The influence of literature on the pro-environmental attitudes of environmental educators.

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The thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to the final version of my thesis being made available worldwide when deposited in the University’s Digital Repository, subject to the provisions of the Copyright Act 1968.
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Abstract
The purpose of this research is to better understand the potential influences of fiction on environmental educators. Current research into pro-environmentally active people indicates that youthful exposure to the natural environment is the main motivator for pro-environmentalism. As urbanisation continues in our society, this exposure could become less available to many children, thus potentially leading to less pro-environmental behaviour. As many young people consume large amounts of television, books and internet, this presents the opportunity for utilizing these media as an alternative method of encouraging pro-environmental behaviour.

This qualitative study used semi-structured interviews of 31 environmental educators from environmental education centres on the east coast of Australia to address the possible influence of fiction on their pro-environmental attitudes. It revealed that the participants recall predominantly fictional material from childhood, especially from the age ranges of 8 – 11 years, adolescence and early adulthood. There is a high recall of stories by J R R Tolkien, Enid Blyton and J K Rowling, and the highest number of listed books is from the category of Fantasy/SF and stories involving social issues.

This study is different from previous reports into the influence books have had on environmental educators’ pro-environmental values, as it is concentrating on the potential influence of fiction rather than factual or scientific texts.

While stories will never replace authentic childhood experiences in the natural environment for influencing pro-environmental attitude formation, they are a valuable element in teaching strategies as audiences often accept information from stories. Stories are important as they are an aspect of previously recognised pro-environmental influence that can be manipulated by children’s teachers and carers and may reduce the reported increasing occurrences of Eco-phobia and Nature Deficit Disorder.
Chapter 1 Introduction

1.1 Background to the research problem
As urban children’s access to free play in the natural environment appears to be decreasing (Chawla, 2009; Louv, 2008; N. M. Wells & Lekies, 2006), alternative methods of encouraging pro-environmental behaviours are required. Books and authors or media have been identified in previous studies as influences for pro-environmental behaviour amongst environmentalists, but there has been little research into this area of influence. The primary pro-environmental influence reported worldwide appears to be youthful exposure to the natural environment; and in Australia family influence, formal education and loss of a special place follow in importance (Corcoran, 1999; S. J. Hsu, 2009; Palmer, Suggate, Robottom, & Hart, 1999). As more children are living in urban areas in Australia (ABS, 2010; Gleeson, 2006; Gray, 2007), research suggests Australian children’s exposure to the natural environment will diminish for future generations (N Gough, 2002). This lack of personal experience in the natural environment is also a concern worldwide as children develop psychological complaints such as Nature Deficit Disorder, and Ecophobia, a fear of the natural environment (Louv, 2008). This envisaged societal change has led to environmental educators (N. Gough, 2003b; McLoughlin & Young, 2005; Stephenson, 2007) calling for alternative ways to teach people about environmental issues such as climate change, greenhouse gases and water shortages.

The present study involves multi-disciplinary influences and builds upon research undertaken in a number of areas (Environmental Education, Media Studies, Learning from Fiction, Psychology, Advertising, and Education) to enquire into environmental educators’ memories, values, attitudes and actions. A kaleidoscope of voices and opinions highlighting areas of relevance in this study are presented in the literature, weaving together to help inform the background to this investigation.

Environmental Education is a broad spectrum of teaching and learning experiences for all age groups, specifically about, for and in the natural environment. Learning about the environment often occurs within school subjects
such as biology and geography where students learn about the world through the different natural and built environments. Leaning for the environment is learning how to care for and preserve various parts of the natural environment, especially endangered species and ecosystems. In many instances learning in the environment involves students and schoolchildren partaking in excursions to Environmental Education Centres (EECs) to fulfil the environmental sections of education curricula. Learning in the environment also involves individuals in specific outdoor activities such as visits to zoos, animal parks, museums and national parks or wilderness. Current research into environmental education focuses predominantly on education in the environment, examining people’s experiences in these deliberately environmentally educating situations (Ballantyne & Packer, 2009; Tooth & Renshaw, 2009).

Studies into significant life experiences influencing pro-environmental influences began in the 1960s with Tanner (1998b) and others questioning environmentalists about their formative experiences and investigating the gap between environmental knowledge and actions (Kollmuss & Agyeman, 2002). This research expanded in the 1990s when Palmer and colleagues (Palmer et al., 1998) investigated the significant influences from participants in nine countries and Corcoran (1999) questioned participants in the United States. It has continued with the more recent studies of Hsu (2009) with students in Taiwan. The research projects all show similar influences, despite the varying definitions of ‘environmentalist’ for the participants in the studies. The Australian responses as listed in Palmer et al’s (1998) Table 3 for the top six influences are: 1) child in nature, 2) work, 3) tertiary education, 4/5) close family & older friends, 6/7) Adult nature & ‘negative’ books. In the world lists, secondary school, pollution, tree clearing & disasters were the unmentioned influences in the Australian report column. Despite all these studies, very little is known about how and why children become pro-environmental.

How do people develop a deep and lasting concern for the environment?
There is a large literature on environmental education but we know very
little about how and why children develop a concern for environmental issues.” (Hart, 2003a, p. 176).

Over the last ten years media reports and journal articles wrote that people are losing interest in green or environmental issues and becoming overexposed, disinterested or “browned off” (Byron & Curtis, 2001) about such issues; while others have described the current environmental education methods as “boring” (A Reid, 2009 p. 137) and less than effective. As many people now consume a large range of media such as television, internet, films, magazine and books, these media could be more comprehensively used for encouraging pro-environmental behaviour. Within the studies on influences on pro-environmental behaviours (Easton, Koro-Ljungberg, & Cheng, 2009; S. J. Hsu, 2009; Kollmuss & Agyeman, 2002), ‘media’ is mentioned as a minor influencing factor, with no specific reference made to the influence of fiction.

In exploring the influence of books on pro-environmental attitudes, recent research into picture books as an influence on children has led researchers to conclude that the decline in interest in environmental issues during the 2000s decade is reflected in the decline of representations of the natural world and wild animals in children’s picture books (Williams, Podeschi, Palmer, Schwadel, & Meyler, 2012). Children’s environmental books have also been discussed and assessed for their educational value in research situations (Hadzigeorgiou, Prevezanou, Kabouropoulou, & Konsolas, 2011; Hug, 2011; Reid, Payne, & Cutter-Mackenzie, 2010; Williams et al., 2012), but no research has been uncovered indicating the influence of the fictional stories on children’s pro-environmental behaviour. This suggests there is a research gap that this study can address. By looking at environmental educator’s influential childhood books, this study intends to discover if one type or genre of fiction emerges as important to the cohort.

Fiction is utilised for educating people through the process of Educational-Entertainment, or Edutainment (Singhal et al., 2004; Singhal & Rogers 2002). Relevant information on health and social issues such as AIDS or domestic violence is often presented in Edutainment as part of the fictional storyline in a
popular radio or television soap opera. This method of subtly educating audiences aligns with other research indicating people learn better from fictional rather than factual texts as their mental defences are not aroused and information can be accepted more easily (Marsh, Meade, & Roediger, 2003; Prentice & Gerrig, 1999). Fiction enhances audiences’ understanding of the context of the situation (Kilbourn, 1998) as the audience can be ‘transported’ into the story, and accept the richness of the descriptions or explanations as part of the entertainment experience, and then take the relevant information back to the real world once the entertainment experience is concluded (Green & Brock, 2000).

Learning in these situations usually takes place incidentally, or tacitly. The information is passed via the entertainment; it is not deliberately sought out by the receiver, but happens almost accidentally as the receiver is exposed to the fictional story. Once the information is absorbed by the receiver, it is available for further use in other situations, often without any form of mental challenging for correctness (Marsh et al., 2003).

As will be mentioned in the definitions in the Section 1.2, previous research into pro-environmental attitudes and actions has examined various identified pro-environmental people including undergraduates in environmental sciences, environmental activists and environmental educators. These studies have proved difficult to correlate due to the differing emphases on personal and public behaviour or activism (Chawla & Cushing, 2007; S. J. Hsu, 2009; Kollmuss & Agyeman, 2002). Environmental educators working in Environmental Education Centres have been chosen for this study as they are daily acting positively for the environment by their pro-environmental attitudes which they are then expounding to future generations (Hart, 2003). Investigating the formative influences of environmental educators is important in discovering how pro-environmental attitudes have been created and may be recreated in future generations (NGough, 2002, p. 20; Tanner, 1998a, p. 399).

Participants’ memories may include specific identified story characters, authors, titles, or general types or genres of books. Fiction has been chosen for this study because the influence of embedded messages and information about the
environment in the fiction. Anecdotal comments suggest that this embedded learning appears to have influenced environmental educators’ interests and career choices, subtly encouraging individuals towards environmental awareness. This study will test this apparent input of tacit learning.

For incidental or tacit learning to occur, the individual usually has a covert interest or motivation in the learning experience. Incidental learning has been characterised by Marsick and Watkins (2001, p. 28) as being haphazard, not highly conscious and triggered by an internal or external jolt. It has also been characterised as learning while concentrating on something else (Marsick & Watkins, 2001; M. Sutherland, 1993) and as a response to learning settings. The literature agrees that implicit learning links past experiences with recent learning to provide more comprehensive knowledge (Eraut, 2000). The reading of fiction provides a suitable basis for such an experience as readers may build on their previous knowledge to aid in comprehending their knowledge base (Green & Brock, 2005; Mazzocco, Green, & Brock, 2007).

Research into implicit learning examines the effects of an experience where the subject is unable to definitely define the learning situation (Berry & Dienes, 1993, p. 7; Schugurensky, 2006, p. 167) and may have been undervalued due to lack of recognition (Schugurensky, 2006, p. 163).

As investigating the results of incidental learning is problematic due to the difficulty in identifying the original source (Erdelez, 2004; Schugurensky, 2006) this study is combining concepts from unobtrusive data collection (Webb, Campbell, Schwartz, & Sechrest, 2000) to assist in exploring the collected data. The unobtrusive data collection method of measuring erosion and accretion (Webb et al., 2000, pp. 35 - 52) is employed to gather data from situations where occurrences may not otherwise be measured. In previous research these have included the indication of popularity of a museum exhibit by the replacement time of the floor tiles and the reading of a library book by its dog-eared pages and fingerprints (Webb et al., 2000, pp. 37 - 38). In this study the reappearance of favourite books or authors within the cohort is used as an indicator of importance to the participants.
1.2 Definitions
Parameters set at the beginning of the study were designed to limit controversy over definitions and ensure validity of comparisons and discussions of the participants in this study.

In this study an Environmental Educator is a person working as a teacher in an Environmental Education Centre. This cohort is acting on their pro-environmental attitudes and values by actively teaching within the specific area of environmental education.

An Environmental Education Centre (EEC) is a specific place for students to go to learn about and experience various aspects of the natural environment. EECs have different educational priority areas, and their own specific focus, such as outdoor education or a specific eco-system focus, and may classify themselves as following the philosophical directions of Conservation Education, Environmental Education or Education for Sustainability.

This study is also an Education for Sustainable Development (EfSD) exercise as it shows literature, fiction and narrative as fulfilling the criteria for EfSD. While there is often a debate about the definitions of Environmental Education and Education for Sustainability or Education for Sustainable Development (EfSD); this study approaches EfSD as incorporating Environmental Education and the participants share their varying views in the Discussion Chapter in Section 5.2.m. EfSD incorporates the triple bottom line of considering the cultural, economic and environmental concerns of sustainability (Publications, 2010) which are explored in Section 2.20 in the Literature Review and Section 5.2.m in the Discussion section.

1.3 The problem being investigated and the research questions
Fiction is a vicarious way of experiencing life (Kola-Olusanya, 2005). It is not the best method of experiencing the natural environment, but it is better than no experience, which is a situation currently postulated for young people in the environmental education literature (Bigger & Webb, 2010; Cutter-Mackenzie,
Payne, & Reid, 2010; N Gough, 2002). If, as this literature suggests, young people are having less first-hand experience with the natural environment, which in turn leads to less care and involvement in pro-environmental activities, then alternative strategies for encouraging pro-environmental behaviour require investigation. The question then forms; could literature, and especially fiction, be one of these alternate strategies?

Casual discussions with environmentalists in the 1960s prompted Tanner (1998b) to begin questioning their formative experiences. The following 40 years of research into what encourages environmental educators to become pro-environmental has continued to show that experience in the natural environment is the overwhelming significant life influence (Chawla & Cushing, 2007; Palmer et al., 1998). However, although mentioned in these studies, investigations into the influence of literature do not appear to have been undertaken. If replicating known pro-environmental experiences for educating the young is important, as Tanner states in Gough (2002), then discovering the literary impetus of pro-environmental behaviour should be undertaken. Strategies currently used to encourage care for the environment include Conservation Education, which includes the creation and ongoing care for National Parks and conservation areas. Other areas include formal education in schools and communities for the environment, about the environment and in the environment, and the environmental aspects of Education for Sustainable Development. Each learning strategy targets a specific audience to encourage pro-environmental behaviour. However, the challenge within environmental education is to communicate to those individuals in the community who still will not, or cannot, receive the pro-environmental message.

While the overarching question in this study concerns the influence of fiction on the life choices of environmental educators, this investigation will shed light on a number of other research areas including the formative influences on participants’ values and attitudes, and the potential recognition of influences from the childhood texts they read on these developing attitudes. A second area relates to the types or genres of fiction that appear to have been most influential and most
remembered amongst the participants. A third area of interest is the participants’ use and belief of the usefulness of stories as a teaching and learning strategy within their workplaces and the corresponding responses from students to this approach. And finally, this study aims to discover if fiction could be used as an alternative strategy for helping people learn about environmental issues, as is called for by the United Nations when referring to Education for Sustainability (Mula & Tilbury, 2009).

Studies within the disciplines of Psychology, Education, Media and Advertising have established that reading fiction influences individuals’ attitudes and actions (Green et al., 2008; Mar, Djikic, & Oatley, 2008; Oatley, 2002a; Shrum, 2004). Research states that fiction has its impact through emotions (Oatley, 2002b), through identification with character and plot (Slater, 2002), and through comedy and drama (Poindexter, 2004). However, the specific genres or types of fiction are not discussed. This study aims to discover if certain text types, genres or authors are repeatedly discussed by the participating environmental educators, either as identified sources of pro-environmental attitudes or as common favourites amongst the cohort, potentially indicating the tacit or incidental learning gathered from these identified texts.

Research from these disciplines has responded to the question: does fiction have an influence, consciously or subliminally, on establishing attitudes and values that lead to specific operational actions?

This research shows that fiction influences individuals’ attitudes and behaviours (Hakemulder, 2008), by indicating that fiction readers learn social skills and norms from the stories they read (Green et al., 2008; Mar, Oatley, Hirsh, dela Paz, & Peterson, 2006; M D Slater, 2002). It also reveals that people believe what they read (Prentice & Gerrig, 1999) and that they use stories to help them make life choices (Green & Donahue, 2008; Wyer & Adaval, 2004). Although the changes can be from just a short exposure (Law & Braun-LaTour, 2004) these belief changes may be lifelong (Appel & Richter, 2007), and can be very persuasive because they are remembered as images and emotions rather than facts being mentally compared with previous knowledge (Mar et al., 2008). The influence of
stories on emotions and images originated with storytelling and is also applicable to written stories (Oatley, 2002). As Cassady (1994, p. 12) says “Storytelling is an oral art form for preserving and transmitting ideas, images, motives and emotions with which everyone can identify.”

Environmental education research recognises the influence of emotions in promoting pro-environmental behaviour. Kollmuss and Agyeman (2002, p. 248) state that “emotional involvement is what shapes environmental awareness and attitude” and cite Chawla’s studies saying how valuable emotional connections are in promoting pro-environmental awareness and concern. In other research looking at aesthetics in environmental education, Swonk (2000, p. 263) says that rational strategies of information and knowledge are not enough to influence attitudes. An emotional basis is required, saying “positive attitudes towards animals, plants and ecosystems are based on emotions”. The confirmation that emotions are created or reinforced by fiction, and that emotional engagement is required for pro-environmental influence, then suggests that emotions transmitted by fiction for pro-environmental attitudes and actions should exist.

Individuals learn by integrating information from various sources (Eraut, 2000) and learning from reading a specific work of fiction is often not recognised, rather it is simply accepted by the reader (Mazzocco et al., 2007). This passive acceptance of information can be seen as a form of subliminal influence on readers (Seitz, Lefebvre, Watanabe, & Jolicoeur, 2005; Shrum, 2004). Subliminal learning coincides with the psychological theory of conditioning (Seitz & Watanabe, 2003), where individuals’ behaviours or thoughts are reinforced by repetition (Erdelyi & Zizak, 2004; Rowland & Turner-Neal, 2011). This may also be seen as a form of brainwashing (Jarvis, 2008; Lifton, 2011; Rowland & Turner-Neal, 2011; K. Taylor, 2006). Despite the negative connotations to the term, brainwashing may be seen to exist as a legitimate form of learning (Lifton, 2011) when it is for the public good (Slater, 2002), or as tacit or incidental learning (Livingstone, 2006; Marsick & Watkins, 2001) accumulated unintentionally. This incidental learning of information is not deliberately
undertaken (Seitz et al., 2005), rather it is a by-product of other activities (Foster & Ford, 2003; Ross, 1999) such as reading for pleasure.

It is difficult to assess and attribute specific actions to incidental learning rather than to deliberate educational opportunities as it is dealing with the intangibles of attitude and belief (Buissink-Smith, Mann, & Shephard, 2011; Dean, 1996) occurring outside the awareness of the individual concerned (Moyer-Guse, 2008). However, edutainment does appear to record some successes in influencing audiences through electronic media, with television soap operas including storylines dealing with social issues such as childhood vaccinations, overuse of antibiotics, and skin cancer (Brock & Green, 2005), and cervical cancer (Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013). Other reported successful edutainment projects are radio programs including information about ways of dealing with domestic violence and AIDS (Singhal, Cody, Rogers, & Sabido, 2004; M D Slater, 2002).

However, research has not discovered what kind of fiction generates the most positive pro-environmental responses from individuals. This is the gap in the currently reported research that this study addresses.

Recognising that definitive answers to the influence of incidental learning is difficult (Buissink-Smith et al., 2011; Eraut, 2000; Reber, 1993) this research project uses an unusual approach derived from unobtrusive research methods (Creswell, 2009; Lee, 2000; Phillips, 1995) to see if fiction has influenced the participants by asking about their reading habits, both as children and as adults. Participants making specific responses stating pro-environmental influences are not expected, rather a confluence of books, authors or types of books may suggest influential reading matter.

The thesis question is then: Has fiction influenced the pro-environmental attitudes of environmental educators?

This in turn raises other questions such as:
1. Do these environmental educators have similar formative pro-environmental experiences to other environmental educators previously researched?

2. If fiction does influence people, what kind or genre of fiction appears to work best in this situation?

3. What age group appears to be most influential?

4. Are environmental educators’ reading habits different from those of the general population?

5. What stories do participants pass on to future generations? (At home and at work)

6. As all environmental educators are individuals, is there anything in common that can be taken from this study and generalised for other areas of concern?

1.4 Format of the thesis
The literature available on the formative pro-environmental influences identified in previous studies is discussed in the first part of Chapter 2, the Literature Review. This is then followed by literature on storytelling and the influence of fiction on people’s values, and attitudes. The various uses of fiction to manipulate readers and audiences using various media are also discussed. The age of most influence from reading is examined, and the reliability of memory and a review of the literature on how the brain retains information from tacit or incidental sources follows before a discussion of the literature on how information can influence individuals’ attitudes and behaviours. The remaining part of the chapter examines and shows how both areas of interest – the pro-environmental influences and the influence of fiction, coincide to provide a platform for this research.

Chapter 3 continues with the theme of the influence of the literature, but here in the Methodology Chapter it addresses the influence of the documented previous research on the design of this research project, the rationale for the method chosen and the details involved in putting it into practice.
Chapter 4 presents descriptive statistics regarding the books that participants mention to indicate possible patterns. The Results chapter is examining participants’ backgrounds and the reasons individuals feel they are pro-environmental. This then leads on to their childhood reading preferences and their adult reading preferences when interviewed. The books they feel are important enough to pass on to future generations are also here, along with the stories they use at work, both written and anecdotal.

Chapters 5, 6 & 7 are the Discussion Section of the thesis. This section follows the order of presentation of information in the Results Chapter and deals with the implications of the findings.

Chapter 5 examines the participants’ formative pro-environmental influences and aligns them with results from previous research. It responds to the question “Do these environmental educators have similar formative pro-environmental experiences to other environmental educators previously researched?” This chapter also examines the participants’ definitions of Environmental Education and Education for Sustainability.

Chapter 6 addresses the question “If fiction does influence people, what kind or genre of fiction appears to work best in this situation?” This chapter covers the different kinds of texts the participants discuss in the interviews before in-depth examination of the participants’ most mentioned specific books.

Chapter 7 addresses two questions posed in this thesis “What age group appears to be most influential?” by comparing the texts mentioned with publishers’ recommended reading ages. It goes on to address “Are environmental educators’ reading habits different from those of the general population?” by comparing participants’ responses with data from a public library database. Examination of the stories used in the various Environmental Education Centres (EECs) and the stories read to children and grandchildren illustrates the question “What stories do participants pass on to future generations?”

Chapter 8 addresses the final question “As all environmental educators are individuals, is there anything in common that can be taken from this study and
generalised for other areas of concern?” with a summary of the findings and revealing participants’ thoughts on the influence of fiction on their life choices.

This is followed by an examination of the implications of the research, and includes suggestions for further research into the various aspects of using specific types of fiction as entertaining and memorable educational material for students of various ages.
Chapter 2 Literature Review

Introduction

As the questions asked by this study require a discussion of a diverse collection of interdisciplinary literature, this chapter first addresses the literature from an environmental education aspect relevant to this study. The beginning of the chapter introduces the environmental education research literature (Section 2.1) and gives justification for looking at fiction as a formative pro-environmental influence on environmental educators. This leads to the importance of emotions (Section 2.2) in influencing people’s beliefs (Section 2.3) before noting the academic calls to encourage pro-environmentalism (Section 2.4) through different methods.

The chapter continues by considering storytelling (Section 2.5) and the previous research into the influence of people’s favourite books (Section 2.6) and how research has demonstrated that fiction can change beliefs (Sections 2.7 & 2.8). As study participants will be asked about their personally influential fiction, definitions of genre (Section 2.9) are discussed. Academic studies into the potentially important childhood ages of influence (Section 2.10) and the phases and reliability of memory (Section 2.11) are important in a study such as this and their use in learning (Section 2.12) leads into a discussion of the literature on mental processing of information (Section 2.13). Previous studies into retention of information from literature have utilized the Elaboration Likelihood Method (ELM) in understanding how people remember things (Sections 2.14). Section 2.15 is a discussion of this literature, along with associated literature about transportation for information retention with examples of studies into the use of fiction in educational entertainment (Section 2.16), advertising (Section 2.17), and psychology to change audience attitudes and actions. The use of information in changing attitudes (Section 2.18), values and actions is also discussed. The chapter concludes with a synthesis of the literature in Section 2.19 and the questions formed from the background to the situation and the literature review.


2.1 Pro-environmental influences

Research suggests that no single event or influence encourages individuals to hold a specific viewpoint on issues such as pro-environmental attitudes and participation in pro-environmental actions (Chawla, & Derr, 2012; Ewert, Place, & Sibthorpe, 2005; Sherry, 2002; M D Slater, 2002). While experiences in the natural environment appear to be the most significant influence, the process is described variously as a complicated and interrelated collection of influences on individual’s attitudes and values before resulting in their pro-environmental actions (Easton, Koro-Ljungberg, & Cheng, 2009; Ewert et al., 2005; N Gough, 2002; 2006). Studies in the 1990s of environmentalists reveal that experience in the natural environment is the most important influence on pro-environmental attitudes from areas such as North and Central America, Australia, Canada, Britain, Europe and Africa (Chawla & Cushing, 2007; Palmer et al., 1998; Palmer et al., 1999). Recent studies (Easton et al., 2009; S. J. Hsu, 2009) also indicate that personal experiences in the natural environment are important in influencing pro-environmental individuals.

Studies report other significant influences as including adult role models such as family, friends and mentors, student and environmental organizations, formal education, negative experiences of environmental degradation or fear of pollution or environmental disasters, books and other media, the individual’s principles or religious beliefs and on-the-job experience (Chawla, 1998b; S. J. Hsu, 2009). As these studies suggest, one of the top ten influences recognised is the category of ‘books and authors’ or ‘books and media’ (Chawla, 1998b; Chawla & Cushing, 2007). These previous studies did not assess the influence of fictional texts on the pro-environmental attitudes of the study participants. Rather they included scientific and ‘negative’ books within this group, such as Rachel Carson’s (1962) *Silent Spring* or the influence of general media (Palmer et al., 1999), in other studies influential books are grouped under ‘heroes’ such as a relative, author or fictional character (Corcoran, 1999) or ‘reading’. Corcoran’s study mentions only non-fiction authors and Chawla (2011) also reports that only non-fiction books were mentioned by participants in her interviews.
Within Palmer et al’s (1999, pp. 189 - 190) study of 82 Australian environmental educators, the nine most common single factors reported in the autobiographical statements about environmental educator’s formative influences and significant life experiences are as shown in Table 2.1.

