Writing            +School Based            Activity            Bed            Lights Out</p> <p>Problem Solving            Activities            (6 groups)            1. Big Foot            2. Misty Canyon            3. Nuclear Waste            4. Loops            5. Mine Field            6. Spider Web</p>	<p><b>Breakfast</b>            Tent / Cabin            Inspection            * Rotation 1  <b>Morning Tea</b>            * Rotation 2  <b>Lunch</b>            * Rocky Foreshore            (Group 1)            * Low Water            Mangroves (Group            2)  <b>Afternoon Tea</b>            +Beach Swim            *Daily Debrief            +Recreation Time/            Fishing            Showers /Dinner            Prep  <b>Dinner</b>            +Journal Writing            +School Based            Activity            Bed            Lights Out</p>	<p><b>Breakfast</b>            Tent / Cabin            Inspection            Depart of Port Tour  <b>Morning Tea @</b>            Toondoon Gardens            Port Authority Tour  <b>Lunch</b>            * Low Water            Mangroves (Group            1)            * Rocky Foreshore            (Group 2)  <b>Afternoon Tea</b>            +Beach Swim            *Daily Debrief            + Recreation Time/            Fishing            Showers /Dinner            Prep  <b>Dinner</b>            +Journal Writing            + School Based            Activity            Bed            Lights Out</p>	<p><b>Breakfast</b>            Clean up            Pack up gear            * Rotation 3  <b>Morning Tea</b>            * Camp Debrief            Depart</p> <p>Rotation 1            Group A - *Low ropes            Group B - +Bush            Cooking            Group C - *Energywise</p> <p>Rotation 2            Group A - +Bush            Cooking            Group B - *Energywise            Group C - *Low Ropes</p> <p>Rotation 3            Group A - *Energywise            Group B - *Low Ropes            Group C - +Bush            Cooking</p>
<p>Arrive            * Orientation            * Set up Camp  <b>Morning Tea</b>            * Problem Solving  <b>Lunch</b>            * Energywise  <b>Afternoon Tea</b>            * Recreation Time/            Fishing            Showers / Dinner            Prep  <b>Dinner</b>            + Journal Writing            * Astronomy  <b>Supper</b>            Bed            Lights Out</p>	<p><b>Breakfast</b>            Tent / Cabin            Inspection            Depart BIEEC for            Marina            Barge depart            Arrive Rat Island            * Island Ramble  <b>Morning Tea</b>            * Below Low Water            Study (snorkelling)  <b>Lunch</b>            * Below Low Water            Study cont.            Pack up            Barge Depart  <b>(Afternoon Tea</b> on            board)            Bus to BIEEC            Showers /Dinner            Prep  <b>Dinner</b>            + Journal Writing            + School Based            Activity (Reef HQ)  <b>Supper</b>            Bed            Lights Out</p>	<p><b>Breakfast</b>            Tent / Cabin            Inspection            * Games            * High Ropes –            Group 1            * Turtle Song –            Group 2  <b>Morning Tea</b>            * High Ropes –            Group 2            * Turtle Song –            Group 1  <b>Lunch</b>            * Low Water            Mangroves  <b>Afternoon Tea</b>            + Recreation            Time/Fishing            Showers /Dinner            Prep  <b>Dinner</b>            + Journal Writing            + School Based            Activity            Camp Fire Night  <b>Supper</b>            Bed / Lights Out</p>	<p><b>Breakfast</b>            Clean up            Pack up gear            * Games            + Bush Cooking            Group 1            * Low Ropes –            Group 2  <b>Morning Tea</b>            + Bush Cooking            Group 2            * Low Ropes –            Group 1  <b>Lunch</b>            #Caterpillar Walk            * Debrief            Depart</p>