*Table 2.1 Palmer’s 1999 most common formative pro-environmental influences.*

<table>
<thead>
<tr>
<th>Influence</th>
<th>Percentage response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood nature/outdoors</td>
<td>71%</td>
</tr>
<tr>
<td>Work</td>
<td>60%</td>
</tr>
<tr>
<td>Tertiary education</td>
<td>43%</td>
</tr>
<tr>
<td>Close family</td>
<td>35%</td>
</tr>
<tr>
<td>Older friends</td>
<td>35%</td>
</tr>
<tr>
<td>‘Negative’ books</td>
<td>23%</td>
</tr>
<tr>
<td>Friends</td>
<td>22%</td>
</tr>
<tr>
<td>Adult nature/outdoors</td>
<td>18%</td>
</tr>
<tr>
<td>Having children</td>
<td>16%</td>
</tr>
</tbody>
</table>

This list (Table 2.1) indicates that while only negative books are recorded in the study, the concept of influencing people’s reading material amongst Australians is a potential area of promoting pro-environmental attitudes. In a similar study in Taiwan a decade later Hsu (2009, p. 507) states that from the Taiwanese study ‘fifteen percent of the respondents were inspired by an influential book or author with environmental messages’ supporting the premise that the influence of books and authors on people’s pro-environmental attitudes remains a viable area of research.

Beyond the academic literature, very few pro-environmental individuals have mentioned that specific fictional narratives have made a difference to their values, attitudes or life choices (Canfield & Hendricks, 2006; Sabine & Sabine, 1983). After interviewing scientists, Newbold (2000) identifies ten individuals influenced by non-fiction books including James Lovelock, the independent inventor and proponent of the Gaia hypothesis, who identifies himself as a SF reader. In his book *Gold*, Isaac Asimov (1996) details individuals who have chosen science
based career paths due to their fiction reading. He mentions one individual who chose a career path in robotics after reading his robot stories, and another who chose nuclear physics after reading stories by H G Wells. Psychology is currently examining the influence of literature in changing people’s lives through Bibliotherapy (E. F. Brown, 1975; Burns, 2009; Shechtman, 2009) as is discussed in Section 2.11. However, there is an absence of academic literature on research into the influence of fiction on life choices of environmental educators.

Environmental educators vary in their training and their knowledge about the environment. However their interest and attachment to the environment appears to surface if they teach about their passion (Hart, 2003; Hungerford & Simmons, 2003). In Australia, like many western countries, environmental education is integrated by classroom teachers within the various school curricula. The lack of passion for the environment and environmental knowledge amongst these typical classroom teachers is of concern to some academics. Cutter-Mackenzie and Smith (2003) state that

> There is a dearth of empirical research about primary school teachers’ knowledge of environmental education and to the degree in which teachers’ knowledge inhibits environmental education practice. (p. 497).

One of the key findings in their study is that the classroom teachers they interviewed were more intent on creating environmentally friendly values amongst their students rather than teaching specific environmental facts.

> [T]he majority of the pilot survey sample considered that the essential aim of environmental education should be to develop either ‘attitudes and values’ (46.1%) or ‘action’ (25%). (p. 512)

The implications of this study into the lack of specific environmental knowledge amongst class-room teachers are reported as a concern that students may leave school with incorrect or incomplete environmental information (Cutter-Mackenzie & Smith, 2003). While lack of teacher knowledge is the focus, this key finding of the classroom teachers’ different perceived learning priority of attitude and value formation is not further explored.

The literature suggests that in order to encourage people to become pro-environmental they need to have enjoyed experiences in natural surroundings,
been influenced by others, family or friends and had a variety of different input styles to reinforce the message or values (Ballantyne & Packer, 2005; Falk, 2005; Palmer et al., 1999; Rickinson, 2001; Zelezny, 1999). The increasing lack of opportunities for young people to experience the natural environment (Kellert, 2002; Monroe, 2003), has led to the identification of Ecophobia (Sobel, 1996) and Nature Deficit Disorder (Louv, 2008) amongst children that has resulted in academic calls for discovering and examining alternative strategies to encourage pro-environmental behaviour (NGough, 2002; Rickinson, 2001; Scott, 2009).

While all environmental education focuses on caring for the environment, the methods of approach and definitions of ‘environmental education’ differ across a spectrum of paradigms and presentation priorities. The ongoing debate sees environmental education as ‘education in the environment, education about the environment and education for the environment’ (Kopnina, 2012; Reid, 2009; Yencken & Wilkinson, 2000). The debate about the definition of environmental education covers a spectrum of understanding ranging from the conservation or natural history proponents (Ballantyne, Packer, Hughes, & Dierking, 2007; Monroe, 2003), through to the sceptics who see environmental education as ‘green wash’, a politically correct veneer of pro-environmental concern covering continuing environmentally destructive behaviours (Jucker, 2011). Environmental education is also described by some as cultural transformation, requiring a new world view questioning and revising current priorities (Jackson, 2011), such as in acceptance of exponential growth. Others see environmental education as incorporating capacity building for sustainable living (Tilbury, 2004), or as necessary for taking strategic actions to care for the environment (Chawla & Cushing, 2007), including calls for social change (Courtenay-Hall & Rogers, 2002). For further information on Education for Sustainability and Environmental Education as it relates to this thesis please see Appendix 3. This debate has also led to studies in new disciplines such as Conservation Psychology and Ecopsychology (Chawla, 2008; Clayton, 2012; Clayton & Myers, 2009; Louv, 2008) which are examining how people care and relate to nature.
Usually environmental information is presented deliberately in a structured setting (Ash & Wells, 2006), such as a classroom, or in an environmental education centre, zoo or museum, (Ballantyne & Packer, 2009; Ballantyne et al., 2007; Falk, 2005; Kellert, 2002) encouraging constructive learning from the experience with the individual building on their previous knowledge (Dillon, 2003). The effectiveness of this deliberate experience has been questioned, with Lowrie (1986) describing scientific information as ‘heavy’ which in turn makes it difficult to interest individuals in pursuing; while Reid (2009, p. 137) also recounts a description of environmental education as ‘boring’. Identification and recognition of this issue has been raised and suggestions on how to make environmental information more accessible to individuals has been discussed (Bierbaum, 2004; N Gough, 2003a; S. Gough, 1999; McLoughlin & Young, 2005), yet longitudinal research into alternative strategies is limited (Falk, 2005; Gralton, Sinclair, & Purnell, 2004).

Lowrie (1986) also highlights another issue still confronting environmental educators when she says “one failing of programs is they attract the already converted ... The challenge is the unconverted.” (Lowrie, 1986, p. 17) This is further corroborated by Hobbs more than ten years later, “Frequently it is not the message itself, but how it is packaged, that makes the difference” and “the changing nature of the world in which we live and work makes the need for better and more effective communication almost a pre-requisite for survival” (Hobbs, 1998, p. 24). The lack of access to the natural environment as people increasingly live in cities means this avenue of influence will progressively diminish and other avenues will be necessary. One mention of an alternative way of encouraging pro-environmental behaviour within highly citified people is through the ‘Pigeon Paradox’, which involves the care of urban species, such as pigeons and rats, as a hands-on contact for individuals with the natural world in a situation, such as a city high-rise apartment block, where native species cannot be reintroduced (Dunn, Gavin, Sanchez, & Solomon, 2006).
2.2 Emotions influence thinking

Positive pro-environmental action is linked to enduring memory, which is often tied to positive emotions (Ballantyne & Packer, 2005; Clayton & Myers, 2009; Fredrickson & Branigan, 2005). Lowrie (1986) and other researchers believe that to encourage memory of environmental information the experience should be fun, creative and social. (Krathwohl, Bloom, & Masia, 1973; Talarico, Berntsen, & Rubin, 2008). Recognition that positive emotions from experiences and attraction to charismatic animals have been identified as significant pro-environmental influences (Dillahunt, Becker, Mankoff, & Kraut, 2008, May; Swonke, 2000), ties in with the emotion literature, indicating that positive emotions are more likely to result in longer-term retention of information (Appel & Richter, 2007; Sousa, 2006).

Within environmental education research, the consensus appears to be that emotions significantly influence the way individuals think about pro-environmental knowledge, attitudes and behaviours. (Ballantyne, Fien, & Packer, 2001; Ballantyne & Packer, 2005; Blakemore & Frith, 2005; Clore & Huntsinger, 2007). Psychology, advertising and media studies confirm that if people feel positive about a subject such as the environment, they are likely to care more for it (Escalas, 2004; Fredrickson, 2004; Fredrickson & Branigan, 2005; Zillmann & Vorderer, 2000).

Emotions are a powerful tool in learning and can alter the way individuals view information presented to them (Escalas, 2004; Vaughn, Hesse, Petkova, & Trudeau, 2009). According to the literature, if emotions created are positive, individuals are more likely to see a broader picture of the information presented, as a global or holistic view of the information; whereas if the emotions created are negative, individuals tend to have only a local, specific interest (Clore & Huntsinger, 2007; Clore & Palmer, 2008; Radford, 2003). Positive emotions are also reported to increase memory of peripheral details (Talarico et al., 2008) and an individual’s interest in a topic (Ballantyne & Packer, 2005) which, in turn, leads to elaborating on the information and extended retention of the information (Petty, Cacioppo, Strathman, & Priester, 2005).
Fiction can generate both positive and negative emotions, playing a significant role in an individual’s absorption of information from the storyline and characters providing an opportunity for personal exploration and recognition of emotions and situations with which individuals are not familiar (DeBono, 1976; Mar et al., 2008; Oatley, 2009, p. 211; Strange, 2002). There is discussion as to the influence of these memories from fiction, with these vicarious reading experiences being described as important as real life experiences by some researchers (Blakemore & Frith, 2005; Mar et al., 2006), while others (Gordon, Gerrig, & Franklin, 2009) dispute these findings. Gordon et al. suggest that imaginary emotions and memories are different to real world emotions and memories due to their lack of sensory and specific data, including their lack of vividness.

The inference here is that if individuals feel positive about adventures in the natural environment they are inclined to investigate similar experiences and look for further information by more reading. They are more likely to feel positive about what they read; subsequently, they are likely to remember more information.

**2.3 Change in belief**

Within environmental education research some researchers state that actual physical experience is the best method of changing individuals’ values to appreciate the natural environment (Kollmuss & Agyeman, 2002; Maiteny, 2002) but this is not the only indicator. Pro-environmental influences reported in research include demographic, social, economic and internal factors such as previous knowledge, values and attitudes, locus of control and responsibilities (Kollmuss & Agyeman, 2002, p. 239). However, the greater problem identified in promoting these values is that of internal barriers to the action, such as practicality (Chawla & Cushing, 2007), and it is reported that if these pro-environmental actions become too difficult to maintain, people will walk away (Maiteny, 2002; Schultz & Kaiser, 2012) as individual’s inner beliefs are more likely to remain in control of their long-term actions rather than external regulations (McKenzie-Mohr & Smith, 1999; Scott, 2002).
However, within education research generally, others state that individuals’ beliefs may be changed just as effectively through fictional sources (See Section 2.7 & 2.8) (Green & Brock, 2005; Mar et al., 2006) and that stories are a positive method for instruction as it is easier to believe a story than disbelieve it (Gilbert, 1991; Marsh, Meade, & Roediger, 2003; Shrum, 2004).

Research into readers’ preferences in texts indicates that for some individuals, specific transformative books have opened the individual’s eyes to a different perspective on a subject and changed their beliefs or attitudes to aspects of the world.

Sometimes the encounter with the significant book was accidental, since the book was read initially for some other purpose…In about one quarter of all cases, readers said the book was a model for living … offered examples to follow, rules to live by, and sometimes inspiration. In some cases reading changed the readers’ beliefs, attitudes or pictures of the world, which change in turn altered the way readers chose to live their lives after the book was closed. (Ross, 1999, p. 791).

Research into learning from accidental sources includes studies into serendipitous information gathering or opportunistic acquisition of information that have recorded empirical data, confirming that people react inconsistently when deliberately presented with information that is useful to them in another aspect of their lives (Erdelez, 2004) but often act on what they have discovered (Foster & Ford, 2003; Heinstrom, 2006; Ross, 1999). In discussing serendipitous information gathering Ross said, “Readers choose books for the pleasure anticipated in the reading itself, but then, apparently serendipitously, they encounter material that helps them in the context of their lives.” (1999, p. 785). This indicates that pro-environmental information which influences environmentalists’ lives and values, may have been gained from books they read for pleasure.

Within environmental publications Mongillo and Booth (2001) found one environmental activist mentioned Aldo Leopold’s (1987) *A Sand Country Almanac* and the children’s book *The Lorax* (Seuss, 2002) as “inspirational and are the sources of many of his ideas” (p. 148). Newbold’s (2000) biographies of environmentalists details 10 influential texts from the 16 interviewees including
non-fiction texts such as James Lovelock’s recall of an interest in organic chemistry, and other environmentalists’ early interests in biology, astronomy and biographies of scientists. Journal articles on research into the influential books mentioned by environmentalists in the reported studies on pro-environmental influences in Section 2.1 include non-fiction texts such as Rachel Carson’s (1962) *Silent Spring* (Palmer et al., 1999), or are general in their details such as “Influential book or author with environmental messages” (S. J. Hsu, 2009, p. 507).

### 2.4 Calls to encourage pro-environmentalism

Environmental educators worldwide (N Gough, 2003a; McLoughlin & Young, 2005; Stephenson, 2007) are calling for alternative ways to teach people about current issues such as climate change, greenhouse gases and water shortages because the current methods have been described, as ‘boring’ by some observers (Reid, 2009). As the most influential method of encouraging pro-environmental behaviour, that of experience in natural surroundings is diminishing (Dunn et al., 2006; Louv, 2008; Orr, 1989; Williams, Podeschi, Palmer, Schwadel, & Meyler, 2012), alternative influences need to be considered. For many years environmental educators have been concerned with “The Gap” between environmental attitudes and concrete actions such as is indicated in the article by Kollmuss & Agyeman (2002) who state that individuals require more than knowledge alone to make pro-environmental choices. They suggest pro-environmental attitudes lead to an individual’s modified values and then to actions. This report has been hotly debated amongst other environmental educators and researchers in the journal *Environmental Education Research* in 2002. Thus, the debate on what makes people environmentally active remains an enduring discussion.

The articles in the 2002 journal suggest that barriers appear to be the main reasons individuals’ knowledge is not translated automatically into actions. Other mitigating factors for pro-environmental attitudes and actions listed include emotional involvement, gender, awareness of environmental issues, and the individual’s locus of control over the issues (Kollmuss & Agyeman, 2002). While
other authors suggest cultural, intergenerational and political biases may indicate barriers to pro-environmental behaviour (O'Donoghue & Lotza-Sisitka, 2002). Chawla in a later report agrees that information is not enough to institute action, that “the antecedents of action are much more complex than knowledge alone” (Chawla & Cushing, 2007, p. 437). Subsequent researchers also agree, reminding readers of the importance of positive emotions in maintaining actions with knowledge (Ballantyne & Packer, 2005).

Questions about the ability of literature to influence pro-environmental attitudes in individuals have been asked (Reid, Payne, & Cutter-Mackenzie, 2010), and calls to address environmental issues in children’s literature have been made (Bigger & Webb, 2010), but research into the most effective types of texts to influence children, at this most effective stage for establishing and influencing life-long values, does not appear to have been considered to date. Texts influence how children see the world and how they form their attitudes and values. The research states (Williams et al., 2012) that a decrease in the coverage of nature in textbooks, television programs and magazines coupled with the fact that modern books are now usually set in built environments suggests an even greater distancing of children from experiences with the natural environment resulting in a decrease in pro-environmental attitudes.

However Williams et al.’s references to Mobley, Vagias & de Ward (2010) and Wells and Davey Zeece (2007) cloud the veracity of this finding, as Mobley et al. extrapolate their findings from on-line readers of the National Geographic website to the general population, and Wells et al. are discussing books with factual information and texts rather than fictional tales. Other recent research is also looking into the influence of texts on children by focussing on the factual correctness of the science rather than the storyline on the influence of these texts on children (Christenson, 2008). This focusing on factual informational texts and pictures ignores the usefulness of fiction in influencing social behaviour and skills.
2.5 Storytelling

Storytelling is an ancient art still practised by most cultures where information is passed from generation to generation by word of mouth through storytelling, or through pictures via rock carvings and cave art. This historical affinity for stories was an important part of education and entertainment in pre-literate civilizations. Storytelling used amazing or magical worlds to teach how to overcome some of the difficulties or trials in life (Andrew, 2002). One of the main advantages of storytelling is its ability to transmit locally identifiable ideas, images and emotions to a specific audience by highlighting local cues (Cassady, 1994; MacDonald, 1999) to make the message more meaningful. Modern storytelling also includes the narratives available in electronic media, such as those on the internet and television (Appel & Richter, 2007; J. Hsu, 2008; Weimann, 2000).

In our Australian society, as among many societies worldwide, fictional narratives or stories are an important form of interpersonal communication (Fien & Passingham, 2002; A. Gough, 1997; N Gough, 2002; J. Hsu, 2008; Kola-Olusanya, 2005; Mar et al., 2006; McNaughton, 2004). Societies find narratives useful for better understanding their own, and other people’s, emotions and situations (Biocca, 2002; Djikic, Oatley, Zoeterman, & Peterson, 2009; Graesser, Olde, & Klettke, 2002; Jacobs, 2002; Oatley, 2009), and individuals appear to find narratives easier to remember and understand than rhetoric (Green & Brock, 2005; J. Hsu, 2008; Mar & Oatley, 2008). The literature also states that an individual tends to believe what he/she reads, even if it is incorrect (Graesser et al., 2002; Mar & Oatley, 2008; Prentice & Gerrig, 1999).

Stories are useful in helping individuals define self-image, their own place within society and culture. As culture is always changing, stories help share these changing ideas and encourage community making (Schank & Berman, 2002). In self-learning, stories can represent ways of taking action or to give a different voice in a situation. They are described as a crossroads, a place where people can meet and discuss, to look for commonality, to learn and expand horizons to help make sense of things, to evaluate and integrate ideas. All these reasons give
stories great potential power in communicating environmental issues to a broader audience (Dyson & Genishi, 1994; Hakemulder, 2008; Mar et al., 2008).

Researchers suggest it is the power of narratives that make stories easy to understand because people’s minds are “naturally wired for stories” (Graesser et al., 2002; Green & Brock, 2005, p. 121; Green & Donahue, 2008) and that individuals put themselves into the stories and use their learning from them in their daily lives as they see fit (Schank & Berman, 2002). Fiction is a well-used and valuable learning experience for children (L. K. Fazio & Marsh, 2008a; Morrow & Gambrell, 2000) as it may be used to provide reassurance, moral guidance, explanations and warnings in a readily understandable and acceptable format, as well as providing recreational entertainment (Gabriel, 2000). The reasons people give for reading fiction go beyond the entertainment and relaxation available and include learning survival skills, self-knowledge, a feeling of immortality, and when looking for intelligence in a mate (Green & Donahue, 2008).

Deliberate learning opportunities are developed both at home during early childhood and later in school English curricula, as fictional stories are employed to intentionally inform and influence students of all ages (Culp, 1985; Morrow & Gambrell, 2000; Russell, 1958). This power of influential reading developed last century into the modern psychological method of Bibliotherapy; which is a form of patient education through reading specific books targeting patient relevant social or behavioural issues (Burns, 2009; Oatley, Mar, & Djikic, 2012; Shechtman, 2009).

2.6 Previous research into Favourite books

The research mentioned so far suggests that reading influences individuals; however, reported research into influential or favourite books is limited. This may be due to the variety of socioeconomic groups surveyed and the continual changes in popular texts creating difficulty in validating the data collected (Guthrie & Greaney, 1991). While commercial booksellers have current popular lists, and institutions such as the Australian Broadcasting Commission ask their audiences
to vote on their most popular books (Commission, 2011b) there is little empirical research reported in journals. One of the most often quoted texts on influential reading is Sabine and Sabine’s (1983) *Books That Made the Difference* which details the influential books of a diverse group of US citizens. Within the book most texts are only mentioned once, except the Bible, which receives 15 entries.

Larsen’s (1996) study examining reading habits of three generations of Scandinavian families reports that significant memories of favourite books were often associated with significant personal memories of the time. These memorable texts were often read when the participants were in early adulthood and that “at least some of the memories apparently become a long-lasting ingredient of one’s life history in the same way as some personal experiences… reading is not only for momentary pleasure, but for life.” (p. 589). Further discussion of the ages of participants when they read these memorable books is in Section 2.11 where the ages of memory are detailed.

As participants in this study are asked about their favourite books, existing literature examining teachers’ preferred texts should be an informative benchmarking tool and a valuable comparison. Reports on this appear limited to Russell’s (1949) research into teachers’ favourite texts to pass on to students. Russell surveyed 680 teachers hypothesising that their highly significant books would reflect the importance of these texts to the teachers.

The total influence of a book on a child’s development can never be evaluated in terms of his adult memories of the book, but there is some reason to believe that highly significant reactions to a story will be remembered longer than less significant experiences. If an adult remembers certain parts or effects of a book read as a child, it may be argued that these passages or effects were fairly important influences on his development during childhood and adolescence (p. 477)

### 2.7 Fiction / Narrative can change beliefs

Through structured reading, such as in Psychology’s Bibliotherapy, or through reading for personal preference, individuals use fiction as a source of information about emotions (Green & Brock, 2005; Mar et al., 2006; Ross, 1999). They tend to understand the feelings created by the stories at their own personal level,
blending the information from the story with their previous self-understanding (Larsen, 1996) and using their personal history to help make sense of the emotions and information they read about in the narrative. (J. Hsu, 2008; Miall & Kuiken, 2002; Polichak & Gerrig, 2002; Radway, 2002). The strongest impact of these emotions and the information from the narrative is where the readers have empathy with the main character (Mar & Oatley, 2008; Schank & Berman, 2002) or know part of the setting, so they can concentrate on the new information they are receiving (Mazzocco et al., 2007).

Research indicates that the line differentiating memories of fictional happenings in the stories and happenings in the real world can also become blurred for readers (Biocca, 2002; Marsh et al., 2003; Prentice & Gerrig, 1999). When retaining information in memory, individuals usually store the data recently acquired with the source of the information; these details are known as memory tags (Zunshine, 2006). Memory tags identifying the original source of the information are often mentally misplaced over time, and so false facts, emotions and values from a fictional narrative may be transferred unchecked to real world usage (L. K. Fazio & Marsh, 2008a; Gerrig & Prentice, 1991; Gilbert, 1991; Marsh et al., 2003; Oatley, 2002a; Polichak & Gerrig, 2002; Strange, 2002). The ramifications of losing such memory tags mean that although individuals rely on their accumulated knowledge, some information being relied upon in a situation may be misleading or incorrect (L. K. Fazio & Marsh, 2008b; Prentice & Gerrig, 1999).

In order to test if and how individuals are influenced by what they receive from fiction, empirical research has been undertaken showing children learn incorrect information from stories, (L. K. Fazio & Marsh, 2008a) which they subsequently believe is true (Marsh et al., 2003). Research has also been undertaken into adults belief of blatantly incorrect information from fictional sources (Graesser et al., 2002; Green & Donahue, 2008; Marsh et al., 2003; Strange, 2002) with the adult group believing falsehoods (Prentice & Gerrig, 1999) such as “mental illness is contagious and chocolate helps you lose weight” (Green & Brock, 2005, p. 123; Prentice & Gerrig, 1999).
Information from fictional sources may also change attitudes. Further studies showing that an individual’s change in attitude from a fictional source can also alter their subsequent beliefs and actions (Eraut, 2000; Gerrig & Prentice, 1991; Graesser et al., 2002; Green & Brock, 2000; Hakemulder, 2008; Mar et al., 2008; Mar et al., 2006; Oatley, 2002a; Prentice & Gerrig, 1999; M.D Slater & Rouner, 2002). This influence from fiction is not confined to reading; there are also reports on the influence on audience beliefs from fictional narratives on television (Appel 2008) and through radio programs (Singhal et al., 2004).

These reports on attitude change due to fiction are not isolated cases and may be beneficial. According to Mar, in 2000, Hakemulder

searched the psychological literature and found 54 experimental studies that satisfied criteria of reliability and validity, in which fictional narratives promoted moral development, improved empathy, and changed norms, values and self-concepts. (Mar et al., 2008, p. 130)

These reported changes in beliefs and attitudes are usually linked to social skills and abilities (Mar et al., 2006), emotional knowledge (Djikic et al., 2009), changes in social beliefs and social issues (Slater & Rouner, 2002) and as simulation of life for learning (Mar et al., 2008; Oatley, 2002a). Despite being a social issue, environmental issues do not appear to be included in any of the reported studies.