<p>Arrive  <b>Morning Tea</b>  * Orientation  * Set up Camp  *Weatherwatch  <b>Lunch</b>  *Problem Solving Activities  * Daily Debrief  <b>Afternoon Tea</b>  +Recreation Time/Fishing  Showers / Dinner  Prep  <b>Dinner</b>  +Journal Writing  +School Based Activity  Bed  Lights Out</p>	<p><b>Breakfast</b>  Tent Inspection  *Our Habitat  <b>Morning Tea</b>  *Energywise  *Weatherwatch  <b>Lunch</b>  *Low Water Mangroves  *Daily Debrief  <b>Afternoon Tea</b>  +Recreation Time/Fishing  Showers /Dinner  Prep  <b>Dinner</b>  +Journal Writing  +School Based Activity  Bed  Lights Out</p>	<p><b>Breakfast</b>  Tent Inspection  *Waste Management  <b>Morning Tea</b>  *Rafa Rafa – Cross Cultural Role Play  *Weatherwatch  <b>Lunch</b>  * Low Ropes  <b>Afternoon Tea</b>  *Sustainable Schools  *Daily Debrief  +Recreation Time  Showers /Dinner  Prep  <b>Dinner</b>  +Journal Writing  +School Based Activity  Bed  Lights Out</p>	<p><b>Breakfast</b>  Clean up  Pack up gear  * Depart for Awoonga Dam  * Canoe/Kayak  <b>Morning Tea</b>  * Canoe /Kayak  <b>Lunch</b>  Depart</p>
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<p>Arrive  * Orientation  * Set up Camp  <b>Lunch</b>  * Sustainable Fishing/Surf Safety @ Tannum Beach  <b>Afternoon Tea</b>/Daily Debrief  Recreation Time  Showers / Dinner  Prep  <b>Dinner</b>  Journal Writing  School Based Activity  Bed  Lights Out</p>	<p><b>Breakfast</b>  Tent Inspection  * Rocky Foreshore  <b>Morning Tea</b>  (Packed)  * Activity  <b>Lunch</b>  * Low Water Mangroves(P-3)  * Problem Solving/Bush Cooking(4-7)  <b>Afternoon Tea</b>/Daily Recreation  Time/Fishing  Showers /Dinner  Prep  <b>Dinner</b>  Journal Writing  School Based Activity  Bed  Lights Out</p>	<p><b>Breakfast</b>  Tent Inspection  * Problem Solving(P-3)  * HW Mangrove (Canoeing)(4-7)  <b>Morning Tea</b>  (packed for 4-7)  * Bush Cooking (Yr P-3)  * HW Mangrove (Canoeing)(4-7)  <b>Lunch</b>  Port Tour  <b>Afternoon Tea</b> @ Marina  Recreation  Time/Fishing  Showers /Dinner  Prep  <b>Dinner</b>  Journal Writing  School Based Activity  Bed  Lights Out</p>	<p><b>Breakfast</b>  Clean up  Pack up gear  * Low Ropes (P-3)  * High Ropes (4-7)  <b>Morning Tea</b>/Camp Debrief  Depart</p>
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## Appendix G: Data Schedule

NO	NAME	SEX	AGE	TAPE No.	group	Journal	Drawing
<b>School A</b>							
1	Katie	F	9	1	1	Y	none
2	Penny	F	9	2	3	Y	none
3	Quentin	M	9	3	4	Y	none
4	Marg	F	9	4	5/6	Y	none
5	Bill	M	9	5	7	Y	none
6	Genny	F	9	6	9	Y	none
7	Ann	F	9	"	9	Y	none
8	Cody	M	9	7	8	Y	none
9	Bridget	F	9	"	8	Y	none
10	Grace	F	9	"	8	Y	none
11	Chad	M	9	"	8	Y	none
12	Norma	F	9	"	8	Y	none
<b>School B</b>							
13	Karen	F	10	8	10	Y	Rocky beach
14	Shirley	F	10	9	11	Y	Mangroves
15	Adam	M	10	10	13	Y	Beach animal
16	Troy	M	9	11	14	Y	Energy
17	Keith	M	9	12	16	Y	Rocky beach
18	Jerome	M	9	13	17	Y	Rocky beach
19	Kay	F	9	14	12	Y	Bikes
20	Thea	F	10	"	12	Y	Bikes
21	Bunty	F	10	15	15	Y	Mangroves
22	Mabel	F	9	"	15	Y	Canoeing
23	Maisie	F	9	16	18	Y	Canoeing
24	Nigel	M	9	"	18	Y	Canoeing
25	Jake	M	10	"	18	Y	mangroves
<b>School C</b>							
26	Brett	M	10	17	20	none	Canoeing
27	Kirstee	F	11	"	20	none	Fishing
28	Piers	M	10	18	21	none	Canoeing
29	Jodie	F	11	"	21	none	Canoeing/ snorkelling

NO	NAME	SEX	AGE	TAPE No.	group	Journal	Drawing
<b>School D</b>							
30	Brett	M	9	19	24	none	Mangroves
31	Kirstee	F	9	20	548	none	Mangroves
32	Piers	F	9	21	840	none	Pools
33	Jodie	F	9	22	428	Y	Energy
34	Lacy	F	9	23	959	Y	Turtlesong
35	Doreen	M	10	24	22	Y	Ropes
36	Sally	M	10	"	22	Y	Ropes
37	Sharon	M	10	25	23	Y	Energy science
38	Margaret	M	10	"	23	none	Mangroves/ropes
39	Adele	F	9	26	510	Y	none
40	Jeremy	M	9	"	510	Y	Mangroves/ropes
41	Jesse	M	9	"	510	Y	Ropes
42	Tracy	F	9	27		Y	Ropes
43	Gloria	F	9	"		Y	Ropes
44	Joanna	F	9	"		Y	none
45	Denis	M	9	28	358	none	none
46	Max	M	9	"	358	none	Astronomy
<b>School E</b>							
47	Rose	F	12	29	524	none	none
48	Tanya	F	12	30	806	none	none
49	John	M	10	31	709	Y	Pools
50	Louise	F	10	"	709	Y	Canoeing
51	Stanley	M	9	"	709	Y	Canoeing
52	Lewis	M	9	32	33P	Y	Canoeing
53	Martina	F	11	"	33P	Y	Canoeing
54	William	M	9	"	33P	Y	Cricket