**2.8 Transportation**

In some cases, where the storyline and characters are believable, some individuals are convinced that the fiction is true (Green & Brock, 2005). Melanie Green and colleagues believe that readers mentally transport themselves into novels and, rather than suspending disbelief, suspend the real world in order to inhabit the created world of the fictional narrative. Individuals become enmeshed in the characters or storyline of the narrative and become transported into the fictional setting. It has been reported that the more transported individuals are, the more they believe the information in the narrative (Green & Brock, 2005) and the more likely they are to take the information back to the real world (Hakemulder, 2008).
The more individuals are transported, the more likely they are to adopt attitudes and beliefs explicitly or implicitly implied by a narrative, even a fictional narrative (Escalas, 2004; Green, 2004; Green & Brock, 2000; Green & Brock, 2005; Green et al., 2008; Mar & Oatley, 2008; M.D Slater & Rouner, 2002; Strange, 2002; Vaughn et al., 2009). However, emotions go both ways, with readers’ real world emotions and moods influencing their acceptance of the reading experience. Research has shown that negative feelings or disbelief diminish and positive moods increase the transportation effect (Vaughn et al., 2009).

Reports state that the depth of transportation does not depend on the quality or genre of the literature; rather it depends on the quality of the prose. Examples of quality prose here include vivid descriptions and emotional responses which are more likely to create significant transportation (Green & Brock, 2005), and the more transported the reader is, the less likely they are to notice false information in the storyline (Green & Brock, 2002). While it is difficult to manipulate readers’ transportation experiences (Green, 2004), Green & Brock suggest that there are five prerequisites for good transportation experiences:

1. Narrative persuasion is limited to story texts (a) that are in fact narratives, (b) in which images are evoked, and (c) in which readers’ beliefs are implicated.
2. Belief change occurs… to the extent that the evoked images are activated by psychological transportation, defined as a state in which readers become absorbed in the narrative world, leaving the real world behind, at least momentarily.
3. Propensity for transportation by exposure to a given narrative account is affected by attributes of recipients (e.g. imagery skill, transportability).
4. Propensity for transportation by exposure to a given narrative account is affected by attributes of the text. Among these moderating attributes are the level of artistic craftsmanship and the extent of adherence to narrative format.
5. Propensity for transportation by exposure to a given narrative account is affected by attributes of the context. Among these moderating attributes may be aspects of the context or medium that limit the opportunity for imaginative investment and participatory responses. (Brock & Green, 2005, p. 125)

However, exposure to a narrative does not guarantee an individual’s transportation experience. If the story has been heard before, or does not interest
the individual, or they disbelieve it because they know it to be untrue, then they will not be transported (Green & Brock, 2005). As specifics are not known as to why individuals choose to believe some parts of a story and not others, it has been suggested that trust in the source may be the key to this (Prentice & Gerrig, 1999). For the information in fiction to be accepted into the individual’s way of thinking with no questions asked, it must appear to be realistic, from a reliable source, and not contradict anything of which the reader is already aware (Slater, 2002; Zunshine, 2006).

Transportation is a powerful concept when looking at the influence of literature on attitudes and behaviours as individual’s memories are such that, if they were transported and later they are reminded of a scene, they will usually be able to reconstruct the basic storyline (Green & Brock, 2002). This indicates that peripheral information has been retained incidentally and is able to be recalled (Appel & Richter, 2007; Talarico et al., 2008). Research has found that while the specifics of an autobiographical memory may be vague, the overall thrust of the memory should be reliable (Chawla, 1999), so this overall thrust should transfer to individuals’ memories of literature. Although the reader may not remember the whole narrative, the reader should retain the plot outline or particularly emotive sequence, scene or character from the text.

Transportation has also been used to describe individuals’ entrancement with electronic media such as movies and television. However the research suggests that reading usually proves better at promoting transportation because the reader has the ability to proceed at their own rate, and so indulge in the aspects of the novel they particularly enjoy (Green & Brock, 2002). Empirical investigations to assess the impact of transportation on readers’ values and attitudes have shown that because the ideas or values are embedded in the story, it is hard for the individual to argue against the story, whereas if it were a piece of rhetorical prose, there would actually be an argument presented to refute (Green & Brock, 2002; Mar & Oatley, 2008; Prentice & Gerrig, 1999). It has been shown that the emotions and images from the fictional sources remain unchallenged and last...
longer in individuals’ memories than argument and so this could be a useful way to influence individuals (Green & Donahue, 2008; Slater & Rouner, 2002).

Sections 2.5, 2.6 and 2.7 show that storytelling and narrative are important methods of communication within our society that can be deliberately used to influence individuals’ attitudes and beliefs. They also acknowledge that correct and incorrect information can be gathered by individuals of all ages from texts, especially if the reader is transported by the text into the world of the story. The source of this information, which may later be relied on in the real world, may be forgotten, but the information remains with the individual.

2.9 Genre
This study is exploring the influence of fiction, so it is important to know what kind of fiction participants read and which authors and stories influenced them when they were children. There are a number of ways of viewing types or genres of texts. It may prove to be significant if one specific text appears often, or participants regularly mention a certain type or genre of book. Readers often return to a style of writing, a type of book or a particular author that they enjoy (Rosenberg, 1982). The memories and personal definitions of the texts that participants read indicate their opinions of genres rather than an academic view of the genres (Todorov, 2000), as such the results and discussion sections this study will be using their definitions of genre to maintain the legitimate voice of study participants.

Historically Aristotle and Plato are credited with creating the concept of genre where texts were divided into the four areas of tragedy, comedy, parody and lyric poetry (Chandler, 2000; Duff, 2000; Fowler, 1982). Since then, debate on genre has related to the current cultural and social mores of the era with ways of grouping texts reflecting content, ways of approaching the subject matter, and themes variously coming to the fore in the discussion. Although a traditional classification, genre is described as a cultural assumption defined by the individual with regard to their relevance of time or a specific need (Chandler, 2000).
While genre is a convenient literary labelling scheme, the inherent indicators or signs that a specific text belongs to a generic group are not prescriptive (Cobley, 2005; Dubrow, 1982; Fowler, 1982). Rather, they are culturally recognised signs - such as in the form of situation, plot or characters - understood by the readers as indicators that the text belongs to a generic type (Chandler, 2000; Rosenberg, 1982; Swales, 1990). Because of the mutability of the classifications of genre within fiction one individual’s definition of the genre of a specific novel may be different to another’s as they may define genres using different parameters (Brettell, 1997; Chandler, 2000; Fowler, 1982; Makaryk, 1993). Equally, a text may belong to a number of genres at the same time such as Tolstoy’s (2008) *War and Peace* which may be variously classified as romantic fiction, historical fiction and war fiction (Cobley, 2005; Fowler, 1982). However, texts are never without genre (Chandler, 2000).

Little research appears to have been done into the most influentially effective types of texts or genres, other than grouping them together as fiction or narrative and defining them as compelling or plausible (Green, Garst, & Brock, 2004; Mar & Oatley, 2008). However, some research suggests that an individual’s preferred entertainment genre will have the most impact on his/her implicit beliefs as this is when he/she is most relaxed and open to suggestion (Appel & Richter, 2007; Wyer & Adaval, 2004). Limited studies into which genres influence individuals’ attitudes and subsequent actions in Educational-Entertainment or Edutainment (see Section 2.14) indicate the broad areas of comedy and drama as the most influential genres (Poindexter, 2004). It is proposed that these are most successful because they generate interest in the story, putting the individual at ease and uncritically opening them up to the message within the entertainment (Green, Garst et al., 2004; Greenberg, Salmon, Patel, Beck, & Cole, 2004).

While fiction has proved useful in increasing social abilities and increasing social reasoning, the different psychological influences from different kinds of stories or genres have yet to be investigated (Oatley et al., 2012).
2.10 Ages of influence
Not only what texts are remembered, but also when participants undertook their most memorable reading may be an important indicator in this study. Middle childhood, covering the ages 8 to 11, appears in the various areas of academic literature as a significant time of influence for reading, emotional influence and attitude and value formation (Hart, 2003; Kola-Olusanya, 2005). Participants’ remembered favourite books could cover all age groups and text types so understanding the particularly significant age groups of development is important. It has been suggested that during middle childhood children gain an interest in the natural environment through legends, myths and stories with characters drawn from the natural environment (Kellert, 2002; Kola-Olusanya, 2005).

Guthrie and Greaney (1991) investigated the reasons people read, including the time they spent each day and the different kinds of reading material they used on a regular basis. Their report highlights the differences in developed world readers’ interests and text types among different age groups, sexes and generations. They listed preschool reading as mainly picture books and nursery rhymes, quoting a Japanese study saying children’s preferred books were “happy, full of life, complicated, well-illustrated and full of movement” (Guthrie & Greaney, 1991, p. 77). The popular reading material in elementary (or primary) school were described as varying according to age, sex and reading ability, and that classifying genre was difficult in these situations, as it was “quite subjective” (p. 77), but the “general reading interests include adventure, fantasy, mystery, sports and games, humor [sic] and especially animals” (p. 77). As the children progress through middle school their interests expand to include mystery stories and popular series books, such as Enid Blyton’s works, the Hardy Boys and Nancy Drew (p. 77). Towards the end of elementary school the boys interest have developed into reading more non-fiction texts, while the girls are reading popular novels. By high school Guthrie and Greaney see the interest in reading switching away from books to magazines and some comics, with more modern studies showing that boys were interested in war stories, sport, science fiction, history and spy novels such as James Bond. The girls developed an interest in books about love and
relationships, such as romance and historically themed novels. While accepting the conclusions reached from the studies, Guthrie and Greaney query the validity of the data gathered for this report. They recognise the difficulty in generalising their work as the variables within the studies used include family socio-economic issues, the availability of printed material to the children, library access and parental interest, support and example for reading.

Children learn to read at different ages, with many in developed countries beginning their reading experience by being told or read stories from picture books (Guthrie & Greaney, 1991; Meek, 1988; Shelley, 1990). The child’s interest in books then develops with their imaginations (Shelley, 1990) encouraging increasing interest in new topics. While children’s books are written to publishers’ criteria of word count and complexity of language (Wallin, 2010), the topics of the texts are not defined. Once the books are published, suggested reading ages are often omitted from the books because individuals learn to read at different rates (Zwartz, 2009). Formal education also recognises and tests reading ability as tied to ages for children, accepting that some children take longer than others to develop reading and comprehension skills. In NSW, due to the education system, literacy testing is undertaken in at various stages in primary and secondary school using a variety of text types (Government, 2012).

Kellert (2002) suggests that the first age for a perspective of nature as being between the ages of 3 and 6 years with nature fulfilling the child’s material needs and providing comfort and security. The second stage is identified as middle childhood, from 6 to 12 years of age, when children are appreciating natural creatures for their differentness and other settings in the wild piquing their curiosity. The most dramatic increases in children’s’ understanding of nature are between the ages of 9 and 12, and between 13 and 17 years when children exhibit an increase in their ecological and moral values “by treating other creatures with moral consideration” (Kahn, 1999, p. 18).
Figure 2.1 Ages of influence in childhood according to educationalists, environmental educators and psychologists. Differences in ages of stages of memory. Red: early; Yellow: middle & reminiscence bump; Green: teenage

| First Authors | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 2 | 0 |
| Ages of influence | c = early childhood; m = middle childhood; t = teenage |
| Kellert 2002 | c | c | c | m | m | m | m | m | m | t | t | t | t |
| Sobel 1999 | c | c | c | c | m | m | m | m | m | t | t | t | t |
| Pretty 2009 | c | c | c | c | m | m | m | m | m | t | t | t | t | t | t |
| Stages of memory | c = childhood amnesia; b= reminiscence bump |
| Janssen 2011 | c | c | c | c | b | b | b | b | b | b | b | b | b | b | b |
| Larsen 1996 | c | c | c | c | c | c | c | c | b | b | b | b | b | b | b | b |
| Rubin 1998 | c | c | c | c | c | c | c | c | b | b | b | b | b | b | b | b |
| Rathbone 2008 | c | c | c | c | c | c | c | c | b | b | b | b | b | b | b | b | b |
| Fitzgerald 1996 | c | c | c | c | c | c | c | c | c | c | c | b | b | b | b | b | b | b |
| Consensus Janssen 2011 | c | c | c | c | c | c | c | c | c | c | c | c | c | b | b | b | b | b |

Sobel (1996) defines the formative stages of understanding nature based on the child’s area of interest. Starting with the first stage in early childhood, 4 to 7 years, where children are interested in their home environment and the creatures they recognise there. The second stage is middle childhood, 8 to 11, when children become more adventurous in their local area; and the third stage, from 12 to 15 and beyond is where their area of influence encompasses the social space of where teenagers meet together, such as in a shopping centre. He sees involvement and empathy building with animals as important in the first stage, followed by
adventures in the natural environment in the second, and social and moral action as appropriate in the third (Sobel, 1996, pp. 13 - 27). Pretty et al (2009) suggest the three ages are the first age of up to 5 years of age when parental influences are greatest, the second is from 6 to 11 years of age, when children develop cognitive capacities and develop memories; and the third age, from 12 to 18 when children form their own opinions and independence.

The alignment of these three classifications of formative stages of child development (Kellert, 2002; Pretty et al., 2009; Sobel, 1996) are useful in looking at participants’ reading for this study as they are similar in both their age groupings and the indicators of childhood development. Amalgamating these concepts indicates a trend revealing that in children’s first stage of development, of up to about age 7, is when they are beginning to read, their interest is in their known environment as influenced by their parents and they see nature fulfilling their material needs for comfort and security. In the second stage, ages 8 to 11, as they are becoming more independent in their reading and developing more cognitive capacity, children begin appreciating and understanding natural creatures and other environments. In the third stage, from 12 years to late teens, children are forming their own opinions and moral independence, exploring more of their local social environment. Figure 2.1 illustrates this alignment of middle childhood within the three areas of interest. It includes ages of significant memory, which are discussed in Section 2.11 about Memory.

2.11 Memory
In research into individual’s memories of favourite books, Janssen and colleagues (2007) state that adults retain three or four ages of autobiographical memories of varying complexity and depth, depending on the age of the subject. These autobiographical memories are listed as 1) ‘childhood amnesia’, where few memories remain, 2) the ‘reminiscence bump’ of adolescence and early adulthood where many memories are recalled, then 3) a period of few memories before the final 4) ‘recency or retention effect’ of memories from the last few years (Janssen et al., 2007, pp. 755 - 756). Studies identify adolescence and early adulthood as the period of life when individuals experience the reminiscence bump (Janssen,
Rubin, & St. Jacques, 2011; Larsen, 1996; Rathbone, Moulin, & Conway, 2008; Rubin, Rahhal, & Poon, 1998). As shown in Figure 2.1, these studies show minor differences in the ages consistent for the reminiscence bump, with the consensus age group being 10 to 30 years of age. However, Janssen’s study identifying subjects’ memories of favourite books (Janssen et al., 2011) lists the age of best memory as 10 - 40 years of age.

This information reflects on this research by suggesting that participants in this study may not remember early childhood books, rather they may recall the texts they encountered in and after high school. If participants do remember early childhood books, research suggests it is because they are particularly relevant to their life or recent situation (Janssen et al., 2007). It would appear that significant memories if these texts are what is known as a Sleeper Effect, where remembered information has been gathered from an unusually vivid or relevant experience (Gordon et al., 2009) and may increase in importance for the individual over time (Appel & Richter, 2007).

The individual’s use of information accompanied with a lack of conscious memory of the source of information is significant in this study as the participants’ attitudes and ongoing knowledge are influenced by the information they have accumulated. Memories of special events or significant life experiences are often stored with emotions that act as prompts or cues to his/her remembering the specific information or adding to their prior knowledge (Blakemore & Frith, 2005; Mazzocco et al., 2007; Sousa, 2006). Inconclusive investigations have been undertaken by various disciplines to discover why some information is retained by individuals while other data is forgotten (Petty et al., 2005; Prentice & Gerrig, 1999).

Research into strategies to encourage retention of information from media indicates that deliberate manipulation of stories occurs to influences individuals’ perceptions and the likelihood of them remembering the information (Erdelyi & Zizak, 2004; Weimann, 2000). Within advertising Chip and Dan Heath describe their strategy for encouraging retention of information as the SUCCES method where, for the information to be retained, it needs to follow the principles of being
Simple, Unexpected, Concrete, Credible, Emotional, and Stories (Heath & Heath, 2007). While authors may not recognise these principles as advertising techniques, many fictional stories follow similar ideas.

As mentioned in Sections 2.7 and 2.8, in literature, according to Zunshine (2006), some information from such stories may be accepted unchallenged by individuals because either they trust the source of the information, or the information doesn’t appear to be worth worrying about at the time often due to other distractions. This information is then accepted by the individual in a suppositional format and when it has proved accurate, the origin of the information may be forgotten as the memory tags that identified the source of the information are lost and it becomes an accepted truth (Zunshine, 2006).

Appel and Richter (2007) also see the loss of memory tags as a significant problem in individuals’ beliefs in what they read in fiction. They see this loss as contributing to an ‘absolute sleeper effect’ whereby the individual remembers the information but forgets if the source was reliable or not. The individual then relies on the information because it is in their memory (Appel & Richter, 2007) not because it has been mentally judged reliable. This coincides with Livingstone’s (2006) and others’ (Alexander & Jetton, 2000) findings in implicit learning where information is retained tacitly and used in everyday life.

The reliability of memory for research has been addressed in various literature as retelling stories is how individuals reflect what they have learnt over time (Chawla, 1998a; Clough, 2002; Kellehear, 1993) and contains a mixture of events and personal facts (Janssen et al., 2007). Further reports highlight that autobiographical memory may not be exactly correct, but rather may reflect the overall thrust of the situation (Chawla, 1999; Wagenaar, 1986). These studies have used such memories for previous research and relying on participants’ memories in this study is appropriate as the books identified may reveal a trend or theme the participants have not identified.
2.12 Memory and the learning spectrum

Individuals remember information from a variety of sources and situations, and just as their learning styles differ, so does their individual retention of information from the situation. Traditional methods for environmental education encompass formal and informal settings, including educational institutions from primary to tertiary level, through to environmental activities such as Landcare and Clean Up Australia, to museums and nature parks where hands-on experiences with nature are encouraged. However, environmental learning goes beyond deliberate educational interventions.

Educationalists have broadly divided learning into categories such as the situational categories; formal, non-formal and informal (Livingstone, 2001; M. Smith, 2006, p. 437), and by intent to learn (Colley, Hodkinson, & Malcolm, 2002; Marsick & Watkins, 2001). Within ‘intent to learn’ there are a variety of paradigms (Colley et al., 2002) describing recognition of an individual’s ability to collect and use information from a wide variety of sources. This review is privileging informal or tacit learning as it is relevant to this study.

Informal learning can be further broken down into the deliberate action of self-directed learning, and the non-deliberate actions of socialisation and incidental learning (Schugurensky, 2006). Within these two non-deliberate areas individuals learn such things as values, attitudes, behaviours and skills. This is done by observing others, often family members and close associates, and by tacitly absorbing information presented in a variety of forms, from workplaces to entertainment (Jarvis, Holford, & Griffin, 1998; Marsick & Watkins, 2001; M. K. Smith, 1999, 2008).

The informal learning spectrum is recognised in education as including situations where individuals unintentionally pick up information but recognise the use of the information. These are through tacit learning – where the contents are not a part of one’s normal consciousness, but useful in everyday life (Livingstone, 2006); through to peripheral learning – learning skills from the periphery of a group, such as through an apprenticeship (Hawkins, 1973; Heywood, 2001; Lave & Wenger, 1991). The next area is through implicit learning – such as learning social or
cultural norms at home, at school or in the workplace (Marsick & Watkins, 2001), and finally education through lifelong learning – observing the world and others in it from birth throughout life, using all the senses and all opportunities (Livingstone, 2006).

This informal learning spectrum depends upon an individual’s ability to absorb the information by relying on a myriad of conditions; some of which include an ability to understand the information being presented, an inclination to believe the information, and the trustworthiness of the source. Other factors include age and previous knowledge or experience, interest in the subject, metacognitive ability and emotions, both at the time and related to the subject (Kalantzis & Cope, 2008; Marsick & Watkins, 2001). However, The research states that no learning is specifically explicit or implicit, but rather a compilation of various learning incidents. Smith (1999, 2008) refers to Reber and Eraut when he mentions the concept of a ‘continuum’ in implicit learning (M. K. Smith, 1999, 2008, p. 5), suggesting that implicit knowledge, once recognised, can become explicit. This paradigm is further explored with psychologists investigating the influence of personality traits in ‘serendipitous learning’ (Erdelez, 2004; Foster & Ford, 2003; Heinstrom, 2006). Serendipitous learning involves fortuitous accidents in finding information for one problem while looking at something else. An example of this comes from Erdelez (2004), who describes a research study where students were presented with information for one university assignment while participating in another university task, while Williamson (1998) found that the participants of her research study could identify times when they had found information serendipitously from friends and media programs.

The learning gained from reading fiction is incidental or tacit and may be greater than initially realised by individuals. Eraut (2000) describes the learning occurring between implicit and deliberate as reactive learning. The knowledge recognised here is not deliberately sought, but rather eventually acknowledged, often without conscious memory of the source, or sources, of the information. While Coffield (2000) sees this knowledge as invaluable as he describes formal learning as the
‘tip of the iceberg’ of knowledge, with informal learning the significant, but unrecognised two-thirds of knowledge individuals obtain.

While both formal and informal learning may occur at the same time, the amount of learning actually done through incidental means is often underestimated by individuals (Eraut, 2000; Livingstone, 2006) because it is difficult to isolate the incidental from the intentional learning (Erdelez, 2004). Identifying, testing and assessing incidental learning has been recognised as a challenge at the best of times (Schugurensky, 2006), as individuals are affected differently depending on their prior knowledge of the situation or information mentioned in the situation (Mazzocco et al., 2007). Reber (1993) suggests that implicit learning should be examined in a setting in which the acquisition process is unlikely to have been contaminated by previous learning or pre-existing knowledge. However, outside laboratory conditions, with general knowledge this would be almost impossible.

Researchers (Callanan & Braswell, 2006; Eraut, 2000; Livingstone, 2006; Stadler & Frensch, 1998) are calling for further exploration of this area of study as recent projects have included both direct observation in situation, and in-depth interviewing in an attempt to explain incidental learning. The validity difficulties of self-reporting and researcher presumptions in these studies are identified and acknowledged (Livingstone, 2006; Stadler & Frensch, 1998) and the complexity of understanding implicit learning is highlighted by Stadler & Frensch (1998) when recognising that an individual’s implicit knowledge may originate from an unrecalled source or explicit learning situation.

Unexpected learning also occurs during the process of Bibliotherapy where psychologists use reading stories as a deliberate learning experience (Section 2.7). They acknowledge that this happens especially if the reader is not guided in what they are reading (Shechtman, 2009). Participants in this study may remember texts or information gained in childhood, although, due to the passing of time and the vagaries of memory, they may not remember the exact texts. Some of the memory research suggests the highest retention rate of texts will be from the adolescent / early adulthood period as discussed in Section 2.11 (Fitzgerald, 1996; Janssen et al., 2007; Larsen, 1996; Rathbone et al., 2008; Rubin et al., 1998),
while other research suggests that middle childhood may provide the highest number of memories (Kellert, 2002; Kola-Olusanya, 2005). Unexpected learning from fiction is a form of incidental learning which is then defined as reactive learning (Eraut, 2000) when the individual realises that they are using the information serendipitously gathered.

2.13 Mental processing of information
Discussion of what individuals remember must involve examination of the research into the mental processes used in memory and processing information. For individuals to use information they have received - be it from a deliberate search or gained incidentally, they must be able to remember the information, if not the source.

In the literature (Appel & Richter, 2007; Brock & Green, 2005; Green, Brock, & Kaufman, 2004), two main models are used for understand individuals’ abilities to process information; the Heuristic-Systemic Model (HSM) of Chaiken and colleagues (Chen & Chaiken, 1999), and Petty and colleagues’ Elaboration Likelihood Model, (ELM) (Petty & Cacioppo, 1986; Petty et al., 2005; Petty, Wheeler, & Bizer, 2000). Research in both these models has been predominantly undertaken relying on didactic or rhetoric texts and media in their research. While the two main models involved are similar in many respects, both with the dual mental processing methods of individuals deliberating or thinking about the information gathered, or just accepting it without judgement, the literature relating to the influence of fiction refers only to the ELM. This model appears to better accommodate many of the premises involved in exploring and understanding the influence of fiction on changing individuals attitudes, values and actions, predominantly through ELM’s peripheral route (Appel & Richter, 2007; Bedford, 2010; Brock & Green, 2005).