### Summary of Groupings from Data Schedule

	Planned Number of Children	Group Size				Actual Number of Children
		1	2	3	5	
Planned Target Number of Each Group Size	35	10	5	5	0	
Actual Number of Each Group Size		18	8	5	1	54
Variance from planned target to achieve 'saturation' of data		+8	+3	0	+1	+19

## Appendix H: Excerpt of a Conversation

- Researcher *Imagine tomorrow and you are heading home, you have a brother?*
- K A brother, two sisters,
- Researcher *How old is your brother?*
- K My brother is four, turning five next year.
- Researcher *What, you are the eldest?*
- K Yes.
- Researcher *Oh, so you are the big sister?*
- K Yes.
- Researcher *Say they came up to you, or perhaps it may be mum, so she came up to you and asks you "K, what did you do with all your classmates at the centre?"*
- K I'd say going to the bush, rainforest walks and looking at the bird skulls and all the wonderful trees that are all coming together like a canopy, like a real rainforest, to walk through it is like a park, it's really cool, and I'd also talk about ummm.....
- Researcher *Did you do anything special with you all classmates?*
- K My group is Crystals.
- Researcher *What Crystals?*
- K Yes.
- Researcher *So what did Crystals do, what did Crystals do as a group?*
- K I walked around we talked about the lightning.
- Researcher *Oh, you did we get lightning last night? We had rain!*
- K No, we had rain and we thought it might be a storm. It so much rain coming through and we thought there'd be a storm, but there wasn't.
- Researcher *Did we get hail?*
- K I don't know, Mrs K. said we got some hail.
- Researcher *I know we got showers.*
- K Yes, a bit of rain, yet that it was really cool.
- Researcher *Yes, but as long as you do not get wet. Did you have rain your tent?*
- K No, we only had a little tiny bit just in the corner were all stuff was to be found.
- Researcher *But as long as it doesn't get wet. Did you go to sleep quickly?*
- K Yes.
- Researcher *I like think it's just so nice in the tent lying there but as long as you don't get wet.*
- K No.

Researcher *So you were sleeping on the ground then?*

K No.

Researcher *You had a mat?*

K No, but some snored, I don't snore, but my grandad snores.

Researcher *So how old is granddad?*

K I don't know, but he is really old, I think around 60 years old

Researcher *That's not old!*

Researcher *So your walk in the forest was that the best of your studies? We call that habitats. Was that the best area you studied?*

K Probably, yes.

Researcher *But you liked the forest though so you like the forest and what a catering player else?*

K I like the Fossil Gulley, the Bridge, the Look-out, frog house

Researcher *We're still here in November Did you find any frogs in it?*

K We saw some but it was really hard.

Researcher *We have some striped ones, with a stripe on their face. We have a really good name for it, it's called a Striped Tree Frog and has a brown stripe with a little white stripe underneath its eye. On the program you are doing different things about the environment, and working for the environment; were there any things. Were there any special things that you would mentioned to your mother?*

K The worm farm.

Researcher *You liked the worm farm?*

K Yes, and the compost.

Researcher *Did the compost stink?*

K No, it didn't really. I thought it would, you pick it up and it smells quite good. Like when you go to a compost bin in your own backyard, it smells, but here, it's all like when you buy it from the shop, all nice and fine and stuff. It's really cool.

Researcher *Trish told you why your compost bin at home is not working really well. Did she suggest to try and set it up again at home.*

K We will probably try again and I will tell Mum how to make it work probably properly and not put any meat in it

Researcher *Oh, you put meat in it?*

K Well it depends.

Researcher *Well you have small children and they think it's an ordinary bin.*

Researcher *Because you're the big grewed up one.*

Researcher *Do you play with your little brother?*

K Participant Some times. He is very much into a tackle.

Researcher *So he gets the window seat?*

K Beg pardon?

Researcher *So he gets the window seat?*

K No, I do.  
Researcher *You do?*  
K Yes.  
Researcher *So the oldest gets the best seat?*  
K Yes

## **Appendix I: Sample Introduction and Conclusion**

Well, thank you K for agreeing to have a chat with me. Now couple of weeks ago, you and your mum signed a form to say that you agree to have a chat with me. So is it still okay?

We have a nod of the head so I presume, that means okay.

Now, K, what I'm after is use some of your really great ideas about how we can make the Boyne Island Environmental Education Centre even better next year.

When the grade fours come we will be able to put into practice your ideas. So you okay with that?

Another nod of the head.

Now before we start just a couple of things I'd like to say,

It to really really important that you don't give me just answers that you think I want to hear. I have broad shoulders so if something didn't go well we want to hear that.

Indeed, I'd love to hear that probably more than how we do the really great stuff, because that's the stuff we need to fix up. Also, I might mention some ideas but this is your talk, so I want your ideas so you don't have to just respond to what I say. I would love you to mention anything you want to. And remember, you can leave at any time. This is your time, so I am really grateful that you are choosing to give that up to help me so if you want to leave, that's fine with me.

Now I have got this well tape-recorder here because my brain is mush and I will forget all the beaut things you're going to say, so, I need to make certain I can have a look at all the things you've said later on. So is that Okay with you?

**K. Yes.**

Okay, great! So, you have a drawing here of the beach, would you like to tell me about your drawing?

## Appendix J: Conversation Starters

Greeting:	Trying to make the programs here even better. Need to know your ideas of some of the good things.
Validity:	Do not just tell me what you think I might want to hear.
Diversity:	I am happy to discuss any other points I would really welcome your ideas. Please think about your answers and tell us your own opinions.
Permission:	Is it still Okay to talk and use your information?
Power:	Appreciate any help. You can leave any time you wish, just tell me.
Prompts:	I will be using this recorder in front of you so I can remember your great ideas. I have this sheet to remind me of some of the things we can talk about.

- 1a Tell me about your drawing?
- 2a) Tell me anything else about what you did here at BIEEC?
- 2b) When you go back to school, what would you want to tell the students who haven't been yet about your time here at BIEEC?
- 3a) What do you think learning means here at BIEEC?
- 3b) Can you give an example of learning at BIEEC
- 3c) Can you give an example of learning at your school.
- 3d) Is there anything specific that has helped you learn here at BIEEC? What is it? (prompt from photograph)
- 4a) You have taken a number of photos today. Why are these photos important?
- 4b) Can you tell me what you learnt from the activities shown in the camera?
- 4c) Were there any area/s that you visited during your time here that were really special for you? Why?
- 4d) Was there a time when you did NOT feel comfortable about being IN the environment?
- 5a) How did you prepare for this camp?
- 5b) What sorts of activities did you do at school or home?
- 5c) What sorts of activities do you think you might be doing when you return to school that build on what you've done here?
- 6a) We have been trying to teach you about caring for the environment.  
Was there ONE POINT (Where / What) during your stay here when you thought "I SHOULD care for the environment"?
- 6b) Was there ONE POINT (Where / What) during your stay here when you thought "I CAN DO something for caring for the environment"?  
What are you going to do about the environment once you leave Boyne Island?

Thank you for your time. I know that you could have done other things with your friends so appreciate you helping me. By giving me your ideas about your visit you are helping us continue to make things better for our visitors.

## Appendix K: Drawing Worksheet

My Day @ BIEEC



## Appendix L: Content Analysis Categories Explanation

<b>DIMENSIONS</b>	<b>THEMES</b>	<b>MESSAGES</b>	<b>COMMENTS</b>
<p style="text-align: center;"><b>Location</b></p> <p>Children related how the venue contributed to their experience and identified 3 different aspects of the site</p>	<p style="text-align: center;"><b>Physical</b></p> <p>Children related aspects of the campus that contributed to their experience</p>	<p>Good resources Access to new equipment Feel safe</p>	<p><i>Children related how the campus is a good safe place with resources and equipment</i></p>
	<p style="text-align: center;"><b>Human</b></p> <p>Children related their interactions with centre staff</p>	<p>Help by staff Treated with respect /responsibility</p>	<p><i>Children related how the behaviour of centre staff contributed to their experience</i></p>
<p style="text-align: center;"><b>Social</b></p> <p>Children related how the social aspect of a residential situation contributed to their experience and identified 5 different aspects</p>		<p>Individuals Friends Team Behavioural Change Differences</p>	<p><i>Children identified 5 different aspects where their experience of a residential situation contributed to changes in themselves, interacting with their friends, the advantages of learning in teams and the change in behaviour of individuals and simply being in a different situation</i></p>
<p style="text-align: center;"><b>Engagement</b></p> <p>Children related how the program of activities in a residential situation engaged them in learning</p>	<p style="text-align: center;"><b>Positive Engagement</b></p> <p>For the most part this was a positive experience</p>	<p>Having fun Having fun ABOUT learning Exploring nature and actually touching animals &amp; plants First encounters with nature Nature as a curiosity Positive Reinforcement Enjoyed the physical activity First-time activity</p>	<p><i>Children related how FUN was a major aspect in contributing to their experience</i></p>
	<p style="text-align: center;"><b>Barriers</b></p> <p>However for some certain aspect caused them to feel ill at ease</p>	<p>Preference for well known Nature Deficit Disorder? Cultural fears</p>	<p><i>Children related how fear of an activity may cause unease they also related their fears of nature</i></p>