In the HSM, the heuristic processing of new information relies on data already stored in the individual’s memory, or by the impressiveness of the message according to already known cues rather than making a specific judgement based on thinking through the information presented. Individuals’ judgements based on
heuristic processing rely on the ready availability within his/her memory of relevant information to the current situation. Chaiken and colleagues see this as the ‘sufficiency principle’ whereby individuals minimise their thinking (Chen & Chaiken, 1999, p. 74). In the other mental processing of this dual route model, the individual deliberately analyses the information presented and systematically makes judgements on the validity of the data. This systematic processing requires time and the individual’s ability to correlate the information presented with previous knowledge and come to a judgement. Systematic processing is less likely to be seen in individuals who do not like to think, have no background knowledge in the subject area, or who are pressed for time (Chen & Chaiken, 1999). As the Elaboration Likelihood Method (ELM) is referred to in previous studies (Appel & Richter, 2007; M.D Slater & Rouner, 2002; Suruchi. Sood, 2002) it will be the method discussed in detail for this study.

2.14 Elaboration Likelihood Method. (ELM)

Within the Elaboration Likelihood Method Petty & Cacioppo (1986) postulate that there are two main ways people’s attitudes are changed. The predominant one is through deliberate, careful thought about an issue, where an individual weighs up the pros and cons and the strength of the argument, and chooses whether to believe this information. They call this the central route (Petty & Cacioppo, 1986) and believe the information here to be more enduring in memory. To use the central route for processing, an individual has to be motivated and actively process or elaborate on the message (Serafin, 2007). The majority of research in ELM has related to central route processing where research indicates that influence from information processed via the central route is more enduring and predictable than that induced via the peripheral route (Petty & Cacioppo, 1986).

The second or peripheral route is an automatic response to a message, with the individual not thinking, just responding to the message (Serafin, 2007). Here the information is retained by the individual’s mind without conscious thought or filtering of the information for validity. According to the research, (Petty et al., 2005, p. 86; Petty et al., 2000) attitude changes are weaker and less predictable if retention is through the peripheral route (Petty et al., 2005) but less research
appears to have been documented examining retention of information from the peripheral route.

Within ELM, and similar to HSM, persuasion through the peripheral route is often tied to an individual’s pre-existing knowledge or cues. These cues can include the attractiveness or credibility of the source of the information (Bhattacherjee & Sanford, 2006), or the frequency of the repetition of the message. Whatever the pre-existing cues, the information is not scrutinised or elaborated on before being accepted. Petty and Cacioppo (1986) also suggest that the ease of acceptance of the information also indicates the ease with which it may be dismissed or forgotten, but they admit that assessing this retention of information has proved difficult (Petty & Cacioppo, 1986).

Because ELM is based on the amount of elaboration undertaken by the individual, it is described as a dual-route multi-process theory as the amount of elaboration or thinking by an individual can be significant when using the central route, or miniscule, when using the peripheral route, or somewhere in between. Petty and Wegner (1999) describe ELM as a continuum of thinking and believe that due to the huge amounts of simultaneous inputs of information that individuals are continually exposed to, they prioritise the information received in order to survive.

If information is retained from a fictional source and goes on to influence individuals’ attitudes, values and actions, then it would most likely be initially processed peripherally via either the Elaboration Likelihood Method or the Heuristic System Model. Both areas of research believe the peripheral processing of the information would have only short-term retention (Appel & Richter, 2007; Bator & Cialdini, 2000). However, if the information is repeated (Graesser et al., 2002), or the individual receives similar stimulus serendipitously or from a different source, more mental processing may be done and the unintentionally absorbed information may be retained longer (Bator & Cialdini, 2000; Kilbourn, 1999; Petty et al., 2005).
The research reports that the length of memory persistence then appears to depend on the amount of elaboration done, either as inline processing, as the individual elaborates on the data, or afterwards after subsequent inputs revive the initial information, or non-message variables or cues are sufficiently intense to cause the information to be retained (Petty et al., 2000). In some situations, it is the intensity of emotion that appears to increase the memory of incidentally obtained and peripherally processed information. Research within psychology indicates that positive emotions lead to better memory of peripheral events. This research includes several studies reinforcing previous research indicating that positive emotions can also influence the memory of peripheral details in a situation (Talarico et al., 2008).

2.15 ELM, or Transportation for information retention

Research into central route processing in ELM (Section 2.14) and Transportation (Section 2.8) indicates that where ELM requires a cohesive argument for individuals to process the information presented (Petty & Wegener, 1999), Transportation requires the opposite. It relies on imagery and emotion to be successful in altering individual attitudes, values and actions (Appel & Richter, 2007; Escalas, 2004; Green & Brock, 2005; Green & Donahue, 2008). Appel & Richter submit that existing research indicates that this retention would only be short-term (Appel & Richter, 2007) and would decline in influence over time unless further elaboration was undertaken. However, if the ELM peripheral route was employed, then the imagery, emotion and the persuasiveness of the source would be vital to the retention of the information, not the soundness of the argument. So both Transportation and the ELM peripheral route are relevant to the long-term retention of peripherally gathered incidental information.

This means that the information incidentally absorbed from a fictional source could also update real-world knowledge as it became serendipitously recognised through reactive learning (Section 2.12) by the individual and acted upon (Erdelez, 2004; Foster & Ford, 2003). Emotion is involved here too, as enjoyable reading and information seeking experiences are likely to make individuals more open to retaining more information (Denning, 2001; Heinstrom, 2006; Oatley,
2011). Authors of fiction research their background materials extensively to strive to ensure the information in their stories is factual or correct so that audiences trust the situations and character development in the texts. This applies to obvious foreground plot details, as well as background details. However, just like transportation research (Section 2.8), social research states categorically that the message or information will fail to reach an audience or reader if the story is not sufficiently entertaining (Conolly & Haydar, 2008; Moyer-Guse, 2008; Murphy et al., 2013). One method of ensuring this informative entertainment is received by most audiences is through Educational Entertainment or Edutainment.

2.16 Educational Entertainment, Edutainment or EE
Education-Entertainment, also known as Edutainment or EE, is the deliberate delivery of an educational message within an entertainment format. It can be delivered via electronic format, such as radio, television, film or internet, or through print format, such as posters, comics, novels etc. In poorer countries it is mainly used to influence social factors, such as health, female equality, population control and protection of the environment (Poindexter, 2004; Singhal & Rogers 2002).

Edutainment is broken into two broad areas; one of these is educational but still entertaining software for computers, while the other claim to the name is by social educators. This second one is the one being addressed in this section.

All media entertainment has content and although the truthfulness or reliability of the content may be questionable as mentioned in Section 2.7, most people choose to believe what they are told if the source is credible, or if it is what they want to hear (Zunshine, 2006). If the narrative of the entertainment is well constructed, then the audience is more easily persuaded not to question the information being presented (Singhal & Rogers 2002; Slater & Rouner, 2002). When an author researches material and places specifically pro-environmental information into fiction, it may be deliberately, implicitly or reactively absorbed by the individual. When it is a conscious and deliberate choice of the author to place educational
material within a fictional text for the audience to acknowledge and act upon, it is called Edutainment.

The Edutainment strategy has been used successfully in various countries to highlight social issues and potential solutions in such areas as domestic violence and sexual health related issues (Moyer-Guse, 2008). The impact and success of these programs have been studied by monitoring the audience’s behaviour and acceptance of product ‘markers’ placed within the programs (Singhal et al., 2004; Singhal & Rogers, 2002). These markers have included the rebranding of an existing product, such as the condoms (Catapult) in St Lucian, a memorable character’s name (Scattershot) in Jamaica, and a positive action, such as the beating of kitchen pots and pans in South Africa as a response to domestic violence (Singhal & Rogers, 2002). Health issues promoted through Edutainment have included cancer prevention information (Kreuter et al., 2007; Murphy et al., 2013) overuse of antibiotics (Green & Brock, 2005) and encouraging safe sex behaviours through romance novels (Green & Brock, 2005).

In order to make edutainment a valuable social tool, the programs must be well scripted and produced (Poitrow & deFossard, 2004), and they must also be entertaining and relevant to their target audience. If the program is too educational and not entertaining enough, research shows that there is a definite possibility that the audience will not be transported and persuaded by the program, especially if the aim of the program is to change individuals’ attitudes and actions (Slater & Rouner, 2002).

Successful Edutainment programs have comprehensive planning and discussions with the target audience before production to ensure the information presented is socially as well as scientifically correct and appropriate. John Hopkins University in Baltimore, USA has devised kits to explain and promote the use of Edutainment in health related areas (Poitrow & deFossard, 2004). This form of educating while entertaining has been recognised, encouraged and perfected by such children’s programs as Sesame Street from the USA and Play School in Australia. There are positive implications of educating people this way; however,
there is also the recognised potential for these media to influence people in negative ways.

Sood and associates (2004) analysed the recorded research in traditional Edutainment to assess its influence on the respective audiences. They identified 28 reports of studies of varying methodologies detailing the success of edutainment programs and series (Sood, Menard, & Witte, 2004). The vast majority of the studies relied on self-reported surveys to ascertain the influence of the edutainment on the audience. The number of participants in these surveys ranged from small focus groups through to 4,000 participants.

Audiences of all ages can be significantly affected by exposure to misinformation in fiction (L. K. Fazio & Marsh, 2008a; Gerrig & Prentice, 1991; Marsh et al., 2003), which exposes a huge potential for deliberately manipulating audiences. This potential has been realised in many cases by the advertising industry that specialises in influencing the way people think and then act.

### 2.17 Advertising

Research in the specialist area of Advertising focuses on the theory and practice of persuading people to act on information that is often based on an emotional trigger. This trigger is either relevant to individuals’ self-perceptions, such as their self-image, self-esteem, and self-confidence or peer perceptions and may be conscious or unconscious (O’Shaughnessy & O’Shaughnessy, 2004). Persuasion in advertising is a deliberate attempt to convince the individual to act in a certain described manner. However, persuasive intent may be diluted if the individual’s shields or barriers negate the message (O’Shaughnessy & O’Shaughnessy, 2004). Often memory of the product is triggered through transporting the individual into the advertisement and providing positive emotional triggers for her/him to bring back to the real world (Escalas, 2004).

Within advertising, deliberately inducing an emotion can create different attitudes and actions in the receiver. Positive emotions are used to encourage individuals to think about others and the future, while negative emotions tend to make individuals think about themselves (Loroz, 2007). For an advertising campaign to
be convincing to a broad spectrum of individuals, and for them to retain a memory and act on it, often the messages within this media are deliberately mixed.

Advertising utilizes both paths of the Elaboration Likelihood Method (ELM) in persuading audiences. Advertisements use strong arguments to provide for central route processing, and emotive arguments, believable spokespeople and charismatic fauna to promote quick easy acceptance through the peripheral method (Kardes, 2005). Most audiences expect advertisements to attempt to persuade them (Greenberg et al., 2004; Moyer-Guse, 2008) and may erect mental barriers to resist the assaults. However, Edutainment and product placement within programs or texts are often under-examined by the audience resulting in the information being overlooked as it is absorbed (Greenberg et al., 2004).

Product placement in electronic programs and books occurs when a recognised product, such as a brand of soft drink, is shown on camera in passing in the program (Auty & Lewis, 2004; Yang, Roskos-Ewoldsen, & Roskos-Ewoldsen, 2004). Research has shown that this exposure results in priming the audience to choose the product at a later time (Green, Garst et al., 2004). However, deliberate discussion of the product within the story often results in less later recall of the product (Auty & Lewis, 2004). The recognition of the influence of appropriate product placement by various media has led to it becoming a form of advertising revenue in popular programs, including within edutainment (Poitrow & deFossard, 2004).

Persuasion in advertising works because of advertisers’ methods of influencing individuals by addressing the issue to be raised, or the information to be transferred to the audience through perfected manipulations of the ELM central route with strong argument, or through the peripheral route with attractive distracters. Edutainment relies on the congruent placement of information within the entertainment, relying on the entertainment value of the experience to transport the message past the audience’s mental barriers, resulting in a lack of conscious elaboration on the message. However, unlike advertising the repetition of the message, either from further programs in the series or from different sources encourages individuals to remember the information and permit it to
influence their attitudes. Incidental learning takes place without the audience making any conscious effort (Auty & Lewis, 2004; Schutz & Luckmann, 1973). Advertisers and psychologists use priming to subconsciously influence an audience to act or react. There are three effects noted in the literature by Law and Bran-LaTour (2004). The first is perceptual, where individuals are exposed to a product or idea for a short time and then prefer the product, even though they do not remember seeing it (e.g. product placement). The second is conceptual, where researchers used certain words to create behaviour, such as words related to old age, which resulted in test subjects walking slower as they left the test. The third is emotional, where microsecond flashes of subliminal messages of a smiling face produces a positive emotional response from the audience (Law & Braun-LaTour, 2004, p. 70).

These subliminal manipulations may be seen as coercion or brainwashing (Jarvis, 2008; Lifton, 2011; Rowland & Turner-Neal, 2011; K. Taylor, 2006) if the audience is unaware or an unwilling participant. Rowland and Turner-Neal (2011) in Brainwashing for Beginners list nine different methods of brainwashing and define it as “the use of indirect means to manipulate people to do what you want, while maintaining the illusion of free will.” (Law & Braun-LaTour, 2004, p. vii) Taylor (2006) in Brainwashing: The Science of Thought Control defines it as “the systemic and often forcible elimination from a person’s mind of more established ideas, especially political ones, so that another set may take their place.” (p. 230) While Jarvis (2008) sees brainwashing as a deliberate act, incorporating the senses as well. Fiction, like advertising has the capacity to deliberately alter audiences’ unconscious attitudes and behaviours within most definitions of non-violent brainwashing. While formal education is seen as a legitimate form of brainwashing (Lifton, 2011) if it is for the public good (Slater, 2002) and the audience/learner is aware of the message being communicated; the subtle underlying messages transmitted through advertising and within entertainment such as fiction could be viewed in a negative light if they are not for the public good.
2.18 How information can change attitudes, values and actions

Attitudes and values are predominantly formed when we are young but can change if necessary over time or through conscious choice. The predominant age of influence for creation of values is early childhood (Ewert et al., 2005; Hart & Nolan, 1999; Pretty et al., 2009), and continues throughout life, depending on how important the issue is to the individual. Childhood has also been identified as an important time for stories to influence people (Shelley, 1990). However, measuring attitude change is a difficult task (Fabrigar, Krosnick, & MacDougall, 2005).

Psychological studies suggest that just as intention does not guarantee performance, neither do attitudes guarantee actions, and research states that although attitudes may indicate a subsequent action, it is not a reliable means of predicting such an individual’s actions (Bandura, 1969; R. H. Fazio & Roskos-Ewoldsen, 2005; McKenzie-Mohr, 2000; McKenzie-Mohr & Smith, 1999; Procter, 2008). The literature suggests that the influence of attitudes on subsequent actions relies on an individual’s judgement of the source of the message and its perceived reliability, the actual message and its believability, the current beliefs of the recipient, the channel or method of passing on the information and the context of the communication (Bandura, 1969; Petty et al., 2005).

In order for attitudes to reflect behaviour, psychological research indicates individuals must consciously decide to modify their actions (Cooper, Mirabile, & Scher, 2005; McKenzie-Mohr & Smith 1999). However, within the Transportation and media psychology literature, the unconscious influence of elements of a story indicates that behaviour changes can happen without deliberation (Appel & Richter, 2007; Green & Brock, 2005; Mar et al., 2008). This suggests that behaviour and attitude changes may occur without prior deliberation, once again reflecting the potential of the Elaboration Likelihood Method’s peripheral route of information retention.
2.19 Conclusions
As can be seen from the literature discussed in this chapter, environmental education currently focuses on promoting positive environmental attitudes and actions using the primary influence, that of exposure to the natural environment (Section 2.1). Investigations into the early influences for pro-environmental behaviour resulted in environmentalists revealing a variety of effective Significant Life Experiences (SLE) that can be repeated with further generations (Chawla, 1999; S. Gough, 1999; S. J. Hsu, 2009; Tanner, 1998a, 1998b) (Section 2.1). As the identified influences are multiple rather than single events, more attitude change may occur by influencing people’s inner world of their own interests (Chawla, 1998b; Kola-Olusanya, 2005), by engaging them with topics of personal interest through fiction.

The examination of the literature reveals that stories have been used as educational tools since mankind used cave paintings. Because human minds have developed to accept stories as a valid method of learning, storytelling continues today through electronic as well as hard copy communication with the broadcasting of deliberately entertainingly educational tools such as Edutainment and advertising. Within entertainment education, the entertainment value has to mask the educational value or the recipients’ mental barriers may reject the message. The importance of the entertainment component has also been found to be critical in passing information through fiction via Transportation. The successful delivery of the intended message depends on a number of variables concerning the sender, the message itself and the receiver.

Research has demonstrated that social information passed through the fictional/entertainment setting has proven valuable for altering people’s attitudes and potentially their subsequent actions in improving both health and social issues. While the general term of fiction is used in the research, a breakdown into the genre of the texts does not appear to have been undertaken to examine which kinds/types or genres of texts are the most influential.
Research opinions vary as to the most influential time for exposing audiences to life changing information. Most educationalists see that the three ages of childhood are approximately up to 7 years of age, 8 – 11 years, and over 12, with the most important age of influence being the middle one (8 – 11 years) as it is when children began to develop their independence in relationships, in exploring their environment, and in choosing their reading material and interests. However, while educationalists see this as an important time, memory specialists see that the adolescent and early adulthood are the most often remembered times. This means that if participants remember books or texts from before their adolescence, these may be particularly significant for the memories to have surfaced despite the childhood amnesia stage (Figure 2.1).

Previous research acknowledges that memory is not perfect as an empirical research tool, but research into the reliability and validity of using participants’ personal memories for research has been established. This study is not looking at deliberate memory, rather at the incidental or tacit learning participants have absorbed from their reading material when younger. Research highlights that although tacit and incidental learning are recognised forms of learning, empirical testing of this method of learning has proven difficult.

Memory research finds that deliberation on an issue results in better storage and retrieval of memories relevant to the issue. This review has discussed the importance of the Elaboration Likelihood Method’s (ELM) peripheral route of unintentional and unquestioned storage of information as important for this situation rather than the more often studied ELM central route which examines intentional learning.

Edutainment and advertising similarly focus on deliberate message placement and retrieval, whereas the use of product placement relies on the subtle insinuation of products or information in programs. Just as product placement needs to be appropriate and in passing to be well remembered, perhaps participants in this study will better remember the incidental information from fiction.
The revelation that product placement in a program is better retained by children than deliberate mention of a product (Section 2.17) means that books and authors mentioned by participants may not have a deliberate pro-environmental theme or storyline. Rather they may have the pro-environmental message subtly inserted within the story as a minor theme, action or value of the characters (Section 2.13).

Thus this study is examining the early reading memories of environmental educators to discover if there is a link between the participants’ reminiscences. If this link exists, it may reveal a previously unexplored aspect to promote pro-environmental behaviour within future generations.
Chapter 3 Methodology

Introduction
This thesis uses qualitative research methods to discover how and if literature has influenced environmental educators in their life choices and work. As previously shown in Section 2.1, research indicates that only 23% of Australian Environmental educators surveyed attribute negative stories, authors or the media as an influence on their pro-environmental attitudes and behaviour (Palmer et al., 1999). Other studies worldwide investigating pro-environmental influences have used autobiographical statements and written responses to survey questions to collect data from environmental educators and pro-environmental study participants (Corcoran, 1999; S. J. Hsu, 2009; Palmer et al., 1999). All of these studies recognize specific influences of creative non-fiction or scientific literature on environmental educators’ pro-environmental behaviour. However, to date, no studies appear to have been undertaken questioning the influence of fictional literature. This study is attempting to discover if environmental educators have acquired incidental or reactive learning from fiction during their childhoods.

According to the research reported in the literature review (Section 2.17), simply increasing knowledge about environmental matters does not result in more pro-environmentalism or action, rather a multifaceted approach reinforcing the information from a number of sources is required to encourage action (Chawla & Cushing, 2007; Easton et al., 2009; Kollmuss & Agyeman, 2002; Schultz & Kaiser, 2012). This research into participants’ childhood reading attempts to examine another avenue of approach to this learning dilemma.

Thirty-one environmental educators from environmental education centres were asked in semi-structured interviews about their early and current reading. They were also questioned about their childhood pro-environmental influences along with their use of stories in their current workplaces and the stories they use with children.

This chapter includes the methodology and the standpoint from which this study is approached in Section 3.1; while Section 3.2 examines at the advantages of
qualitative research practices in this research situation. Section 3.3 discusses the style of interview chosen for this study and Section 3.4 describes the method used. Section 3.5 recognizes the limitations of this study and Section 3.6 concludes the chapter.

3.1 Methodology

“Methodology: A way of thinking about and studying social reality”

(Strauss & Corbin, 1998, p. 3)

The research question: Has fiction influenced the pro-environmental attitudes of environmental educators? can best be answered using qualitative methods, as Denzin & Lincoln (2000) have written, “Qualitative research is a situated activity that locates the observer in the world” (p. 3) and this research is done in the real world, often in the workplace not in an artificial space such as a laboratory. Using a constructivist paradigm as described by Guba & Lincoln (1994) and Creswell (2009) this, just as previous studies, relies on the participants’ views and memories of their reading to provide the data for this study. This paradigm allows utilisation and description of contextual information that may prove to be important to understanding the research results. Individuals build on information received to produce knowledge gained to generate understanding of specific situations. When we learn, we construct meaning from the bricolage of our own personal experiences by building or constructing new knowledge by synthesizing new information with our existing knowledge to construct further knowledge and understanding (Creswell, 2009; Guba & Lincoln, 1994; Kahn, 1999; Robottom, 2004).

There is ongoing discussion regarding the precise meaning of the terms “constructivist” and “paradigm”. According to Preissle (2006) the paradigms could be called “theoretical perspectives” and the nuances of Constructivism are varied depending on the scholar and their discipline (Schwandt, 2007). While this debate remains ongoing, due to the nature of the participants and the subject, as Pat Sikes (2002) writes; “qualitative research is difficult to define, as it means different things at different times and in different contexts” (p. xi). In the interests of clarity, the Guba & Lincoln constructivist paradigm is the most appropriate at
this particular time for this particular research study. “Realities are apprehendable in the form of multiple, intangible mental constructions” (1994, p. 110).

Studies into teachers’ attitudes, values and practices indicate that their formative years create an impact on their teaching style (Hart, 2003), their perspectives on issues, and their ongoing life choices suggesting that the figurative language they use is central to understanding these individuals. In looking at teachers’ knowledge Goodson (2008) says

Life experiences and background are obviously key ingredients of the person that we are, of our sense of self. To the degree that we invest our “self” in our teaching, experiences and background therefore shape our practice. (p. 11)

This study hypothesizes that the literature that the participants enjoyed when they were younger influenced the direction of their ongoing interests and choices of reading material. It suggests that teachers are exhibiting their current pro-environmental teaching actions constructed on the values and attitudes they gained from early influences, some of which were from their reading, and that their interests have continued, especially in pro-environmental areas.

The choice to question early reading as an influence on pro-environmental attitudes and behaviours comes from the education based research which states that the middle childhood years (from 6 to 12) are the formative years of social and pro-environmental awareness and development (Hart, 2003; Sobel, 1996). Development in this age group depends on engaging the child with direct and indirect experiences to encourage the higher order thinking skills (Kahn, 1999; Kola-Olusanya, 2005) (Section 2.8). Early reading may also be significant if the participants remember books from this age then they have overcome their childhood amnesia (Janssen et al., 2007) as discussed in Section 2.10 and illustrated in Figure 2.1.

In an attempt to discover as much as possible from the information gathered in the interviews, a Grounded Theory approach is used to examine the data and to discover if any unrecognized influence from informal sources could have influenced the participants in their pro-environmental attitudes and actions. A Grounded Theory design for this study was chosen to ensure that conclusions
grew from the data and observations of the interviews, rather than from pre-conceived ideas (Easton et al., 2009; Ezzy, 2002; Schwandt, 2007). Within discussion of the interviews in Chapters 5 – 7 attention is paid to the different voices blending in the answers and also to the alternative views of those whose responses contradict the overall consensus (Brewer, 2000). Constructivists often use grounded theory as a lens to form impressions and create meaning and theory as the research in the specific situation progresses (Creswell, 2002, 2009; Ezzy, 2002; Mishler, 1990).

The use of a Grounded Theory approach enables this study to delve into the stories provided by the participants and to investigate further categories or themes revealed in the interviews (Creswell, 2009; Glaser & Strauss, 1967; Strauss & Corbin, 1998). Recent international studies into the influences on pro-environmental behaviour have also chosen to use Grounded Theory method to elicit rich data from participants (Easton et al., 2009). This study uses grounded theory to propose a plausible relationship between the concepts and is tested using the various methods of categorising the data to produce a conceptually dense theory (Schwandt, 2007).