<b>DIMENSIONS</b>	<b>THEMES</b>	<b>MESSAGES</b>	<b>COMMENTS</b>
<b>Learning &amp; Teaching</b> Children related how their experience was indeed a learning one with the style of teaching and the extent of knowledge gained	<b>Curriculum</b> Children related certain aspects of the program of activities	Excitement Different experiences Finding something special Funny Incidents Specific incident Recollections	<i>Children identified certain aspects of the program of activities as contributing to their experience</i>
	<b>Pedagogy</b> What did the teachers do to contribute to the child's experience	Variety Informal learning processes Typcasting of learning	<i>Children related how the centre Did not conform to typecasting of learning with a great Variety of Informal learning processes</i>
<b>Environmental Ethic</b> Children related how the program of activities contributed to 3 of the Tbilisi categories	<b>Awareness &amp; Attitudes</b> What was the extent of an Environmental Ethic gained		<i>Children related how their experience contributed to changes in awareness of &amp; attitudes to environmental issues</i>
	<b>Knowledge</b> What was the extent of knowledge gained	Pre & post visit activities Acquisition of detailed knowledge Links with previous knowledge Links with previous - positive nature experiences	<i>Children related the environmental knowledge gained. This is one of the Tbilisi categories</i>
	<b>Action</b> What types of environmental action were planned	Rubbish	<i>Children related how they might take action to help the environment</i>

## **Appendix M: Ethical Clearance**

### **Appendix M.1**

Dear Mr David Kopelke

Re: Improving education for sustainability through listening to children

This email is to advise that your application 0700000758 has been reviewed as Human Ethics Level 1 and confirmed as meeting the requirements of the National Statement on Ethical Conduct in Human Research.

Whilst the project has received ethical clearance, the decision to commence and authority to commence may be dependant on factors beyond the remit of the ethics committee (eg ethics clearance/permission from another institute/organisation) and you should not commence the proposed work until you have satisfied any other requirements.

If you require a formal approval certificate, please respond via reply email and one will be issued.

Decisions related to Level 1 and 2 ethical review are subject to ratification at the next available committee meeting. You will only be contacted again in relation to this matter if the Committee raises any additional questions or concerns.

This project has been awarded ethical clearance until 3/09/2010 and a progress report must be submitted for an active ethical clearance at least once every twelve months. Researchers who fail to submit an appropriate progress report when asked to do so may have their ethical clearance revoked and/or the ethical clearances of other projects suspended. When your project has been completed please advise us by email at your earliest convenience.

Please do not hesitate to contact the unit if you have any queries.

Regards

Research Ethics Unit

Office of Research | O Block Podium | Gardens Point | p: +61 7 3138 5123 |  
f: +61 7 3138 1304 | e: ethicscontact@qut.edu.au | w:  
<http://www.research.qut.edu.au/ethics/>

## Appendix M.2

David Manttan  
(07) 4971 3613  
D:\law



Gladstone District Office  
Education Queensland

6 August 2007

Mr David Kopelke  
Principal  
Boyne Island Environmental Education Centre  
61 Malpas Street  
BOYNE ISLAND QLD 4680

Dear David

I wish to advise that I approve your application to conduct research in Education Queensland Schools in the Central Coast District in accordance with the *Guidelines for Conducting Research on Departmental Sites* ([http://www.education.qld.gov.au/central\\_coast/researchandresearchers/211999991000](http://www.education.qld.gov.au/central_coast/researchandresearchers/211999991000)).

However, participation in any research is voluntary. This means that school principals have the right to decline participation even if approval has been granted at district level. Additionally, principals have the right to monitor any research activities conducted in their facilities and may withdraw support at any time.

It should be noted that District Office approval indicates that the project conforms to *Departmental Guidelines* only. It does not imply official departmental endorsement of any aspect of a research project or support for the general and/or commercial use of an intervention or program being evaluated or developed as part of the research.

If you have any further queries regarding this approval, please contact Mr David Eborn on telephone 4971 3614.

Yours sincerely

A handwritten signature in blue ink, appearing to read "David G Manttan".

DAVID G MANTTAN  
Executive Director (Schools)  
Central Coast District  
Fitzroy Central West Queensland Region  
Education Queensland

PO Box 4255  
21 Dumas Highway  
Gladstone Queensland 4680 Australia  
Telephone 07 4971 3600  
Facsimile 07 4971 3599  
Website [www.education.qld.gov.au](http://www.education.qld.gov.au)

### **Appendix M.3**

alan.sampson@deta.qld.gov.au 09/12/2011, at 7:24 AM, "David Kopelke"  
Mr. Alan Sampson,  
Assistant Regional Director,  
South East Region,  
Education Qld.

Alan,

On 6 August 2007, I received a letter from my then supervisor David Manttan, EDS Central Coast District, approving my application to conduct research in Education Queensland Schools in accordance with the Guidelines for Conducting Research on Departmental Sites.

However, I omitted to seek permission to use the name of the research site, Boyne Island Environmental Education Centre, in the drafting of my thesis. Schools involved and children's names are not being identified.

Therefore, in accordance with QUT and EQ guidelines, I seek permission to identify the research site in the drafting of my thesis.

I would greatly appreciate if this permission, or refusal, could be made quickly to enable me to submit my thesis.

Thanks  
Regards  
David

David Kopelke PSM  
Principal  
Boyne Island Environmental Education Centre

On 09/12/2011, at 7:24 AM, "David Kopelke"  
<dkope2@eq.edu.au<mailto:dkope2@eq.edu.au>> wrote:

Permission granted.

Alan Sampson,  
Assistant Regional Director,  
South East Region,  
Education Qld.

Sent from my iPad  
alan.sampson@deta.qld.gov.au

## Appendix N: Information and Consent Forms

### Appendix N.1

	<b>PRINCIPAL'S INFORMATION For QUT RESEARCH PROJECT</b>
Improving Education for Sustainability Through Listening to Children	

*Dear*

I am writing to invite you to participate in a research project I am undertaking, as part of a Doctorate in Education at QUT. I am seeking to understand how to make the programs at the Boyne Island Environmental Education Centre (BIEEC) more appropriate for children learning about the environment.

Environmental Education Centres have made an influential contribution to school and community Environmental Education (EE) and Education for Sustainability (ES) through nature-based, experiential and action-learning approaches. The underlying assumption is that intensive, but short-term, outdoor/environmental education experiences can change key attitudes and actions. Therefore, the belief is that, with the 'right' program, 'appropriate' environmental behaviour will follow. The central question to my research is to examine what children identify within an EE program that contributes to shaping their environmental knowledge and belief structures.

To generate the children's own accounts of the program at BIEEC, I would like to carry out 'conversations' with the students. The audio-recorded conversations will be face-to-face, and one-on-one or in groups of either two or three children. Drawings completed and photographs taken by children during the week will act as prompts during the conversations. A daily journal, written by the child during the camp, will contribute to the study.

The participation by your school and students in this research is entirely voluntary. Children may withdraw at any time without fear of consequences. No names or any other identifying information of individuals or schools will be used in any reporting of the project findings. Only transcripts of conversations will be used in the reports. Pseudonyms will be used. Audio-recordings presented publically will be modified electronically so that the child's voice is not identifiable. Photographs will be digitally altered so that the faces and any identifying features will be blurred. Personal information will be used only for the purposes of managing the data sets and collected data will be stored in a locked filing cabinet and/or on a computer with password access.

Could you please?

- Make available to your school community the attached materials.
- Discuss the research project with your school community.
- Encourage the children to participate.
- Sign the attached written consent to confirm your school's agreement to participate.
- Return the Consent Form by mail to:

Boyne Island Environmental Education Centre,  
61 Malpas St., Boyne Island, 4680.

Please contact the research team members named below, to have any questions answered, or if you require further information about the project. QUT is committed to researcher integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project, you may contact the QUT Research Ethics Officer on (07) 3138 2340 or [ethicscontact@qut.edu.au](mailto:ethicscontact@qut.edu.au). The Research Ethics Officer is not connected with the research project and can facilitate a resolution to your concern, in an impartial manner.