This study will be using a Narrative Analysis Approach (Boje, 2001; Earthy & Cronin, 2008; Riessman, 2008; Sorsoli, 2007) to look within the data for each participant’s individual truth rather than ‘the’ truth of all participants, their individual microstoria (Boje, 2001). Thus interpretation of the data will rely on the filters used to examine the data during the analysis period to reveal the themes rather than on Discourse Analysis (Sorsoli, 2007).

A link between the books the participants remembered from their childhood, their teacher training and the stories the participants told during the interviews, will reveal the influence the childhood literature had on the teachers and their way of thinking, as, according to Hart (2003), teachers’ stories reflect what they feel is important. Within constructionist research, Narrative Constructivist Inquiry suggests that the stories people tell others may reveal the inner working of the storyteller’s mind (Sorsoli, 2007), reflecting personal experiences and inner
feelings and emotions. While not denying the importance of the social setting and the influence of others, Sparkle and Smith (2008) quote others in saying:

Constructivism sees narratives as making explicit the meaning that is there in experience (Freeman, 1999). It views them as cognate schemas or scripts through which people understand the world (McAdams, 2006). (p. 297).

3.2 The advantages of qualitative research practices in this research situation

Qualitative research techniques were chosen because the research question is best addressed by asking searching questions of the participants to better enable them to recall the potentially shadowy memories of their childhood reading matter (Chawla, 1998a; Douglas, Roberts, & Thompson, 1988). The semi-structured interview format also releases them to choose what areas they wish to discuss and what trains of thought they feel most comfortable in pursuing (Creswell, 2009; Freebody, 2003). In similar qualitative research interviewing teachers about their formative experiences Hart (2003) also chose conversational interviewing as the most appropriate method of collecting data.

As detailed in the previous Literature Review chapter, memory is a complicated area of study (Section 2.11). Chawla and others have revealed in their research of significant life experiences, participants’ memories may benefit from suggestions or prompting during the interview process to have a fuller and richer recall of the matter under discussion, and the semi-structured interview format fits this, offering the opportunity to engage in discussion if appropriate (Chawla, 1999). As their formative attitudes may stem from early reading, asking them about this may reveal accidental and incidental influential learning experiences of which they are unaware, similar to later recall of product placement from programs as discussed in Section 2.17.

This study is employing concepts not normally associated with using interviews in qualitative research. Discovering details about individuals’ incidental learning has been a challenge for researchers (Mazzocco et al., 2007; Schugurensky, 2006) so the incidental and reactive learning may be triangulated rather than deliberately expressed by the participants. Knowledge that is realised after the event is referred
to as reactive learning, while knowledge consciously deliberated on and acknowledged at the time it was delivered is deliberate learning (Section 2.12). In an attempt to explain incidental learning previous studies have used direct observation and in-depth interviews (Callanan & Braswell, 2006; Eraut, 2000; Livingstone, 2006; Stadler & Frensch, 1998), however, understanding implicit learning is complex as the specific source of the implicit knowledge is often unrecalled (Livingstone, 2006; Stadler & Frensch, 1998).

This study is combining concepts from unobtrusive data collection (Creswell, 2009; Kellehear, 1993; Lee, 2000; Webb et al., 2000) to assist in exploring the collected data. The unobtrusive data collection method of measuring erosion and accretion has been used as data to indicate occurrences that may not otherwise be measured. Previous research has used the replacement time of floor tiles as an indication of popularity of a museum exhibit and in another study the amount of reading of a library book was judged by the number of dog-eared pages and fingerprints present (Webb et al., 2000, pp. 37 - 38). In this study the accretion of participants mentioning favourite books or authors is to be used as an indicator of importance to the cohort. The number of times certain books, authors or genres are mentioned will be used to identify potentially important texts.

There are a number of theories and ways of explaining why information we receive remains accessible from our memories for use in the real world. Section 2.13 of the Literature Review, discusses a relevant theory, the Petty & Cacioppo (1986) mental processing model, the Elaboration Likelihood Model (ELM). However, in their studies on this method the authors do not use narratives or fiction as their vehicle of persuasion. Rather they rely on didactic or rhetorical texts and media in their research. Thus the information some of the participants in this study have been using since childhood to construct their values, attitudes and actions may have been acquired thorough a variety of literature via the ELM peripheral route and incidentally learned by them rather than undertaken as a deliberate learning activity. Serendipitous learning or opportunistic acquisition of information (OAI) has been reported when examining learning behaviour of university students, academic staff and members of the public (Erdelez, 2004;
Foster & Ford, 2003; Heinstrom, 2006) (Section 2.12). In other studies, OAI has been identified as coming incidentally rather than deliberately from recreational reading (Ross, 1999), and explicitly incidentally gained from fictional sources, Anna explicitly referred to a benevolent process in which wide and frequent reading, especially fiction, produces answers to current concerns, without the need for active information seeking. (p. 795).

Microstoria, or the stories of ordinary people, have the strength to give the viewpoint of the general person rather than the privileged view of the Grand Narrative Analysis of famous people (Boje, 2001). By using the microstoria (Douglas et al., 1988) of the various environmental educators, a link between their early reading and their subsequent life choices may be discovered. Asking the interview questions of high profile individuals in environmental circles has the potential to create confusion with definitions such as what are pro-environmental actions and who is a high profile individual. Because it is the environmentally disinterested public that needs to be influenced towards pro-environmental actions, the microstoria of environmental educators has been chosen as a better way to investigate potential influences. This study is an explanatory narrative inquiry, looking for a connection between the ‘events’ – the books young environmental educators read, and their current career paths (Clandinin & Connelly, 2000).

3.3 The advantages and style of interview
The three major types of interviews considered as appropriate for this study were structured, semi-structured and unstructured (Freebody, 2003). A structured interview, with all participants being asked the same predetermined questions in the same order, is unsuitable in this case as it would restrict the generation of the participants’ flow of thought into memory and prevent the spontaneous eruption of memories that would be valuable for the research. Likewise, an unstructured interview, with a few general questions or issues to be discussed, while giving rich data in the free flowing conversation, could mean that the interview had the potential to miss out on covering the areas of importance of the study and coinciding interests among the participants.
The semi-structured interview situation, beginning with the predetermined guide questions (see Appendix 1) and then allowing the participants latitude to digress into areas of interest provides the best of both worlds with the option of further discussion and revelation of memories where appropriate. Kvale (1996) describes interviewers as ‘miners or travellers’. Miners are looking for specific information that will not change, while travellers are looking for experiences and opinions on those experiences. This qualitative study is, as Kvale describes it, travelling. Using his description of the interviews as an Interview means the interviews are an interchange of ideas between the participants, and aids in the discovery and understanding of the participants’ views and the generation of any theory from the data presented.

**Ethical Constraints**

As with all such studies, ethical considerations must be considered before undertaking the research. In this case survey questions as well as the initial interview questions were initially submitted to the University Ethics Committee and then to the NSW Department of Education and Training (as it was then) and the Queensland Department of Education. All three bodies were satisfied that the study was ethically acceptable, valid and useful. The consent information is enclosed in Appendix 2. Once these bodies had accepted the format it was not able to be altered.

Ethical issues raised included evening-up the power balance in the interview situations. In order to make the situation as unthreatening as possible for the participants and to make them feel more comfortable talking about personal childhood memories they were interviewed in a space of their choosing, preferably at their place of work. By interviewing most participants individually, face to face, reassurance of their privacy and reinforcement of an interest in their stories and to encourages richness in their responses. Pseudonyms are also used to mask the identity of the participants and ensure their privacy.
3.4 Method
As indicated previously in Section 3.3, the qualitative method chosen for this study consists of semi-structured interviews of environmental educators in environmental education centres in states on the east coast of Australia. Appropriate sample size is often questioned in qualitative research, because the size of sample needs to be sufficiently large from which to draw valid conclusions, while it also needs to be sufficiently small to ensure quality in-depth responses. This research followed the cohort sizes suggested by Castro and colleagues for in-depth qualitative aspects of research of 20 – 40 interview participants (Castro, Kellison, Boyd, & Kopak, 2010, p. 343).

3.4.a The participants
The participants chosen for the study were environmental educators in Environmental Education Centres (EECs) in New South Wales and Queensland with later additional volunteers from Tasmania. The regions were chosen because of the potential number of participants and the relative ease of access to the EECs for the interviews.

The Definitions in Section 1.2 describe an Environmental Educator as a person teaching in an EEC. The participants are at the highest level of Bloom’s Affective taxonomy, that of displaying a commitment to their principles on a daily basis (Buissink-Smith et al., 2011; Krathwohl et al., 1973). It is difficult to measure affective learning. However it is usually displayed by a daily practice of the values and attitudes held by the participants (Buissink-Smith et al., 2011). This daily practice is revealed by the participants through their active involvement in teaching students about the environment. To limit complications with comparisons to other pro-environmental groups studied (Chawla & Cushing, 2007; Easton et al., 2009), no comparisons of participants’ various pro-environmental attitudes and actions outside their work environment were considered or discussed. The cohort has representatives from both genders and represents a mixture of ages. Their minimum educational level is a teaching degree and participants were open and articulate in conversation and appreciated the relevance of the study.
3.4.b The actual study

The details of the study went straight to specific Environmental Education Centre (EEC) teachers in Queensland EECs, and were forwarded to NSW teachers via the gatekeeper of the NSW DET Sustainability Centre in NSW. Initial response was disappointing with very few contacts volunteering for the study. Two months after sending the first round of emails they were resent to the NSW DET gatekeeper and to the individuals in Queensland who had not responded. A few more responses were forthcoming and an interviewing schedule was organised.

Participants were contacted by email and telephone to organise convenient times for the interviews. In most cases significant distances had to be covered between centres so attempts were made to interview participants in regions and en route to other interviews. Once the interviews began, participants volunteered to find other environmental education teachers in various EECs and they were then added into the study through a Snowballing method of recruiting. This method has been used in research previously to find “hidden populations” which are difficult to access (Berg, 2004; Noy, 2008). All the participants interviewed appeared to be happy to talk, even if they were co-opted by friends and associates. The Snowballing recruitment of interviewees also attracted participants from EECs in Tasmania, which were not associated with the Tasmanian Department of Education.

The concept of genre or type of literature was raised as a potential obstacle during discussions about creating the interview questions as participants may categorise the same text under differing genres or types. The participants’ text descriptions were to be used where possible to maintain their original voice in the process, and library and publishers’ categories of texts were also chosen as a comprehensively understood categorisation for other texts (see Section 2.9).

As the semi structured interviews began, the research morphed through the Grounded Theory study (Creswell, 2009; Glaser & Strauss, 1967), with participants offering information on different issues for environmental educators and EECs. The deliberate decision to let the participants have their say before returning to the topic allowed them to reveal more of themselves, the differences between EECs, Departments of Education and their priorities. These differences
may prove important as different types of teachers may be attracted to certain types of EECs. It also gave the participants an opportunity for time to think and remind themselves of books they later remembered as being informative or favourites from childhood – even if they did not see these books as being environmental (at the time or later).

3.4.c Interviews
The majority of the interviews occurred individually at a suitable place of the participants’ choosing. For many it was their work place, for others in cafes on their way home from work. Interviews generally lasted about an hour and wound naturally down to completion. They were done over a 3 month period in the second half of 2011. As semi-structured interviews specific questions were asked of all participants, but the ability to go off topic if appropriate was often utilized.

Complications
The majority of the interviews were completed without issue. However a few complications arose. In one case two participants were interviewed together after work, as it was the only opportunity for them to talk. They had worked together for many years and the discussion did not appear to be impaired by the pair situation. The other complications were lack of transcripts in two cases. In one case the recorder malfunctioned and notes of the interview have been used for the study; and the other situation was where the participant was unable to stay after work and be interviewed, but promptly emailed answers to the set questions.

3.4.d Naming of participants
In this study the interviewees are called participants as they were all willing participants in the discussions and interviews. They have been both genuine and generous with their time, knowledge, interest and skills assisting in understanding of their situations and personal histories.

To ensure the anonymity of participants, pseudonyms have been used for publication (Guba & Lincoln, 1994; Kvale, 1996). The pseudonyms chosen for them were random but in alphabetical order of the transcripts being accepted and
returned by the participants. The Anglo-Saxon pseudonyms are also an indication of the make-up of the environmental educators. All those interviewed appeared to be of predominantly European ancestry. There did not appear to be any indigenous, Asian or African teachers in the interviewed cohort. This may be a reflection on the teachers in general in Australia, or of those in EECs, or it may have just been a coincidence. Identifiable towns and regions have also been modified to ensure anonymity for the participants. Mentors and significant others, such as children and partners have also been coded to protect their anonymity.

3.4.e Transcripts

3.4.e.i Validation: Member checking and multiple sources of evidence

Interviews were digitally recorded and then transcribed. Initially everything on the recording was transcribed, verbal stumbles in responses, umms and ahhs, periods of dead air and thinking time were also noted. However as the interviews progressed irrelevant parts of the interviews were edited as they were unnecessary for this study and so they were removed from the first version of the transcripts. A copy of the first transcript was emailed to the participants for their perusal as soon as it was completed and to confirm what they had said in the interviews (Cho & Trent, 2006; Creswell & Plano Clark, 2007). Participants were asked if they wished to change anything or add more books they remembered. After all the interviews had been transcribed, a second round of emails was sent to those who had not replied to the first email with edited second versions of the transcripts, where all the identifying towns, cities, and specific Environmental Education Centre (EEC) or mentor names were also removed from the transcripts. Once these were returned they were coded.

Participants who returned their transcripts made no significant changes to the originals, and in some cases additional books were submitted by some of the participants. Some participants contributed lists of large numbers of books they believed were important to them, others made no response, and some participants mentioned in responses that they had forgotten that in writing the spoken word certain literary traditions, such as sentences, could be missing.
Electronic copies of the original recordings have been made for back-up purposes, and electronic copies and one hard-copy of the final transcripts including pseudonyms were also made.

3.4.e. Validation: Triangulation and pattern matching
Texts specifically identified by participants, or mentioned by numbers of participants, as important to them were located and read looking for environmental information within the storylines. Similarities of authors, text type or genre are also noted to examine the possibility that a type or category of books creates a pattern that is particularly important to the cohort.

3.4.f Coding and the emergence of categories
The coding began by hand on the printed copies of the transcripts, which were then transferred to NVivo coding as the process progressed. Initially hand coding was chosen as trusting electronic media with data has proved to be a problem in the past and continued. All documents with identifying information have been shredded.

Reading and Stories
After organising the basic statistical data of gender and age group, the next area of coding was the most obvious areas of interest; the specific books/authors and kinds or genres of literature people remembered reading. This information is grouped together because individuals often remember an author or a type of book rather than being able to name a specific title. Although the concept of genre differs amongst people (Section 2.9), the participants’ concepts were used along with library and publishers’ definitions of genre in this case as they coincided into the broad genres used here. (Chandler, 2000; Makaryk, 1993; Todorov, 2000).

Classifying the literature
The literature reported by the participants is broken up into two major groups, Scientific and Humanities. Originally the plan had been to separate the literature into fiction and non-fiction, however the number of texts mentioned by participants that did not fit the neat divide required a rethink of the categories.
After discussion, it was decided to use the Humanities/Scientific divide because it better reflected the responses from the participants while still providing usable categories for the study. The Scientific category encompassed all the factual material participants mentioned including subgroups of textbooks, dictionaries and encyclopaedias and actual magazines. Within the Humanities category, the subgroups of fiction, poetry, plays, children’s stories, autobiographies and biographies, philosophy and spiritual/religious texts were used.

Once interrogation of the data began, the subgroups in both categories changed to reflect the literature actually mentioned. Initially all the literature with a Dewey Decimal System number was placed into the scientific category. However the Dewey System has numbers for fictional literature as well as factual material. By cross-referencing the literature with the US Library of Congress classification system the literature presented fell into other subgroups again (Swanson, 1972). The decision was made that the scientific category for this study are be those books that fell within both the Library of Congress science categories and within the Dewey Decimal system:

*Table 3.1. Scientific category of books using Dewey and Library of Congress categories.*

<table>
<thead>
<tr>
<th>Dewey Decimal</th>
<th>Library of Congress</th>
</tr>
</thead>
<tbody>
<tr>
<td>000 – 099</td>
<td>Computer science, information and general works</td>
</tr>
<tr>
<td>500 – 599</td>
<td>Science</td>
</tr>
<tr>
<td>600 – 699</td>
<td>Technology</td>
</tr>
<tr>
<td>900 - 999</td>
<td>History and geography – excluding the 920 – 928 biography section</td>
</tr>
<tr>
<td></td>
<td>R</td>
</tr>
<tr>
<td></td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>U</td>
</tr>
<tr>
<td></td>
<td>V</td>
</tr>
</tbody>
</table>
In the data there are 83 separate mentions of scientific type books and magazines fitting in both the Dewey selection and the Library of Congress selection criteria (Table 4.16).

This means that the Humanities books are categorised as those in the library under fiction and junior fiction and in the Dewey decimal system classes and from the Library of Congress classes of:

Table 3.2. Humanities category of books using Dewey and Library of Congress categories.

<table>
<thead>
<tr>
<th>Dewey Decimal</th>
<th>Library of Congress</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 – 199</td>
<td>Philosophy and psychology</td>
</tr>
<tr>
<td>200 – 299</td>
<td>Religion</td>
</tr>
<tr>
<td>300 – 399</td>
<td>Social Sciences</td>
</tr>
<tr>
<td>400 – 499</td>
<td>Language</td>
</tr>
<tr>
<td>700 – 799</td>
<td>Arts</td>
</tr>
<tr>
<td>800 – 899</td>
<td>Literature</td>
</tr>
<tr>
<td>920 – 928</td>
<td>Biography</td>
</tr>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>P</td>
</tr>
<tr>
<td></td>
<td>Z</td>
</tr>
</tbody>
</table>

The clarification of genres of fiction also arose and the stories were then categorised by the genre description with which the author is identified. The books were then classified into various groups within fiction, junior fiction, historical fiction, philosophy, religious and spiritual experiences, and literature.

There are an initial 365 mentions of books/genres/authors in this Humanities category that are initially collated into 41 groups to be discussed. To enable better examination of the data comparing adult and childhood reading these 41 groups were broken into in more manageable areas of interest, with the books grouped into eight categories (Section 4.2, Table 4.4).
3.4.f.i Childhood reading
As differing ages of influence were recognised as a potential indicator of interest, the children’s reading was also categorised into ages of childhood reading. Categorising young people’s reading is difficult as division by genre is not undertaken by authors, editors, publishers or educators (Section 2.10). The divisions of text are usually into fiction or non-fiction and then within the fiction section, the texts are in five junior fiction categories.

The first of these five categories is ‘picture books’ which are books of 24 to 32 pages usually with a short word count. These books are designed to be read aloud to children before they have acquired reading skills. The pictures often tell a story and hold the interest of the child. Picture books may, however, be aimed at all age groups. The second category of children’s books is ‘early readers’, which are written for children just starting to read and these usually rely on specific easy word lists. The third category is ‘chapter books’ which have a simple storyline and challenge young readers. The fourth category is ‘middle grade’ books, where the concept of a series of books becomes popular. The fifth and final category is the ‘young adult’ books, aimed at the 12 plus age group, designed to address social issues, and growing up (Wallin, 2010).

This publisher’s age category system covered all the books mentioned in the interviews of the participants’ childhood reading, including books from all the children’s categories and texts from adult categories of literature. As the publishers’ age categories are more specific than required for this study, the age groups in the tables in the Results Chapters are broken at the ages Sobel (1996) (Section 2.10) suggests are indicative of changes of children’s spheres of interest, up to 7 years of age, 8 – 11 and 12 years and over (Tables 4.21.a & 4.21.b).

3.4.f.ii Current reading
Participants were also asked what they were currently reading as well as what they remembered reading when they were younger. This was done to see if their reading style when they were young may have influenced their ongoing life choices in the environmental area. They were asked about their current reading to see if their taste in literature had changed over the years or remained the same. It
was anticipated that this could be an indicator of the participant’s ongoing interest in a certain area of literature, which reinforced pro-environmental attitudes and behaviours.

Some participants revealed a personal response to specific literature they had read when they were younger noticeably influencing their attitudes and so this was separately coded as “seminal literature”. Any reference to the environmental awareness they remember gained specifically from any literature was also coded. This included both their and their students’ awareness raising by the specific literature.

Participants were asked about the use of stories at work. This category includes stories they read from books, along with stories and anecdotes they tell while they are teaching. This data was initially categorised together as in some cases the participants modified written stories for their classes. In other cases, scenarios were developed from stories to involve the students in different ways in the stories while they were at the EECs. Participants were also asked about why they told stories, what the tradition of telling stories was at their EEC and about the students’ reactions to these stories. Most participants also told stories; either ones they used at work, or stories from their lives, thus indicating that they use stories as part of their usual communication.

Stories the participants read to their children and grandchildren were also requested to discover if they revealed any particular stories they remembered and used with consequent generations that they may have enjoyed as children. Stories participants particularly remembered and passed on would have evoked an emotional response from the participants that they were looking to encourage in future generations. These stories may be significant in participants’ value-formation as they were developing their values and attitudes as they grew.

3.4.f.iii Participant training
This area of participant training was also split into groups for coding. The primary trained teachers (H), the high school science/geography teachers (S), and the others (O) – those who were working in environmental education centres outside
the Departments of education and without specific teacher training. This delineation is necessary as the types of participants varied greatly in their attitudes towards the use of stories in their teaching. In trying to discover if there is a difference between any of the teachers, Snow’s (1971) Two Cultures, the ‘scientists’ and the ‘literary intellectuals’ were consulted (p. 15). The participants are teachers and so not as potentially diametrically opposed as the people involved in Snow’s research, which the traditional science/humanities divide suggests. The participants have the potential to have differing reading habits and viewpoints on life, but more from a continuum or spectrum of opinions rather than being adamantly opposed.

This initial coding prompted further exploration of the stories the participants were using in the interviews. It appeared that the scientific readers were the participants who had come to environmental education from experiences as high school science teachers. These participants also tended to use stories that were scientifically based. The other participants, those who read the humanities literature, appeared to be drawn to the EECs from primary school teaching and tended to use more cultural or imaginative types of stories in the stories they told me. This in turn led to investigation of a possible link between the participants’ teaching background, high school science or geography teaching or primary school, and their reading preferences, scientific or humanities, and then onto the types of stories they told, science or humanities based.

**Influences on Values**

The identification of influential reading material led to other areas of influence such as participant responses about the influence of their family, and their influences on their family are also to be coded. These are included as participants may reveal what they believed influenced their values, attitudes and their behaviour. Their influence on family is also included here, as participants may discuss how they believe they influence others in their immediate family about environmental issues (Section 7.4). The participants’ upbringing and early experiences in the natural environment should confirm the findings of the
previous studies into the influences on pro-environmental educators (Section 2.1). Participants’ responses will be coded to discover if different childhood backgrounds may have led to different reasons for making pro-environmental life choices. Family, mentors, youth groups, and religious affiliation, are also coded in this category.

Giving a definition of “pro-environmental” is avoided in the interview questions as the concept has proved contentious in previous studies where authors have discounted others research because they disagree with the specific definition of pro-environmental (S. J. Hsu, 2009). These definitions range from where the individual in the study recycles materials through to including only those who belong to a pro-environmental political party. In this study the definition of pro-environmental was a person who was working as an educator in an EEC as individuals attracted to working in such a specific environment would have a pro-environmental ethos which would be active in their life choice of workplace (Section 1.4). Participants’ own definitions of pro-environmental are examined and coded (Section 5.2.m).

**Activities of the EECs**

By defining the participants as pro-environmental because they work at an EEC, it must be recognised that the activities at the various EECs are significantly different. To see if the style of the EEC influences the use of stories, or the type of teacher, participants were asked about the activities of the various EECs. The age of the students, details on the types of the programs they provide were all coded.

To discover if a type of teacher was drawn to a type of EEC and then proceeded to continue teaching in their preferred method consideration was given to which type of teacher they were – primary or high school, and what was the predominant ethos of the individual EEC. The EECs appear to be on a spectrum from, at one end the humanities based centres, which often used stories as part of their teaching plans, or for cultural learning, and leadership and communication based exercises, to the other end of the spectrum were the heavily science based EECs which were significantly involved in fulfilling high school science curricula. In between these
two extremes were the EECs that fulfilled both aspects with different plans and programs for various age groups to fulfil the visiting teachers’ learning programs with the classes.

3.5 Limitations
The limitations in this study reflect the limitations in similar qualitative studies. The filtered viewpoint of the interviewer (Creswell, 2009) is a limitation of this study. As a middle aged, middle class married white woman from a suburban background, certain biases exist. As part of the free range generation of baby boomers with free access to bush playgrounds, the encroachment of the built environment and the reduced opportunities for some children to play in the natural environment is a concern. The discovery of the influence of a fictional presentation on increasing children’s environmental knowledge in previous longitudinal research (Freestone, 2006) spurred this study.

Other limitations include the difficulty of relying on memory as a primary source of data as is discussed in Section 2.11. Participants’ surface memories revealed in the interviews may be related to their immediate concerns rather than to a more enduring memory. The method of providing the interview transcripts for member checking may address this with the participants’ option to alter their responses and add other reading material.

The semi-structured interview format means that all participants are asked to respond to similar initial questions (Appendix 1), however, this format means that in each interview the ongoing discussion between the interviewer and the participant will vary, depending on the individual situation. While this participant driven subjective diversion of each of the interviews may highlight particular areas of interest and influence of that specific participant, it means that different topics may be highlighted in some interviews and ignored in others.

The difficulty in assessing incidental learning is discussed in Section 2.12 & 3.2. The member checking option for participants provides an opportunity for post-interview alterations and additions to the participants’ reading lists. The interviewees’ potential for attempting to provide the ‘right’ response to the
interview questions is minimised by making no reference to specific reading ages, authors or book types.

For the research project consideration was given to attracting participants from the ranks of environmental and sustainability educators and attempting to assess what influenced their career choices. However, career choice is a huge study area, well beyond the framework of this research. Within career choices there are multiple theories covering everything from genetic predisposition towards a job through to the participant deciding what to do depending on whatever job is going at the time of looking for work (D. Brown, Brooks, & Associates., 1996).

This study is examining the influence of fiction, so specific environmental educational material, including non-fiction media is also outside the parameters of this study as the information is deliberately constructed and presented to an audience who know what the learning or educational outcomes should be. Environmental education can be part of a formal educational curriculum, or an informal learning experience, such as a wildlife park or recycling centre, a coffee table nature photograph book, a wildlife television documentary, or even narratives such as volcano or climate change disaster movies and books. While all of these are relevant educational - and sometimes entertaining - materials, they are deliberate educational tools, and not the incidental or tacit learning which this study plans to explore.

This research is proposing to identify fiction as a contributing factor in the participants’ life choices, but recognises it is not necessarily the major influence in their pro-environmental choices. Data collected from participants in this study is not compared to other people beyond the specific cohort interviewed. Inferences made from the data collected may be useful for subsequent comparison to others, such as environmental activists or non-pro-environmental individuals at a later date.

3.6 Conclusion
An examination of the incidental or reactive learning done from books and authors is being undertaken to discover if there is a link between literature and
pro-environmental attitudes and behaviours. The interviews include a series of questions about literature and stories that the participant remembered reading when they were younger, their current reading behaviour and the books they read to children which may indicate a type of book the individual is attracted to, or remembers best. The less obvious influence of reading should be revealed by the participants’ responses when asked about how and when they use stories in their teaching at the EECs. The type of responses participants give may also reveal discovery of the influence of reading and stories. By telling stories of their family life and elaborating on the influences of stories there, or the stories participants’ feel work best at work, these may help explain a point or illustrate their point of view on a subject, revealing implicit learning.

With the difficulty in identifying specific unintentional retention of the information from literary sources, these three areas of storytelling may combine to reveal an indication of the influence of literature and stories on the participants’ lives. The use of these intentional and unintentional revelations possibly shows the underlying potential of the stories to reveal more about participant pro-environmental attitudes, values and actions; as well as influences on their life choices.
Chapter 4 Results of the participants reading preferences

Introduction
This chapter displays the themes revealed in the data in a numerical manner. These numbers are descriptive statistics, numbers used to indicate significant or important findings discussed in the following Discussion Section. Qualitative research relies on the thickness of descriptions and the voice of the participants rather than numbers, but in some cases the numbers are useful to give indicators of trends in the data. In this research it is particularly important as the number of times certain books, authors, types of texts or genres are mentioned gives an indication of their importance to the participants individually and to the whole cohort. The numbers help in revealing the themes and fortunate coincidences in the interview data highlighting areas of broad and specific influences to the participants.

Different approaches to categorising the data are presented within this chapter, as examining the data from a variety of angles reveals different discoveries in the data. There are five differently coded sections within this chapter. Section 4.1 looks at an initial coding of the interview data; Section 4.2 at books by type according to participant’s text types, or ‘in vivo’ coding along with the scientific texts according to the Library of Congress and Dewey Decimal system; Section 4.3 classifies books according to childhood reading age and publishers’ categories; Section 4.4 uses public library categories, and Section 4.5, individual texts.

As this chapter is focusing on the number of times participants specifically mention or discuss books, authors, genres or types of literature, the word ‘mention’ in this chapter covers all these contingencies. Participants’ comments and opinions on the different types of literature are detailed in Chapter 6.

4.1 Participants
Thirty-one participants from 19 Environmental Education Centres (EECs) in three states took part in this study. The data was collected in the last quarter of 2011.
The small number of participants means the numbers are only indicators of areas of interest within the cohort.

Table 4.1 Participants by state and gender

<table>
<thead>
<tr>
<th>State</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>2</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Queensland</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Tasmania</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Totals</td>
<td>11</td>
<td>20</td>
<td>31</td>
</tr>
</tbody>
</table>

4.1.a Teachers’ backgrounds

Participants involved in this study come to the EECs predominantly from two teaching areas, that of primary teaching (H), or from a high school science/geography background (S). A small number of the participants in the study do not fit into these two categories, so a third category, Other (O) was created for the remainder whose training is in social science, veterinary nursing and accountancy. There are two participants who fit into both (H) & (S) groups, however as their initial training was in the primary/humanities area, they have been counted in the (H) group.

Table 4.2. Participants by teacher training

<table>
<thead>
<tr>
<th>Teacher training</th>
<th>Code</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary/humanities</td>
<td>H</td>
<td>4</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>Science/geography</td>
<td>S</td>
<td>4</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Other</td>
<td>O</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Uncovering the participants’ educational backgrounds is important for discovering if these educational backgrounds make a difference to the way participants evolved into environmental education teachers in EECs. This also has the potential to reveal if any reading influence is more prevalent in one group, or omitted in the other groups.

As mentioned in Section 3.4.f.iii, the definitions here are different to Snow’s (1971, p. 115) Scientific vs. Humanities debate as the participants are all teaching
and so are already on the humanities side of the spectrum. However, their leanings towards the humanities or scientific ends of this group may provide an interesting insight into behavioural influences. While it is noticeable that more (H) humanities than (S) science based teachers and more females than males responded to the study, it would appear that this was teacher preference to responding to the research proposal and not indicative of EEC staffing ratios. Exact details on staffing ratios are unavailable as part-time and occasional teachers often supplement the permanent staff at the EECs.

### 4.1.b Identified pro-environmental influences on the participants

Research into developmental influences on environmental educators has been discussed in previous chapters (Section 2.1). Participant interviews provided confirmation that the primary influence was experiences in the natural environment. However their response rate to books as significant influences at various ages differs from the established data due to the focus of the interviews on the literature that participants remembered. Table 4.3 places participant’s responses to questions about their early influences into Chawla’s (1999, p. 15) categories – Sources of Commitment to Environmental Protection. Table 4.3 also includes Chawla recognised influential pathways into pro-environmental behaviours “a concern for the environment, in and of itself, and a concern for social justice.”(Chawla, 1999, p. 19). These have been labelled in Table 4.3 as Social Justice, (SJ) and (CE) for Concern for the Environment. This table of the participant’s pro-environmental influences may highlight specific reading interests in the different cohorts of H, S & O, or CE & SJ. Specific participant details are in Appendix 3.

Explanations of the terms used in Table 4.3.a are in Table 4.3.b. on the page following the table.
Table 4.3.a Identified pro-environmental influences of participants

<table>
<thead>
<tr>
<th>Pseudo</th>
<th>SJ or CE</th>
<th>H,S or O</th>
<th>Concern for children</th>
<th>Principles or religion</th>
<th>Book or author</th>
<th>Social justice</th>
<th>Vocation</th>
<th>Friends</th>
<th>Edn</th>
<th>Orgs</th>
<th>Family</th>
<th>Negative experience</th>
<th>Nature Experience</th>
<th>Reasons for choosing from both options</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELEN</td>
<td>SJ H</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAM</td>
<td>CE H</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RACHEL</td>
<td>B H</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>humanities reading</td>
</tr>
<tr>
<td>DAVE</td>
<td>CE S</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAY</td>
<td>CE S X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEN</td>
<td>B H</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>strong SJ ethics</td>
</tr>
<tr>
<td>FRAN</td>
<td>SJ S</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAN</td>
<td>B S</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>analytical person</td>
</tr>
<tr>
<td>CATHY</td>
<td>CE S X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELIZABETH</td>
<td>B H X</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FRED</td>
<td>B H</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>humanities reading</td>
</tr>
<tr>
<td>CHARLIE</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>HARRY</td>
<td>SJ H</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
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<td>SJ H</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>BELINDA</td>
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<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>John</td>
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<td>Mary</td>
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<tr>
<td>Sally</td>
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</tr>
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<td>Gina</td>
<td>x</td>
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<td></td>
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<td></td>
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<tr>
<td>Totals</td>
<td>8</td>
<td>18</td>
<td>14</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>15</td>
<td>7</td>
<td>12</td>
<td>8</td>
<td>29</td>
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<td></td>
</tr>
</tbody>
</table>

CE: 5 1 6 0 2 2 9 1 4 5 11
SJ: 3 17 8 7 3 5 6 6 8 3 18
H: 3 11 8 6 4 4 7 3 7 1 15
S: 5 4 6 1 1 2 7 1 4 5 10
O: 0 2 2 0 0 1 1 2 1 2 3
Table 4.3.b. Explanation of the headings in Table 4.3.a.

<table>
<thead>
<tr>
<th>Heading</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudo</td>
<td>Pseudonym of participant</td>
</tr>
<tr>
<td>SJ or CE</td>
<td>Using Chawla’s (1999) definitions of influence from: Concern for social justice – (SJ), Concern for the environment – (CE) both of influences apparent – (B)</td>
</tr>
<tr>
<td>H, S, or O</td>
<td>Teacher training as primary or humanities teacher – (H); science based, geography and outdoors teacher – (S); and others – (O)</td>
</tr>
<tr>
<td>Concern for children</td>
<td>Participants who expressed a concern for children, grandchildren or intergenerational issues</td>
</tr>
<tr>
<td>Principles or religion</td>
<td>Participants who mentioned a religious influence or their principles as particularly significant</td>
</tr>
<tr>
<td>Book or author</td>
<td>Participants who specifically mentioned a significant book or author</td>
</tr>
<tr>
<td>Social Justice</td>
<td>Participants who mentioned the influence of social justice concerns</td>
</tr>
<tr>
<td>Vocation</td>
<td>Participants who mentioned work or vocational influences</td>
</tr>
<tr>
<td>Friends</td>
<td>Participants who mentioned influential friends</td>
</tr>
<tr>
<td>Edn</td>
<td>Participants who mentioned educational influences</td>
</tr>
<tr>
<td>Orgs</td>
<td>Participants who mentioned volunteer participation in outdoor groups</td>
</tr>
<tr>
<td>Family</td>
<td>Participants who mentioned influential family members</td>
</tr>
<tr>
<td>Negative experiences</td>
<td>Participants who mentioned the influence of negative experiences or habitat destruction</td>
</tr>
<tr>
<td>Nature experience</td>
<td>Participants who mentioned the influence of childhood experiences in nature</td>
</tr>
<tr>
<td>Reasons for choosing</td>
<td>Some participants fulfilled the criteria for both of Chawla’s categories of SJ and CE. The reason for this either/or rationalization is here.</td>
</tr>
<tr>
<td>Green colouring</td>
<td>Humanities (H) and Social Justice (SJ) indicators</td>
</tr>
<tr>
<td>Red colouring</td>
<td>Science (S) and Concern for environment (CE) indicators</td>
</tr>
<tr>
<td>Pale yellow</td>
<td>Participants classified as others – (O)</td>
</tr>
<tr>
<td>Bright Yellow</td>
<td>Participants who did not mention the natural environment as a childhood influence or as a negative influence</td>
</tr>
</tbody>
</table>

The bottom section of Table 4.3.a shows that there is a significant difference in the cohorts for the influences of principles or religion, social justice and organizations.
4.2 Child reading to adult reading comparisons

Comparisons between childhood and current reading are offered throughout this chapter to see if a particular type of text is an ongoing reading interest and influence for participants. The initial comparison is of childhood and adult reading genres using the initial coding method. The second method used in Section 4.3 is breaking the texts up into humanities and science based texts, and the third system used in Section 4.4 categorises the young reading by publishers’ categories for age and genre.

4.2.a First coding of general book types

With the first coding, it is difficult to correlate the children’s book genre areas with adult genres as the results are influenced by age as when participants increase their knowledge of the world and the different kinds of books available, and they develop related broadening interests. To compare the book types as the participants aged, for this section similar types of books are placed in the categories as explained in Table 4.4, the first form of coding.

Table 4.4. The first form of coding for the books read by participants used in Tables 4.5 – 4.14

<table>
<thead>
<tr>
<th>First Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info</td>
<td>Texts with environmental information in them. e.g. National Geographic, biology text books; modern scientific authors e.g. Suzuki and Attenborough; specific work or study related texts, e.g. Earth Charter.</td>
</tr>
<tr>
<td>People</td>
<td>Texts about people and their adventures. e.g. fictional adventure stories; creative non-fiction e.g. real life adventure stories, biographies and autobiographies.</td>
</tr>
<tr>
<td>Animal</td>
<td>Texts about animals e.g. fictional stories with animals as the main characters, text books about animals.</td>
</tr>
<tr>
<td>Fantasy/SF</td>
<td>While it could be argued that all fiction is fantasy, this group of texts incorporates the specifically unreal, texts that are fantasy or SF based, e.g. fairy tales for young children, SF and Fantasy stories.</td>
</tr>
<tr>
<td>Philosophy/religion</td>
<td>Texts on philosophy or religion, e.g. Bible and commentaries, other religious texts, philosophical writings.</td>
</tr>
<tr>
<td>Social</td>
<td>Texts about social issues or social justice issues e.g. ecophobia, learning styles; fiction dealing with social issues e.g. Dickens, Grapes of Wrath; and understanding historical turning points e.g. the life of Nelson Mandela.</td>
</tr>
<tr>
<td>Encyclopaedias</td>
<td>Encyclopaedias mentioned as reading matter.</td>
</tr>
<tr>
<td>Australiana</td>
<td>Books Australian life, e.g. Seven Little Australians, Billabong books.</td>
</tr>
</tbody>
</table>
The book preferences in the interviews act as indicators of the popularity of the categories amongst the participants and inform the analysis and discussion of the findings. The areas of interest revealed by the participants lead to the in-depth investigation of those areas.

Table 4.5. Overall number and percentage of participants who mentioned the first book coding categories

<table>
<thead>
<tr>
<th>Code for reading books</th>
<th>Young reading</th>
<th>Adult reading</th>
<th>Young %</th>
<th>Adult %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info</td>
<td>17</td>
<td>22</td>
<td>55</td>
<td>71</td>
</tr>
<tr>
<td>People</td>
<td>28</td>
<td>26</td>
<td>90</td>
<td>84</td>
</tr>
<tr>
<td>Animal</td>
<td>11</td>
<td>4</td>
<td>35</td>
<td>13</td>
</tr>
<tr>
<td>Fantasy/SF</td>
<td>17</td>
<td>13</td>
<td>55</td>
<td>42</td>
</tr>
<tr>
<td>Philosophy/religion</td>
<td>7</td>
<td>8</td>
<td>23</td>
<td>26</td>
</tr>
<tr>
<td>Social</td>
<td>14</td>
<td>17</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>Encyclopaedia</td>
<td>3</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Australiana</td>
<td>12</td>
<td>6</td>
<td>39</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 4.5 lists the participants’ overall remembered reading and reveals general trends among the environmental educators. The remembered reading of the 31 participants interviewed is divided into their childhood and their adult reading. The most popular categories remain the same four with the most popular area of reading as children being People texts, followed by Info and Fantasy/SF texts and Social texts. The most remembered type of adult text is still People, followed by Info and Social texts and then Fantasy/SF. As the participants mature, more of them read Info, Social material and Philosophy & religious texts; and there is a slight decrease in their interest in People and Fantasy/SF books. There is a larger drop in interest in Animal, Australiana and Encyclopaedia reading.

To enhance understanding of the data it has been further broken into the participant categories. In the following tables the columns are the groups of participants, there are three (O) Other group participants, 11 (S) Science trained participants and 17 (H) Humanities trained participants, and they are in the columns of Y & A for younger reading and adult reading.
Figure 4.1. Percentage of younger and older readers of different book categories
Graphic representation of Table 4.5

Table 4.6.a The number of times participants mentioned texts in the different book categories

<table>
<thead>
<tr>
<th>Code</th>
<th>*YO (3)</th>
<th>AO</th>
<th>YS (11)</th>
<th>AS</th>
<th>Y H(17)</th>
<th>AH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info</td>
<td>0</td>
<td>2</td>
<td>8</td>
<td>14</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>People</td>
<td>2</td>
<td>2</td>
<td>11</td>
<td>10</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Animal</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Fantasy/SF</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>7</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Philosophy/religion</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Social</td>
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<td>3</td>
<td>2</td>
<td>3</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Encyclopaedia</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Australiana</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

* YO = Young Other group; AO = Adult Other group; YS = Young Science Teacher group; AS = Adult Science Teacher group; YH = Young Humanities teacher group; AH = Adult Humanities teacher group.

Table 4.6.a details the number of times participants mentioned the text category, both in young and adult reading. This is useful to identify participants’ particularly important texts and text types. It reveals that with age, all groups increased their Info and Social reading and that participants’ reading about People and in the Philosophy/religion categories remained fairly constant while the interest in Animal texts, Australiana and Encyclopaedias dropped off with age.
The Fantasy/SF category varies among the different groups, with the (S) group maintaining their interest and the other two groups becoming less interested.

Table 4.6.b breaks the data into the groups of CE and SJ and shows an increase with age in the Info reading, Philosophy/religion and Social reading for the SJ participants.

Table 4.6.b. Number of times participants mentioned texts in different book categories

<table>
<thead>
<tr>
<th>Code</th>
<th>*YCE(12)</th>
<th>ACE</th>
<th>YSJ (19)</th>
<th>ASJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info</td>
<td>8</td>
<td>13</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>People</td>
<td>12</td>
<td>12</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>Animal</td>
<td>4</td>
<td>1</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Fantasy/SF</td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Philosophy/religion</td>
<td>0</td>
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<td>8</td>
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<tr>
<td>Social</td>
<td>2</td>
<td>2</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>Encyclopaedia</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Australiana</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

* YCE = Young Concern for the Environment; ACE = Adult Concern for the Environment group; YSJ = Young Concern for Social Justice group; ASJ = Adult Concern for Social Justice group.

Table 4.7.a. Participants mentioning initial coding book categories

<table>
<thead>
<tr>
<th>Code</th>
<th>YO</th>
<th>AO</th>
<th>YS</th>
<th>AS</th>
<th>YH</th>
<th>AH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info</td>
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<td>1</td>
<td>8</td>
<td>10</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>People</td>
<td>3</td>
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<td>0</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Fantasy/SF</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>7</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
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<td>Social</td>
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<td>2</td>
<td>2</td>
<td>3</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
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<td>0</td>
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<td>0</td>
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<td>0</td>
<td>2</td>
<td>1</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

Tables 4.7.a and 4.7.b show the number of participants who actually mention the text categories. However, as each group comprises different numbers of
participants, an easier comparison may be made by using Table 4.7, which uses percentages of the total number of participants in each group.

**Table 4.7b. Participants mentioning initial coding book categories**

<table>
<thead>
<tr>
<th>Code</th>
<th>YCE (12)</th>
<th>ACE</th>
<th>YSJ (19)</th>
<th>ASJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>People</td>
<td>12</td>
<td>10</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Animal</td>
<td>4</td>
<td>1</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Fantasy/SF</td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Philosophy/religion</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Social</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Encyclopaedia</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Australiana</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 4.8.a makes comparisons between the three groups easier to see, although with only 3 in the (O) group, the jumps in their percentages are significant.

**Table 4.8.a The percentage of participants in each group who mentioned the book categories**

<table>
<thead>
<tr>
<th>Code</th>
<th>YO %</th>
<th>AO%</th>
<th>YS%</th>
<th>AS%</th>
<th>YH%</th>
<th>AH%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info</td>
<td>0</td>
<td>33</td>
<td>73</td>
<td>91</td>
<td>53</td>
<td>65</td>
</tr>
<tr>
<td>People</td>
<td>100</td>
<td>67</td>
<td>82</td>
<td>82</td>
<td>94</td>
<td>88</td>
</tr>
<tr>
<td>Animal</td>
<td>67</td>
<td>0</td>
<td>27</td>
<td>9</td>
<td>35</td>
<td>18</td>
</tr>
<tr>
<td>Fantasy/SF</td>
<td>33</td>
<td>0</td>
<td>55</td>
<td>64</td>
<td>59</td>
<td>35</td>
</tr>
<tr>
<td>Philosophy/religion</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>18</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>Social</td>
<td>0</td>
<td>67</td>
<td>18</td>
<td>27</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>Encyclopaedia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Australiana</td>
<td>67</td>
<td>0</td>
<td>18</td>
<td>9</td>
<td>47</td>
<td>29</td>
</tr>
</tbody>
</table>

* YO = Young Other group; AO = Adult Other group; YS = Young Science Teacher group; AS = Adult Science Teacher group; YH = Young Humanities teacher group; AH = Adult Humanities teacher group
Table 4.8.a clarifies the popularity of the text categories with the different age and experience groups.

The most popular text category is People for groups except the Adult Scientific (AS) group who prefer Info texts. The Adult Other (AO) group also prefer to read Social books. Second preferences fluctuate a little more with the Young Others (YO) equally preferring Animal and Australiana books, The Adult Others (AO) and Young Scientific (YS) groups prefer Info texts, The Adult Scientific (AS) the people books and both age groups of the Humanities group the Social texts.

It can be seen that Fantasy/SF is the third most popular text category for all three young groups, YO, YS,& YH and the Adult Scientific (AS) group and the Adult Humanities (AH) have the Info texts as third.

Table 4.8.b is a representation of the same data broken up into the categories of Social Justice (SJ) and Concern for the Environment (EC). People is still the most popular category, followed by Social texts in both the Adult and Young SJ groups, Info texts in the adult CE group, and Fantasy/SF for the Young CE group.
Table 4.8.b. The percentage of participants in each group who mentioned book categories

<table>
<thead>
<tr>
<th>Code</th>
<th>YCE%</th>
<th>ACE%</th>
<th>YSJ%</th>
<th>ASJ%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info</td>
<td>58</td>
<td>83</td>
<td>53</td>
<td>63</td>
</tr>
<tr>
<td>People</td>
<td>100</td>
<td>83</td>
<td>84</td>
<td>84</td>
</tr>
<tr>
<td>Animal</td>
<td>33</td>
<td>8</td>
<td>37</td>
<td>16</td>
</tr>
<tr>
<td>Fantasy/SF</td>
<td>75</td>
<td>58</td>
<td>47</td>
<td>32</td>
</tr>
<tr>
<td>Philosophy/religion</td>
<td>0</td>
<td>0</td>
<td>37</td>
<td>42</td>
</tr>
<tr>
<td>Social</td>
<td>17</td>
<td>8</td>
<td>63</td>
<td>84</td>
</tr>
<tr>
<td>Encyclopaedia</td>
<td>8</td>
<td>0</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Australiana</td>
<td>33</td>
<td>8</td>
<td>42</td>
<td>26</td>
</tr>
</tbody>
</table>

Figure 4.3. Percentage of participants mentioning book categories

Graphic representation of Table 4.8.b

4.2.b Gender differences in childhood reading

In order to compare potential gender and generational differences in remembered reading, the number of times an initial coded text type has been mentioned has been divided by the number of participants of that gender and age group. The data in Table 4.9 indicates that males read more from the Info and Encyclopaedia categories, while females read more from the People, Fantasy/SF,
Philosophy/religion, Social and Australiana categories. Both groups read similar amounts in the Animal category.

This also reveals that the females remember reading more books overall than the males. The data also indicates that the most popular category for both genders is People texts, followed by Social texts, with the difference coming in at 3rd preference with males equally preferring Info and Animals, while females remember Fantasy/SF.