<b>Research Team Contacts</b>		
<b>David Kopelke</b>	<b>Associate Professor Susan Danby</b>	<b>Dr. Julie Davis</b>
Phone: (07) 49737312	Phone: (07) 3864 3547	Phone: (07) 3864 3808
Email: <a href="mailto:dkope2@eq.edu.au">dkope2@eq.edu.au</a>	Email: <a href="mailto:s.danby@qut.edu.au">s.danby@qut.edu.au</a>	Email: <a href="mailto:j.davis@qut.edu.au">j.davis@qut.edu.au</a>

*David Kopelke*

**Included:**

- 1. PARENT/GUARDIAN INFORMATION**
- 2. PARTICIPANT INFORMATION**
- 3. CARER/PARTICIPANT CONSENT FORM**
- 4. PRINCIPAL'S CONSENT FORM**

## Appendix N.2

	<b>PRINCIPAL'S CONSENT FORM</b> <b>For QUT RESEARCH PROJECT</b>
Improving Education for Sustainability Through Listening to Children	

Research Team Contacts		
<b>David Kopelke</b>	<b>Associate Professor Susan Danby</b>	<b>Dr. Julie Davis</b>
Phone: (07) 49737312	Phone: (07) 3864 3547	Phone: (07) 3864 3808
Email: <a href="mailto:dkope2@eq.edu.au">dkope2@eq.edu.au</a>	Email: <a href="mailto:s.danby@qut.edu.au">s.danby@qut.edu.au</a>	Email: <a href="mailto:j.davis@qut.edu.au">j.davis@qut.edu.au</a>

### Statement of consent

By signing below, you are indicating that you:

- Have read and understood the information document regarding this project.
- Have had any questions answered to your satisfaction.
- Understand that if you have any additional questions you can contact the research team.
- Understand that your school and your children are free to withdraw at any time, without comment or penalty.
- Understand that you can contact the Research Ethics Officer on 3138 2340 or [ethicscontact@qut.edu.au](mailto:ethicscontact@qut.edu.au) if you have concerns about the ethical conduct of the project.
- Agree to participate in the project.
- Have discussed the project with your children and their requirements if participating.
- Understand that the project will include audio-recording.

<b>School</b>	
<b>Name</b>	
<b>Signature</b>	
<b>Date</b>	

## Appendix N.3



### PARENT / GUARDIAN INFORMATION For QUT RESEARCH PROJECT

Improving Education for Sustainability Through Listening to Children

#### *Dear Parent / Guardian*

I am writing to invite your child to participate in a research project that I am undertaking as part of a Doctorate in Education at QUT. I am also the Principal of the Boyne Island Environmental Education Centre (BIEEC). I am seeking to understand how to make the programs at BIEEC more appropriate for children, by asking them to identify aspects of the environmental education program that contribute to their environmental knowledge. The project will generate important information for the staff at the Centre, which will enable them to make informed decisions about the nature of future programs. The findings of the study will also benefit the wider community involved in developing environmental educational programs.

Your child's participation in the project will involve having a conversation with me about their experiences of the environmental education program. Conversations will each take about twenty minutes, will be either face-to-face one-on-one or in groups of either two or three children. The conversations will be audio-recorded. Drawings completed and photographs taken by your child during the week will act as prompts during the conversation. Daily journals written by your child during the camp will contribute to the study. I seek your permission to use this information in my research.

The participation by your child in this research is entirely voluntary. Your child may withdraw at any time without fear of consequences. No names or any other identifying information of individuals or schools will be used in any reporting of the project findings. Only transcripts of conversations will be used in the reports. Pseudonyms will be used. Audio-recordings presented publically will be modified electronically so that the child's voice is not identifiable. Photographs will be digitally altered so that the faces and any identifying features will be blurred. Personal information will only be used for the purposes of managing the data sets and collected data will be stored in a locked filing cabinet and/or on a computer with password access.

The findings of the research are likely to be disseminated via conference papers, journal articles and a thesis.

The project has been approved by Education Queensland and has ethical approval from Queensland University of Technology. QUT is committed to researcher integrity and the ethical conduct of research projects. However, if you do have any concerns or complaints about the ethical conduct of the project, you may

contact the QUT Research Ethics Officer on (07) 3138 2340 or [ethicscontact@qut.edu.au](mailto:ethicscontact@qut.edu.au). The Research Ethics Officer is not connected with the research project and can facilitate a resolution to your concern, in an impartial manner.

Could you please?

- Discuss this research project with your child.
- Sign the consent form to confirm your and your child's agreement to participate.
- Return the consent form to your class teacher.

<b>Research Team Contacts</b>		
<b>David Kopelke</b>	<b>Associate Professor Susan Danby</b>	<b>Dr. Julie Davis</b>
Phone: (07) 49737312	Phone: (07) 3864 3547	Phone: (07) 3864 3808
Email: <a href="mailto:dkope2@eq.edu.au">dkope2@eq.edu.au</a>	Email: <a href="mailto:s.danby@qut.edu.au">s.danby@qut.edu.au</a>	Email: <a href="mailto:j.davis@qut.edu.au">j.davis@qut.edu.au</a>

*David Kopelke*

**Included:**

- 1. PARTICIPANT INFORMATION**
- 2. CARER/PARTICIPANT CONSENT FORM**

## Appendix N.4

	<b>PARTICIPANT INFORMATION For QUT RESEARCH PROJECT</b>
Improving Education for Sustainability Through Listening to Children	

Hello,

I'm David Kopelke, the Principal of the Boyne Island Environmental Education Centre and I am looking forward to meeting you when you visit my Centre soon. I am carrying out research through the Queensland University of Technology in an attempt to make the programs at the Centre even better for your learning about the environment.