*Table 4.9. Gender differences in childhood reading*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Info</th>
<th>People</th>
<th>Animal</th>
<th>Fantasy /SF</th>
<th>Philosophy /religion</th>
<th>Social</th>
<th>Encyc.</th>
<th>Australiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1.09</td>
<td>3.63</td>
<td>1.09</td>
<td>1</td>
<td>0.18</td>
<td>1.36</td>
<td>0.18</td>
<td>0.18</td>
</tr>
<tr>
<td>Female</td>
<td>0.85</td>
<td>5.6</td>
<td>1.1</td>
<td>1.45</td>
<td>0.6</td>
<td>3</td>
<td>0.1</td>
<td>1.05</td>
</tr>
</tbody>
</table>

### 4.2.c Gender differences in adult reading

To examine the differences in adult reading preferences between the genders, the same method of comparison is employed as used above. The data here in Table 4.10 indicates that Info is still the primary category for males, followed by People and Social texts. For females, the primary category is People books, followed by Info and Social texts. Again females remember more texts, but the discrepancy between the genders is not so pronounced.

*Table 4.10. Gender differences in Adult reading*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Info</th>
<th>People</th>
<th>Animal</th>
<th>Fantasy /SF</th>
<th>Philosophy /religion</th>
<th>Social</th>
<th>Encyc.</th>
<th>Australiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1.09</td>
<td>0.9</td>
<td>0.18</td>
<td>0.45</td>
<td>0</td>
<td>0.55</td>
<td>0</td>
<td>0.09</td>
</tr>
<tr>
<td>Female</td>
<td>0.8</td>
<td>1</td>
<td>0.1</td>
<td>0.4</td>
<td>0.4</td>
<td>0.8</td>
<td>0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

### 4.2.d Generational differences in reading preferences

For this analysis the participants are placed in three age groups, the young group are those who are newer teachers with fewer than 10 years of experience. The
older group are those who have 30 years’ experience, are approaching retirement, or have recently retired. The mid group are those in-between.

Table 4.11 shows the childhood reading participants reported. As can be seen from Table 4.11, the middle group remember reading more texts than the younger and older groups.

Table 4.11. Age category separation of childhood reading preferences.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Info</th>
<th>People</th>
<th>Animal</th>
<th>Fantasy /SF</th>
<th>Philosophy /religion</th>
<th>Social</th>
<th>Encyc.</th>
<th>Australiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>0.4</td>
<td>4.9</td>
<td>1</td>
<td>1.4</td>
<td>0.3</td>
<td>1.7</td>
<td>0.2</td>
<td>0.9</td>
</tr>
<tr>
<td>Mid</td>
<td>1.3</td>
<td>5.4</td>
<td>1.1</td>
<td>1.4</td>
<td>0.6</td>
<td>3.1</td>
<td>0.06</td>
<td>0.6</td>
</tr>
<tr>
<td>Older</td>
<td>0.75</td>
<td>3</td>
<td>1.25</td>
<td>0.5</td>
<td>0.25</td>
<td>1.25</td>
<td>0.25</td>
<td>0.75</td>
</tr>
</tbody>
</table>

The most popular text group is still People in all age groups, with Social texts as the second preference; the older group also have Animal groups in second place. The younger and mid groups mention Fantasy/SF as their third preference here, while the older group remember Info and Australiana texts as their third preference.

Table 4.12. Age category separation of adult reading preferences

<table>
<thead>
<tr>
<th>Age group</th>
<th>Info</th>
<th>People</th>
<th>Animal</th>
<th>Fantasy /SF</th>
<th>Philosophy /religion</th>
<th>Social</th>
<th>Encyc.</th>
<th>Australiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>0.7</td>
<td>1.1</td>
<td>0.1</td>
<td>0.6</td>
<td>0.4</td>
<td>0.6</td>
<td>0</td>
<td>0.1</td>
</tr>
<tr>
<td>Mid</td>
<td>0.94</td>
<td>0.94</td>
<td>0.11</td>
<td>0.35</td>
<td>0.24</td>
<td>0.35</td>
<td>0</td>
<td>0.11</td>
</tr>
<tr>
<td>Older</td>
<td>1.25</td>
<td>0.75</td>
<td>0.25</td>
<td>0.25</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 4.12 illustrates that the most popular two adult reading categories for all three groups are Info and People texts. The younger and mid groups third preferences are Fantasy/SF and Social texts while the older group prefer Australiana.
4.2.e Overall Most popular reading

To compare the overall most popular reading, a table using an arbitrary numbering system with 3 for the most popular category, 2 for the second and 1 for the third, has been created to give an indication of the most popular reading overall. This is an indication of the more popular categories of books mentioned by the discrete groups.

Table 4.13 indicates that within the childhood reading, the People books were the most popular followed by books with Social content in (nearly) every group.

*Table 4.13. Overall popularity of the book categories in childhood reading*

<table>
<thead>
<tr>
<th><em>Group</em></th>
<th>Info</th>
<th>People</th>
<th>Animal</th>
<th>Fantasy /SF</th>
<th>Philosophy /religion</th>
<th>Social</th>
<th>Encyc.</th>
<th>Australiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>S</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>H</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Young</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Mid</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Older</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CE</td>
<td>1</td>
<td>3</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SJ</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>4</strong></td>
<td><strong>30</strong></td>
<td><strong>5</strong></td>
<td><strong>6</strong></td>
<td><strong>16</strong></td>
<td></td>
<td></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>

* O= Other group; S= Science Teacher group; H = Humanities teacher group; CE = Concern for the Environment group; SJ = Concern for Social Justice group.

Using a similar 1 – 3 rating, Table 4.14 indicates that as adults, the reading categories preferred by all are People and Info texts with Social texts as their third preference. The alignment of reading preferences among all the groups may indicate that as participants have aged, their interest have coincided more, possibly due to their common work and interest.
Table 4.14. Overall popularity of the book categories in adult reading

<table>
<thead>
<tr>
<th>*Group</th>
<th>Info</th>
<th>People</th>
<th>Animal</th>
<th>Fantasy/SF</th>
<th>Philosophy/religion</th>
<th>Social</th>
<th>Encyc.</th>
<th>Australiana</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Young</td>
<td>2</td>
<td>3</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE</td>
<td>3</td>
<td>3</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SJ</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>24</td>
<td>26</td>
<td>6</td>
<td>1</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* O= Other group; S= Science Teacher group; H = Humanities teacher group; CE = Concern for the Environment group; SJ = Concern for Social Justice group.

4.2.f Personal reading habits

To ascertain if individual reading preferences altered over the years, Appendix 5 lists the participants, their teacher training, and the categories of books they read when younger and as adults. This shows that individual participants have differing responses to the various categories, not only in the reading categories mentioned, but also in the number of reading categories mentioned. Seventeen of the 31 participants did not remember reading scientific or factual texts when younger, and most recollect reading humanities texts at all ages.

Only two AO participants read different kinds of texts as adults than as children, while most participants appear to be reading similar types of material at all ages.

4.3 Books by Type, Science and Humanities

Section 4.3 uses the second type of coding referred to in Section 4.2. As mentioned in Section 2.9, the concept of genre or type of book is a difficult one to define, especially when talking to a large number of people about books. For this section of the results, the books and stories participants mentioned are grouped
using the local library classifications of the books and when appropriate using the ‘in vivo’ method, using the types or genres of books participants mentioned (Creswell, 2002, p. 448). The following tables reveal the number of times the books or types of books were identified by participants. The texts are also broken-up into humanities texts and scientific texts as detailed in the methodology section (Section 3.4.f), with the Scientific category encompassing all the factual material participants mentioned including subgroups of textbooks, dictionaries and encyclopaedias and specific magazines which fitted within the dewy decimal system and the Library of Congress Science sections.

Table 4.15 reveals that the most popular type of book mentioned as influential reading material while the participants were young or at school was Fantasy/SF with 56 mentions. Adventure stories, were mentioned 41 times, and Classical Literature (Australian, English and US) follows this with 31. Animal books were also popular with young readers generating 16 mentions. As participants matured, their reading material appears to have increased in the Autobiography and Biography areas, and in Social sciences.

Table 4.15. Library coding of texts

<table>
<thead>
<tr>
<th>Library Genre</th>
<th>YH</th>
<th>YS</th>
<th>YO</th>
<th>AH</th>
<th>AS</th>
<th>AO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adventure &amp; Junior fiction adventure</td>
<td>23</td>
<td>17</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>Australian fiction</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Australian history &amp; History</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Australian, English &amp; US literature &amp; Poetry</td>
<td>25</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>37</td>
</tr>
<tr>
<td>Autobiography &amp; Biography</td>
<td>6</td>
<td>17</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>29</td>
</tr>
<tr>
<td>Child psychology</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Children’s literature</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Comics</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Constitutional law &amp; Ethics</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Crime, Detective, Spy, Mystery, &amp; Thriller</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Fairy tales</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Fantasy &amp; SF</td>
<td>40</td>
<td>16</td>
<td>1</td>
<td>13</td>
<td>16</td>
<td></td>
<td>86</td>
</tr>
</tbody>
</table>
Table 4.16 illustrates the book interest areas of the non-fiction or scientific type books mentioned by the participants. This table reveals a significantly smaller number of remembered books and types. The numbers of books mentioned here are very limited, but it can be observed that the (S) participants read the more specific scientific texts – books about birds, insects, frogs etc, while the (H) participants appear to have read the more generalised texts, such as encyclopaedias and National Geographic Magazine. The generalised reading appears to have continued as the participants matured, with magazines and popular environmental writers maintaining their popularity. Work related reading, with information gained from specific text type books and reference material has also increased.
Table 4.16. Library coding of scientific texts.

<table>
<thead>
<tr>
<th>Mentions of scientific reading</th>
<th>YH</th>
<th>YS</th>
<th>YO</th>
<th>AH</th>
<th>AS</th>
<th>AO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Geographic magazine, and encyclopaedias, wildlife magazines, Audax magazine</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td><em>Silent Spring</em> by Rachel Carson</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Meccano magazine and journals</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Popular environmentalists, David Suzuki, Harry Butler, David Attenborough, Charles Birch, and Environmental material</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Animal and plant books, biology, physiology &amp; anatomy, resource books on birds, mushrooms, butterflies, frogs, trees, growing trees, natural history, school texts, chemistry text book, and <em>Yates Garden Guide</em> &amp; seed packets</td>
<td>1</td>
<td>6</td>
<td>9</td>
<td>5</td>
<td></td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Stephen Hawkins</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><em>The Way of the Whirlwind</em> by Mary &amp; Elizabeth Durack,</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Work policies, web pages, newspapers</td>
<td></td>
<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>History and geography chronicles. Explorer books, treks etc</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research &amp; reference books</td>
<td></td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Earth Charter &amp; info related to that</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>The Brain that Changes Itself</em>, by Doidge, psychology, medical</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><em>The Great Destruction</em> by Paul Gooding,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>13</td>
<td>15</td>
<td>22</td>
<td>27</td>
<td>6</td>
<td>83</td>
<td></td>
</tr>
</tbody>
</table>

4.3.a Most popular books overall

Table 4.17 lists the overall participant’s most often mentioned responses to questions about their reading. Participants did not always mention individual books or authors; sometimes they mentioned a genre of literature they liked.
Table 4.17. Number of mentions of most popular books, Library coding

<table>
<thead>
<tr>
<th>Books - Author</th>
<th>YH</th>
<th>YS</th>
<th>YO</th>
<th>AH</th>
<th>AS</th>
<th>AO</th>
<th>Total</th>
<th>Library category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolkien, <em>The Hobbit &amp; Lord of the Rings Trilogy</em></td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>13</td>
<td>SF</td>
</tr>
<tr>
<td>Personal adventure, &amp; Biography</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>Biography</td>
</tr>
<tr>
<td>Enid Blyton, <em>The Faraway Tree, Mallory Towers</em></td>
<td>8</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>Junior Fiction</td>
</tr>
<tr>
<td>English literature, <em>Macbeth, Shakespeare, &amp; school texts the poet John Keats</em></td>
<td>5</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>English literature</td>
</tr>
<tr>
<td>Rowling, <em>Harry Potter</em></td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td>8</td>
<td>Fantasy</td>
</tr>
<tr>
<td>Paul Coelho books, *</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>Psychological drama</td>
</tr>
<tr>
<td><em>Louv, Last Child in the Woods</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td>5</td>
<td>Education</td>
</tr>
<tr>
<td>Diamond, <em>Guns, Germs and Steel &amp; Collapse</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td>5</td>
<td>Social sciences</td>
</tr>
<tr>
<td>Biblical things Scripture Union notes &amp; the <em>Bible, Paul the Dauntless</em></td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>Religious experience</td>
</tr>
<tr>
<td>Roald Dahl</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>SF</td>
</tr>
<tr>
<td>John Le Carre</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>Fiction spy</td>
</tr>
<tr>
<td>Fantasy</td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>4</td>
<td>Fantasy</td>
</tr>
<tr>
<td>Thiele, <em>Storm Boy</em></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>Junior fiction adventure</td>
</tr>
<tr>
<td>Herbert, <em>Dune</em></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>SF</td>
</tr>
<tr>
<td>Stevenson, <em>Treasure Island</em></td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>Junior fiction adventure</td>
</tr>
<tr>
<td>Wyndham, <em>Day of the Triffids</em></td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>SF</td>
</tr>
<tr>
<td>Bradley, <em>Cassandra, &amp; Darkover series, Mists of Avalon</em></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>Fantasy</td>
</tr>
<tr>
<td>Wilbur Smith</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>Adventure</td>
</tr>
<tr>
<td>Hobb, <em>Liveship Traders</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>SF</td>
</tr>
<tr>
<td>Courtney, <em>The Potato Factory</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>3</td>
<td>English literature</td>
</tr>
</tbody>
</table>
4.3.b Individual reading

When asked about childhood reading, participants repeatedly mentioned a small number of specific authors and books. Two authors stood out with 10 specific text mentions each. They were the various writings of Enid Blyton, mentioned by 8 people, and of J R R Tolkien mentioned by 8 people. The most often mentioned individual text was Lord of the Rings mentioned by 5 people, The Hobbit was mentioned by 4, and the Harry Potter series by J K Rowling had 5 mentions. The most mentioned Enid Blyton series was The Famous Five with 2 mentions. The Harry Potter series was also mentioned by 2 participants as part of their adult reading.

Table 4.18. Remembered reading when younger

<table>
<thead>
<tr>
<th>Group</th>
<th>Science books</th>
<th>Humanities books</th>
<th>Lord of the Rings</th>
<th>Enid Blyton</th>
<th>Harry Potter</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>47%</td>
<td>100%</td>
<td>29%</td>
<td>24%</td>
<td>18%</td>
</tr>
<tr>
<td>S</td>
<td>46%</td>
<td>91%</td>
<td>27%</td>
<td>36%</td>
<td>18%</td>
</tr>
<tr>
<td>O</td>
<td>0%</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>SJ</td>
<td>42%</td>
<td>95%</td>
<td>26%</td>
<td>21%</td>
<td>21%</td>
</tr>
<tr>
<td>CE</td>
<td>42%</td>
<td>100%</td>
<td>25%</td>
<td>33%</td>
<td>18%</td>
</tr>
<tr>
<td>All</td>
<td>42%</td>
<td>97%</td>
<td>26%</td>
<td>26%</td>
<td>16%</td>
</tr>
</tbody>
</table>

Appendix 6 is a table indicating individual participants’ remembered childhood reading listed by genre code, and book age group. It also lists participants’ educational background showing if they are (S) high school science/geography trained, (H) humanities or primary trained and (O) other educational background.

The Appendix 5 Table also indicates at what type of Environmental Education Centre (EEC) the participants work. According to participants, EECs designated as S focus primarily on providing mainly science or high school science based curricula for their educational experiences. Those designated with an H provide predominantly primary school educational experiences, indigenous opportunities for learning and personal skill development for all ages. Those designated with
both letters provide both experiences, with participants seeing predominance on the first category.

Using Chawla’s division of participants into those influenced to be pro-environmental by social justice concerns (SJ) and those concerned for the environment (CE), the breakup of significant children’s reading is in Table 4.19. This reveals that while both groups have Adventure Stories as their main reading interest, a significant difference appears in the second ranking preference, with the SJ group reading Spiritual/Religious/Philosophy books and the CE group reading none. Both groups have a heightened interest in the Fantasy/SF.

Table 4.19. Alternate break-up of participant’s reading

<table>
<thead>
<tr>
<th>Book/ author</th>
<th>SJ (19)</th>
<th>CE (12)</th>
<th>SJ %</th>
<th>CE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enid Blyton</td>
<td>4</td>
<td>4</td>
<td>21</td>
<td>33</td>
</tr>
<tr>
<td>Tolkien</td>
<td>5</td>
<td>2</td>
<td>26</td>
<td>16</td>
</tr>
<tr>
<td>Harry Potter</td>
<td>5</td>
<td>1</td>
<td>26</td>
<td>8</td>
</tr>
<tr>
<td>Spiritual/religious/philosophy</td>
<td>10</td>
<td>0</td>
<td>52</td>
<td>0</td>
</tr>
<tr>
<td>Adventure stories</td>
<td>11</td>
<td>8</td>
<td>58</td>
<td>66</td>
</tr>
<tr>
<td>Fantasy/SF</td>
<td>7</td>
<td>6</td>
<td>37</td>
<td>50</td>
</tr>
<tr>
<td>Silent Spring</td>
<td>3</td>
<td>1</td>
<td>16</td>
<td>8</td>
</tr>
</tbody>
</table>

4.3.c Reading preferences when older

In the interviews, participants were asked what they were currently reading and to indicate their current reading preferences. As can be seen from Table 4.20, significantly more (AS) participants mentioned currently reading scientific books (91%) than the (AH) cohort (65%), or their younger (YS) selves (55%). The (AH) group are also reading more scientific books (65%) compared to their younger selves (47%) and both groups are reading humanities books as adults.

The types of humanities books the participants are currently reading indicate that again Fantasy and SF are popular types of reading material for both groups with 25.8% mentions of this genre (H: 17.5%; S: 44.7%). This is followed by the Biography/autobiography and Personal adventure books with 20% mentions overall, (H: 24.3%; S: 15.8%) and the Crime/thriller/forensic/spy books with
11.7% and the Social science and issues literature with 11.7% mentions. The other standout genre is the Historical novels for the (H) group, with 13.5% of mentions.

*Table 4. 20. Age comparison of reported Humanities and Scientific reading*

<table>
<thead>
<tr>
<th>Younger</th>
<th>Science books</th>
<th>Humanities books</th>
<th>Adult</th>
<th>Science books</th>
<th>Humanities books</th>
</tr>
</thead>
<tbody>
<tr>
<td>(YH) Younger Humanities group</td>
<td>47%</td>
<td>100%</td>
<td>(AH) Adult Humanities group</td>
<td>65%</td>
<td>94%</td>
</tr>
<tr>
<td>(YS) Younger Science group</td>
<td>55%</td>
<td>82%</td>
<td>(AS) Adult Science group</td>
<td>91%</td>
<td>100%</td>
</tr>
<tr>
<td>(YO) Young Other group</td>
<td>0%</td>
<td>100%</td>
<td>(AO) Adult Other group</td>
<td>67%</td>
<td>100%</td>
</tr>
<tr>
<td>(YCE) Younger Concern for the Environment group</td>
<td>50%</td>
<td>92%</td>
<td>(ACE) Adult Concern for the Environment group</td>
<td>83%</td>
<td>100%</td>
</tr>
<tr>
<td>(YSJ) Younger Concern for Social Justice group</td>
<td>42%</td>
<td>95%</td>
<td>(ASJ) Adult Concern for Social Justice group</td>
<td>74%</td>
<td>95%</td>
</tr>
</tbody>
</table>

**4.4 Classifying children’s reading books by suggested reading age**

The third method of coding the data as mentioned in Section 4.2 is coding the children’s books by the publisher’s suggested reading age. A number of participants mentioned reading books that are within adult categories in their childhood reading so other publisher’s adult categories are also listed where there are repeated book category mentions. Table 4.21.a also includes the breakup of the participants by teacher type- Humanities (H), Science (S), and Other (O), and Table 4.21.b, predominant childhood influences of Social Justice (SJ) and Care for the Environment (CE).
### Table 4.21.a Young books by publisher’s categories

<table>
<thead>
<tr>
<th>Text type</th>
<th>Total mentions</th>
<th>Number of individuals</th>
<th>No of different books</th>
<th>No of mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>S</td>
<td>O</td>
<td>H</td>
</tr>
<tr>
<td>Under 7 &amp; picture</td>
<td>12</td>
<td>8</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>8 – 11</td>
<td>32</td>
<td>19</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>YA, 11 – 15</td>
<td>22</td>
<td>6</td>
<td>0</td>
<td>13</td>
</tr>
</tbody>
</table>

**Adult books mentioned in childhood reading**

<table>
<thead>
<tr>
<th>Text type</th>
<th>Total mentions</th>
<th>Number of individuals</th>
<th>No of different books</th>
<th>No of mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H</td>
<td>S</td>
<td>O</td>
<td>H</td>
</tr>
<tr>
<td>SF &amp; Fantasy</td>
<td>13</td>
<td>12</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Classic fiction</td>
<td>11</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Contemporary fiction</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Philosophy &amp; religion</td>
<td>8</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Biography &amp; history &amp; indigenous</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Action adventure (AA) &amp; graphic</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Historical fiction</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Poetry &amp; plays</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Mind, body, spirit (MBS)</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Thriller/suspense/crime</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Fiction</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Tables 4.21.a and 4.21.b show that the largest group of remembered books are from the 8 – 11 age range, both in the number of books mentioned, and in the number of mentions. The number of mentions per person in the three (H), (S) & (O) groups also show that the (H) cohort remember more books from this middle age group, as does the comparison between the (SJ) and (CE) groups, with the (SJ) group mentioning more than the (CE) group.
### Table 4.21b. Young books by publisher’s categories

<table>
<thead>
<tr>
<th>Text type</th>
<th>Total mentions</th>
<th>Number of mentions</th>
<th>No of different books</th>
<th>No of mentions by participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SJ</td>
<td>CE</td>
<td>SJ</td>
<td>CE</td>
</tr>
<tr>
<td>Under 7 &amp; picture</td>
<td>15</td>
<td>7</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>8 – 11</td>
<td>33</td>
<td>25</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>YA, 11 – 15</td>
<td>20</td>
<td>8</td>
<td>12</td>
<td>5</td>
</tr>
</tbody>
</table>

**Adult books mentioned in child reading**

|                   | SJ  | CE  | SJ  | CE  |                |                              |
|--------------------|-----|-----|-----|-----|                |                              |
| SF & Fantasy       | 17  | 8   | 3   | 3   | 11             | 25                           |
| Classic fiction    | 11  | 7   | 7   | 4   | 10             | 18                           |
| Contemporary fiction | 12 | 1   | 7   | 1   | 11             | 13                           |
| Philosophy & religion | 1   | 0   | 4   | 0   | 10             | 11                           |
| Biography & history & indigenous | 5  | 0   | 3   | 0   | 4              | 5                            |
| Action adventure (AA) & graphic   | 4   | 4   | 4   | 3   | 3              | 8                            |
| Historical fiction   | 4   | 1   | 3   | 1   | 3              | 5                            |
| Poetry & plays       | 3   | 1   | 2   | 1   | 4              | 4                            |
| Mind, body, spirit (MBS) | 4   | 0   | 4   | 0   | 2              | 4                            |
| Thriller/suspense/crime | 3   | 0   | 3   | 0   | 3              | 3                            |
| Fiction             | 1   | 2   | 1   | 2   | 3              | 3                            |

### 4.5 Library comparisons of Adult Reading

Library-borrowing data from the Newcastle Regional Library was obtained (Library, 2012) in an attempt to ascertain if there is a difference between the reading habits of the participants in this study and the public. Comparisons of the popularity of types or genres of literature between the participant environmental educators and the public could reveal indications that certain forms of literature are more influential in promoting pro-environmental behaviours. As previously mentioned, defining literary genre or type varies according to the situation or study, so for this section of the results the categories/genres were adjusted to match those of the library data.
The Newcastle Library provided a spreadsheet detailing a three-month borrowing period from the multi-council public library region. The data reveals the borrowing patterns of people who live in urban, suburban, and rural residential areas in and around Newcastle. The libraries have a broader variety of loan material than is listed here, such as electronic books and movies and music, so in comparing the data, have only the library categories that match the types of literature the study participants mentioned have been used.

*Figure 4.4. Comparing Public borrowing and participant mentions of text types using Library genre definitions. Graphic representation of selected data from Table 4.22*

![Bar chart showing a comparison between study and library percentages across various genres.]

This is an adult only comparison of the humanities (H), science (S), and other (O) participants compared the public data, as children’s borrowing data from the libraries is not specific enough to indicate any trends. It is also only a broad indicator as the material listed is library borrowing based, and many people buy books to read or borrow them from friends and relatives. The relevance of the science based reading comparison is compromised by the specific work-related interests of the participants, the private ownership of specific interest books and alternative access to non-fiction material.