You can help in this project by agreeing to talk with me when you visit. I am really interested in finding out which activities taught you most about the environment and what we can do in the future to make our programs here more relevant for participants. I expect the conversation will take about 20 minutes. I seek your permission to audio-record this talk. During your visit you will be taking photographs and completing drawings and I would like to include these in our talk also. The daily journal you write during the camp will also supply ideas.

Your participation is entirely voluntary and you may withdraw at any time. I will never tell people your identity; only describe your great ideas.

I have given your school principal and parent/guardian details of the project, so please talk to them about this request. If you wish to contribute to this project, please sign the attached consent form. As well, I need your parent/guardian to sign as well, before the form is returned to your class teacher.

Thank you,

*David Kopelke*

## Appendix N.5

	<b>PARTICIPANT CONSENT FORM</b> <b>For QUT RESEARCH PROJECT</b>
Improving Education for Sustainability Through Listening to Children	

Research Team Contacts		
<b>David Kopelke</b>	<b>Associate Professor Susan Danby</b>	<b>Dr. Julie Davis</b>
Phone: (07) 49737312	Phone: (07) 3864 3547	Phone: (07) 3864 3808
Email: <a href="mailto:dkope2@eq.edu.au">dkope2@eq.edu.au</a>	Email: <a href="mailto:s.danby@qut.edu.au">s.danby@qut.edu.au</a>	Email: <a href="mailto:j.davis@qut.edu.au">j.davis@qut.edu.au</a>

By signing below, you are indicating that you:

- Have read and understood the information document regarding this project.
- Have had any questions answered to your satisfaction.
- Understand that if you have any additional questions you can contact the research team.
- Understand that you are free to withdraw at any time, without comment or penalty.
- Understand that you can contact the Research Ethics Officer on 3138 2340 or [ethicscontact@qut.edu.au](mailto:ethicscontact@qut.edu.au) if you have concerns about the ethical conduct of the project.
- Agree to participate/ for your child to participate in the project.
- Have discussed the project with your child and their requirements if participating.
- Understand that the project will include audio-recording.

### Statement of Child consent

Your parent or guardian has given their permission for you to be involved in this research project. This form is to seek your agreement to be involved. By signing below, you are indicating that the project has been discussed with you and you agree to participate in the project. Please circle the happy face if you wish to help and sign below.



<b>CHILD</b>	
Name	
Signature	
Date	
<b>PARENT / GUARDIAN</b>	
Name	
Signature	
Date	

## **Appendix O: Education Queensland's Principles of Effective Learning and Teaching**

The effective delivery of environmental programs is based on the principles of effective learning and teaching, which include:

- **A foundation on the understanding of the learner by:**
  - Taking into account relevance and meaning for the learner by addressing local, global and futures issues;
  - Promoting the creative potential of each learner to contribute towards a solution of those environment problems.
- **An active construction of meaning by:**
  - **Providing students with an opportunity to:**
    - \* Participate in a variety of formal and informal social and cultural interactions with adults and new group members;
    - \* Explore, and develop an openness to, the diversity of knowledge, understanding, values and beliefs of the diverse group;
    - \* Develop a range of thinking processes including divergent, convergent, lateral, critical and creative thinking to address environmental issues;
    - \* Achieve success and have a sense of progress in their learning by solving an environmental issue.
  - **A supportive and challenging environment where:**
    - \* Learners are encouraged to become responsible and independent;
    - \* Effective communication among all learners occurs;
    - \* Cooperative planning, implementation and evaluation of programs for continuity of learning;
    - \* Diverse, yet relevant, experiences from the wider community are used as contexts for learning;
    - \* Experiences motivate learners and promote enjoyment, achievement and satisfaction.
  - **Development of worthwhile learning partnerships with:**
    - \* Learners and teachers seeking knowledge together;
    - \* Teachers are active learners, and learners have the opportunity to teach others;
    - \* Learners and teachers encourage interaction and respond to the opportunities that arise;
    - \* Learners have the confidence and are given the opportunity and guidance to display leadership.
  - **Shaping and responding to social and cultural contexts by:**
    - \* Developing attitudes, knowledge, skills and processes which enable students to contribute and respond to change within the community
    - \* Achieve success based on realistic and challenging expectations
    - \* Critical reflection on the past and present informs future decisions.

(BIEEC, 2005, p. 11)