As can be seen from Figure 4.4, there is a noticeable difference between the popularity of genres between the public borrowing and the identified participants’
current reading. The data comparisons reveal that of the genres listed, the study participants overall read more than the Newcastle public group from the categories of SF & Paranormal; Social Issues; Psychology, New Age & Religious texts; and Nonfiction & reference. Overall, study participants read less from the categories: Horror, Crime, Mystery; Romance & literature; and Autobiography, Biography & Travel. (see Table 4.23 for numerical details.) Table 4.23 also includes the data for the participant groups, (H), (S) & (O), in the percentage section, with and without their science related books. This reveals the modification of figures due to the significant number of science related books the participants read.

Figure 4.5. Comparison of library genre types between the public and the three participant groups, H, S & O from Table 4.22.

While the broad data suggests ongoing reading in these areas for pro-environmentally minded individual, the groups of participants prefer different types of literature within these categories. Thus, when the data is separated into the (H), (S) and (O) groups it can be seen that the (O) readers read more Social Issues and Reference literature, the (S) participants read more Reference and SF and Paranormal books, while the (H) participants read the most from the Psychology, New Age and Religious genre.
<table>
<thead>
<tr>
<th>Library’s categories</th>
<th>Library data Number of books borrowed</th>
<th>(H) reading</th>
<th>(S) reading</th>
<th>(O) reading</th>
<th>Total P’t’pant data</th>
<th>lib % /63074</th>
<th>study % /173</th>
<th>% without science books /123</th>
<th>(H) people’s books /94</th>
<th>(S) people’s books /65</th>
<th>(O) people’s books /14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autobiography, Biography, Travel</td>
<td>14135</td>
<td>18</td>
<td>8</td>
<td>0</td>
<td>26</td>
<td>22.4%</td>
<td>15.0%</td>
<td>21.1%</td>
<td>19.1%</td>
<td>12.3%</td>
<td>0%</td>
</tr>
<tr>
<td>Australian</td>
<td>1834</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>2.9%</td>
<td>3.4%</td>
<td>4.9%</td>
<td>3.2%</td>
<td>3.1%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Romance and Literature</td>
<td>13591</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td>21.5%</td>
<td>7.5%</td>
<td>10.6%</td>
<td>11.7%</td>
<td>1.5%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Horror, Crime, Mystery</td>
<td>19350</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>14</td>
<td>30.6%</td>
<td>8.1%</td>
<td>11.4%</td>
<td>8.5%</td>
<td>7.7%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Nonfiction &amp; Reference</td>
<td>3542</td>
<td>18</td>
<td>26</td>
<td>6</td>
<td>50</td>
<td>5.6%</td>
<td>28.9%</td>
<td>0%</td>
<td>19.1%</td>
<td>40.0%</td>
<td>42.9%</td>
</tr>
<tr>
<td>Psychology, New Age &amp; Religion</td>
<td>3328</td>
<td>16</td>
<td>2</td>
<td>0</td>
<td>18</td>
<td>5.3%</td>
<td>10.4%</td>
<td>14.6%</td>
<td>17.0%</td>
<td>3.1%</td>
<td>0%</td>
</tr>
<tr>
<td>Social issues</td>
<td>614</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>15</td>
<td>1%</td>
<td>8.6%</td>
<td>12.2%</td>
<td>7.4%</td>
<td>6.2%</td>
<td>28.6%</td>
</tr>
<tr>
<td>SF &amp; Paranormal</td>
<td>6680</td>
<td>13</td>
<td>17</td>
<td>1</td>
<td>31</td>
<td>10.6%</td>
<td>17.9%</td>
<td>25.2%</td>
<td>13.8%</td>
<td>26.2%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Totals</td>
<td>63074</td>
<td>94</td>
<td>65</td>
<td>14</td>
<td>173</td>
<td>99.9%</td>
<td>99.8%</td>
<td>100</td>
<td>99.8%</td>
<td>99.1%</td>
<td>99.9%</td>
</tr>
</tbody>
</table>
While it is only an indication of reading preferences, it appears that an ongoing interest in reading: SF & paranormal; Social Issues; Psychology, New Age & Religious texts; and Nonfiction & Reference material, may influence pro-environmental beliefs and concerns amongst the study participants.

As most of the study participants are reading for work as well as pleasure it is understandable that they are reading from the categories of Nonfiction & Reference; Social Issues; Psychology, New Age & Religious texts. However, it is not as easy to understand the popularity of the SF & Paranormal genre category as it should not be relevant to their work related reading.

When the data is separated into the (H),(S) and (O) groups it can be seen that the (O) readers read more Social Issues and Reference literature, the (S) participants read more Reference and SF and Paranormal books, while the (H) participants read the most from the Psychology, New Age and Religious genre.

4.6 Stories in the EECs
An indication of the use of stories in the workplace was collated from the responses participants supplied to questions about the use of stories in the Environmental Education Centres (EECs). Anecdotal stories are regularly used in the EECs to explain activities and support learning and understanding. Written stories are used less often, but they are prevalent in a number of the EECs. Table 4.22 indicates the types of EEC where they are used.

Each of the 19 EECs has their priority teaching specializations. Broadly the EECs cover environmental education, but they often focus on high school science related activities, high school leadership and social skills and primary school science and social awareness.

The EECs marked as S specialize in the high school science based activities, and those marked H specialise in the social skills for various age groups. As can be seen from the following table, most participants see their EECs as a mixture. The S&H EECs appear to prioritise the science side of the spectrum, and the H&S prioritise the
humanities. The first letter is the more dominant teaching method according to the participants interviewed.

As can be seen from the data, all the H and most of the H&S and S&H centres use published stories. Half of the S centres use published stories in their presentations for students.

Twenty one participants mentioned deliberately using published stories at work. Usually these are specifically targeted for an age group or organised activity at the EEC. For seven participants, specifically written stories are used in their workplace, while other participants have chosen a variety of stories, usually for younger age groups, to use in their programs.

Table 4.23. Printed stories used in the EECs compared to EEC type

<table>
<thead>
<tr>
<th>Type of EEC</th>
<th>Number of EECs</th>
<th>No of EECs using stories</th>
<th>Number of participants identifying using printed stories</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>S &amp; H</td>
<td>6</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>H &amp; S</td>
<td>8</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>H</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>16</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 4.24. Users of published stories

<table>
<thead>
<tr>
<th>Published Texts</th>
<th>Users of the texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stories specifically written for the EEC</td>
<td>OLIVIA, JANE, TONI, NINA, MARY, SALLY, GINA</td>
</tr>
<tr>
<td>Nemo (movie reference)</td>
<td>RACHEL, KEN</td>
</tr>
<tr>
<td><em>The Bunyip of Berkley Creek</em> (Wagner &amp; Brooks, 1990)</td>
<td>KAY, DAVE</td>
</tr>
<tr>
<td><em>The Lorax</em> (Seuss, 2002)</td>
<td>CHARLIE, HELEN</td>
</tr>
<tr>
<td>Aboriginal cultural stories,</td>
<td>HELEN, HARRY</td>
</tr>
<tr>
<td>Happy Feet (movie reference)</td>
<td>RACHEL</td>
</tr>
<tr>
<td><em>We’re Going on a Bear Hunt</em> (Rosen, 1996)</td>
<td>WENDY</td>
</tr>
<tr>
<td><em>There’s a Hair in my Dirt</em> (Larson, 1998)</td>
<td>WENDY</td>
</tr>
<tr>
<td><em>The Giving Tree</em> (Silverstein, 1992)</td>
<td>WENDY</td>
</tr>
<tr>
<td><strong>Going Bush</strong> (Wheatley, 2007)</td>
<td>FRAN</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------</td>
</tr>
<tr>
<td><strong>Worms, the Mechanics of Organics</strong> (Bollard, 2011)</td>
<td>FRAN</td>
</tr>
<tr>
<td><strong>In the Bin</strong> (Bollard, 2008)</td>
<td>FRAN</td>
</tr>
<tr>
<td>“Brian's Urban Farm” by Natalie Dickinson</td>
<td>FRAN</td>
</tr>
<tr>
<td><strong>Turtle Song</strong> (A. Brown &amp; Toft, 2001)</td>
<td>CATHY</td>
</tr>
<tr>
<td><strong>Cry me a River</strong> (McRae, 1991)</td>
<td>CHARLIE</td>
</tr>
<tr>
<td><strong>The People who Hugged Trees</strong> (Rose, 1990)</td>
<td>CHARLIE</td>
</tr>
<tr>
<td><strong>The Best Beak in Binaroo Bay</strong> (Oliver, 2011)</td>
<td>JANE</td>
</tr>
<tr>
<td><strong>The Snow Goose</strong> (Gallico, 1942)</td>
<td>HELEN</td>
</tr>
<tr>
<td>David Suzuki books,</td>
<td>HELEN</td>
</tr>
<tr>
<td><strong>Where the Wild Things are</strong> (Sendak, 1975)</td>
<td>PAM</td>
</tr>
<tr>
<td>“The Rabbits and the Badger” (Unknown)</td>
<td>PAM</td>
</tr>
<tr>
<td><strong>Refugees</strong> (Miller, 2003)</td>
<td>PAM</td>
</tr>
<tr>
<td><strong>Mutt Dog</strong> (King, 2004)</td>
<td>PAM</td>
</tr>
<tr>
<td><strong>Window</strong> (Baker, 1991)</td>
<td>PAM</td>
</tr>
<tr>
<td><strong>Where the Forest Meets the Sea</strong> (Baker, 1989)</td>
<td>PAM</td>
</tr>
<tr>
<td><strong>The Nargun and the Stars</strong> (Wrightson, 2008)</td>
<td>ELIZABETH</td>
</tr>
<tr>
<td>James Cook's journal</td>
<td>FRED</td>
</tr>
<tr>
<td><strong>My Place in Space</strong> (Hirst &amp; Hirst, 2008)</td>
<td>HARRY</td>
</tr>
<tr>
<td>Australian Geographic magazine</td>
<td>HARRY</td>
</tr>
<tr>
<td>Harry Potter references</td>
<td>FRED</td>
</tr>
<tr>
<td>Storybooks</td>
<td>HARRY</td>
</tr>
<tr>
<td>Stories about environmentalists,</td>
<td>TONI</td>
</tr>
<tr>
<td>Real yarns</td>
<td>TONI</td>
</tr>
<tr>
<td>Used to read to the kids at lunchtime at the centre, but now it is too busy</td>
<td>FRAN</td>
</tr>
<tr>
<td>Oral stories, purposeful literature,</td>
<td>ELIZABETH</td>
</tr>
<tr>
<td><em>Turtle anecdote.</em></td>
<td>IAN</td>
</tr>
</tbody>
</table>

These various methods of examining the data have provided an insight into the participants’ use, importance and variety of textual material used and remembered by the participants. They have also given an indication of the types of texts participants
feel are appropriate to use in their workplaces. The books used in the EECs address environmental or social issues relevant to the environment. The published stories are also written for the younger age group.

4.7 Reading to future generations

When interviewed, 21 participants responded when asked about the reading with children and grandchildren outside the work environment. Participants mentioned 50 books or authors, along with five participants who responded with ‘everything’. The variety of reading material is wide, with *The Lorax* (Seuss, 2002) the most popular book, followed by May Gibbs and animal stories.

Table 4.25: Stories read to children and grandchildren

<table>
<thead>
<tr>
<th>Groups (No in group)</th>
<th>No mentioning books</th>
<th>% of that group</th>
<th>Number of books</th>
<th>Number of mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE (12)</td>
<td>7</td>
<td>58</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>SJ (19)</td>
<td>14</td>
<td>74</td>
<td>39</td>
<td>48</td>
</tr>
<tr>
<td>H (17)</td>
<td>12</td>
<td>71</td>
<td>39</td>
<td>65</td>
</tr>
<tr>
<td>S (11)</td>
<td>7</td>
<td>64</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>O (3)</td>
<td>2</td>
<td>67</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Eight participants mentioned passing on books that they read as children to future generations. Only one mentioned using her influential book *The Snow Goose* (Gallico, 1942) for both family reading and at work.
### Table 4.26: Comparison of the stories read as children and the stories read to children

<table>
<thead>
<tr>
<th>Pseudo</th>
<th>H.S., or O</th>
<th>SJ or CE</th>
<th>Books read when younger</th>
<th>Stories read to kids</th>
<th>Stories read at work</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELEN</td>
<td>H</td>
<td>SJ</td>
<td><em>The Snow Goose</em> (Gallico, 1942)</td>
<td><em>The Snow Goose</em></td>
<td><em>The Snow Goose</em></td>
</tr>
<tr>
<td>LOUISE</td>
<td>H</td>
<td>SJ</td>
<td>Gumnut Babies (Gibbs, 1972)</td>
<td>May Gibbs</td>
<td></td>
</tr>
<tr>
<td>JANE</td>
<td>H</td>
<td>CE</td>
<td><em>Snuggle Pot and Cuddle Pie</em> (Gibbs, 1972)</td>
<td><em>Snuggle Pot and Cuddle Pie by May Gibbs</em></td>
<td></td>
</tr>
<tr>
<td>GINA</td>
<td>H</td>
<td>SJ</td>
<td><em>The Magic Faraway Tree</em> (Blyton, 2007)</td>
<td><em>The Magic Faraway Tree</em></td>
<td></td>
</tr>
<tr>
<td>CATHY</td>
<td>S</td>
<td>CE</td>
<td>Roald Dahl</td>
<td>Roald Dahl</td>
<td></td>
</tr>
<tr>
<td>SALLY</td>
<td>H</td>
<td>SJ</td>
<td>Roald Dahl</td>
<td><em>Charlie and the Chocolate Factory</em> (Dahl, 1967)</td>
<td></td>
</tr>
</tbody>
</table>

### 4.8 Conclusions

The use of numbers to indicate participants’ popular texts and text types in this chapter illustrates the difficulty involved in neatly categorising or coding the literature. Participants have indicated the stories they feel are memorable and detailed the specific texts they feel are appropriate in their workplace. The data provides useful indicators as to the childhood reading interest of the participants, which will be discussed in the following chapters.

Chapters 5, 6 and 7 are the discussion section of the thesis. Chapter 5 discusses the participants’ background influences, revealing their identified important influences.
and the impact they feel these influences have had on their lives and career choices. Chapter 6 discusses the participants’ favourite types of books, with an in-depth examination of the most often mentioned stories. Chapter 7 addresses the ages of influential reading and compares the participants’ reading with the reading data from the Newcastle Library to investigate potential differences in reading interests.
Chapter 5 Discussion of environmental educators’ background influences

Introduction
The Discussion Section of this thesis consists of seven sections organised in a similar way to the Results Chapter and is numbered similarly to the Results section to enable ease of understanding. Each section inspects the texts to which the participants’ referred from a different perspective by using the different coding methods as described in the introduction to Chapter 4. The Discussion section is divided into three chapters for ease of reading, and the chapters address the different research questions posed in Section 1.3.

Following this introduction, the remainder of Chapter 5 reveals the environmental educators backgrounds to answer the initially posed question: Do these environmental educators have similar formative pro-environmental experiences to other environmental educators previously researched? The participants in this study come from two streams of teacher training; primary/humanities (H) teachers who approach environmental education from the humanities and social justice side of the spectrum and scientific teachers (S), who look at the science involved in the environment and initially focus on this side of the environmental education spectrum. The reasons these people report they are pro-environmental are compared with reports from previous similar studies (Section 2.1). This study uses similar categories to those used by Chawla (1999) and these categories are reported here in order of ranking of the participants in this study and as listed in Table 4.3.a. Chapter 5 also includes discussion on how these influences impact on the participants’ thinking and teaching.

Chapter 6 discusses the overall types of texts the participants remember reading and reveals the popularity of books about people and information for the participants. This is interesting because research says that information and knowledge alone is not enough for people to make decisions (Section 2.17), but an emotional connection is
necessary to alter their attitudes as revealed in Section 2.2. This chapter also breaks the participants into different groups to discover the specific types of text groups prefer. These groups are based on the participant’s teaching backgrounds – Humanities (H), Scientific (S) and Other (O), and Chawla’s two groups of influence - Concern for the Environment (CE), and Concern for Social Justice (SJ). Comparisons of younger and current reading interests are included along with other groups by gender and age.

Chapter 6 considers the question “If fiction does influence people, what kind or genre of fiction appears to work best in this situation?” by responding to this with the participants’ own genre or types of books, general library codes for texts, and lists of the prevalence of certain types of texts to answer the question. Chapter 6 also discusses the participants’ ‘special’ books, those with the most specific mentions by participants to find similarities in the texts in different age groups and teacher types. The emergence of Fantasy/SF as a major theme in participant’s reading, in the form of Tolkien, Rowling and Blyton is discussed here.

In Chapter 7 the texts are coded by the publishers’ suggested reading age of the children’s books to address the question: What age group appears to be most influential? In Section 2.10 middle childhood was revealed as important to both human development and reading. The growth of pro-environmental individuals due to their experiences in the natural world can be reinforced by reading about adventures in the natural world and beyond in fictional worlds (Shelley, 1990).

Chapter 7 also addresses the initial question: Are environmental educators’ reading habits different from those of the general population? This is considered by using a Library Classification system for the texts and relating the participants reading to the borrowing records of Newcastle area libraries over a three month period (Library, 2012). This snapshot suggests how and why the participants appear to have different reading habits to the public.
In responding to the question: **What stories do participants pass on to future generations? (At home and at work)** Chapter 7 discusses the stories participants use at work, both printed and anecdotal. All the EECs in this study use stories in some form for reinforcing learning experiences for students. The methods employed by various centres differ, as do the types of stories used for the students. The cultural tradition of storytelling here includes the stories specifically written for individual programs at the EECs, anecdotal local stories participants use with different groups of students, and generally available published stories. Chapter 7 concludes with a brief overview of the stories participants tell to their own children and grandchildren outside the work environment and illustrates the importance of stories in participants’ lives beyond work.

**5. 1 Teachers’ backgrounds**

Teachers come to work at the Environmental Education Centres (EECs) for a variety of reasons. Most have trained as either primary school/humanities teachers, or as science/geography teachers, sometimes including an outdoor education stream in their training. Of the 31 participants, 17 are from the primary/humanities background, 11 from the science/geography background, and three from alternative career paths - accountancy, veterinary nursing and social science. In looking at pro-environmental influences on environmental educators Chawla (1999, p. 18) lists 11 categories of influence which have also been used here to discover the identified influences on the participants (See Table 4.3.a).

In 1999 studies undertaken to investigate the formative influences in promoting pro-environmental attitudes in environmental educators in a number of countries revealed common inspirations. In these studies Chawla reported that:

> This research has shown that respondents repeatedly attribute their environmental interests or actions to a similar set of sources: extended time spent outdoors in natural areas, often in childhood; parents or other family members; teachers or classes; involvement in environmental organizations; books; and the loss or degradation of a valued place. (1999, p. 15)
Table 5.1 Comparison of importance Chawla’s (1999) identified pro-environmental influences, Palmer et al’s (1998) Australian Influences and results from Table 4.3.a in this study.

<table>
<thead>
<tr>
<th>Categories of influence</th>
<th>Chawla (1999) ranking from Table 3</th>
<th>Palmer et al. (1998, pp. 188 - 189) Australian single factors</th>
<th>This study ranking from Table 4.3.a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature experience</td>
<td>77%</td>
<td>(Childhood) 71%</td>
<td>94%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(As adult) 18%</td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>77%</td>
<td>(&amp; mentors) 35%</td>
<td>39%</td>
</tr>
<tr>
<td>Organizations</td>
<td>55%</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Negative Experience</td>
<td>39%</td>
<td></td>
<td>26%</td>
</tr>
<tr>
<td>Education</td>
<td>38%</td>
<td>(Tertiary) 43%</td>
<td>48%</td>
</tr>
<tr>
<td>Friends</td>
<td>32%</td>
<td>22%</td>
<td>23%</td>
</tr>
<tr>
<td>Vocation</td>
<td>27%</td>
<td>(Work) 60%</td>
<td>19%</td>
</tr>
<tr>
<td>Sense of social justice</td>
<td>25%</td>
<td></td>
<td>23%</td>
</tr>
<tr>
<td>Book or author</td>
<td>20%</td>
<td>(negative books) 23%</td>
<td>45%</td>
</tr>
<tr>
<td>Principles or religion</td>
<td>15%</td>
<td></td>
<td>58%</td>
</tr>
<tr>
<td>Concern for children, grandchildren</td>
<td>4%</td>
<td></td>
<td>26%</td>
</tr>
<tr>
<td>Effect of having children</td>
<td></td>
<td></td>
<td>16%</td>
</tr>
<tr>
<td>Average number of responses per person</td>
<td>4</td>
<td>4.8</td>
<td>4.2</td>
</tr>
</tbody>
</table>

In a similar study performed at about the same time, Palmer et al (1999) asked survey participants to talk about their significant pro-environmental life experiences and to indicate the ages at which they happened. Palmer and colleagues’ report lists
similar kinds of responses to Chawla’s and lists the nine most frequently mentioned single responses for environmental behaviour from the Australian cohort of environmental educators surveyed as: Childhood nature/outdoors; Work; Tertiary education; Close family; Older friends; ‘Negative’ books; Friends; Adult nature/outdoors; and Having children (Palmer et al., 1999, p. 188).

The participants in this study mentioned all of those areas mentioned by Palmer et al. Along with their experiences in the natural world, study participants mentioned other priority areas, which are addressed here by placing examples of the participants responses in categories similar to those used by Chawla as the participants’ responses best reflect this system. Table 5.1 shows a comparison of two previous studies into pro-environmental influences.

While reasons for becoming environmental education teachers are as individual as the participants themselves, the interviews suggest the participants follow the general trend in research worldwide as indicated in Table 5.1 (Chawla & Cushing, 2007; Kollmuss & Agyeman, 2002; Palmer et al., 1998), relating to the significant influence of youthful experiences in the natural environment. Most of the participants recognised the importance of this experience, and revealed it in differing ways within their personalised collection of identified influences. However, differing from previous studies, the participants in this study ranked 2nd Principles or Religion, the 3rd Education, 4th Books and Authors, 5th Family, equal 6th Negative experiences and Concern for children and grandchildren, 8th Sense of social justice, Organizations and Friends, and finally Vocation. (Table 4.3.a)

Participants’ educational background and work experience disclosed in interviews for this research revealed they all had the expressed factors “environmental knowledge, motivation, attitudes toward the behaviour, values, subjective norms, and life experiences” (Easton et al., 2009, p. 127). There was no real distinction in responses due to the participants gender or education (Tables 4.9 & 4.10), as has been found in other studies of pro-environmental attitudes (Kollmuss & Agyeman, 2002, p. 248). However, the participants did appear to have similar passionate
responses to those interviewed by Hart in his study of environmental educators in Canada reported by Hungerford & Simmons:

As one of my research associates said of the teachers she interviewed in British Columbia, "These people have environment in their bones," although we don't know how it got there. (2003, p. 9)

Examining teacher education backgrounds has revealed that although there is some connection between the science/geography teachers (S) and the Concern for the Environment (CE) category; and likewise between the primary/humanities (H) and Concern for Social Justice (SJ) categories used previously to group environmental educators, they are not the same (Table 4.3.a). Those influenced by social responsibility come from both groups of teacher training, with a majority, 82% coming from the humanities (H) category, with 67% of the science teachers (S) in the concern for the environment (CE) category. This overlap means that a scientific interest in the environment does not necessarily lead to individuals becoming science/geography teachers in environmental education centres, or people interested in social justice issues only becoming the humanities based teachers in EECs, but it is more often the case. This still aligns with Clayton and Myers’ (2009) assertion that understanding how individuals think about the environment helps understand how they behave towards it, as these individuals continue to engage themselves and their students in socially responsible issues.

Participant responses to the specific areas of influence illustrate the broadness of experiences and the depth of passion for their teaching positions. Participants’ memories of the various influences indicate the importance of specific life experiences or situations in their personal lives. The remained of this chapter details the influences and offers insights into the value participants place on certain experiences.

5.1.a Experience in Natural areas
Childhood experiences in the natural environment were constant over all age ranges and occurred for the participants from rural, regional, suburban and city
backgrounds. The natural environments identified stretched from beaches and bushland, through to paddocks and vacant lots in suburbs and established parks. Twenty-nine of the participants detailed experiences in the natural environment as a significant influence, with one atypical participant considering caution when addressing the natural environment.

MARY: My relationship with the natural world is a romantic one, but if you put me in the middle of the bush, or you sent me outback, I’ll freak out. I’m still a bit nature phobic in terms of, I don’t mean our local bush, but distant, I’m a city kid still. So I think I’ve got a long way to learn. I think I’m quite nature phobic in comparison to a lot of my peers, and that’s just because I have some anxieties.

Most participants had ‘free range’ childhoods where they were free to explore the local natural environment. The natural environments varied, but the sense of freedom and wonder with nature was there. Similar to previous studies (N. M. Wells & Lekies, 2006), unstructured time for free play in nature was the important aspect for most of the participants, rather than deliberately structured activities. Attachment to landscape and outdoor activities were a part of the participants’ childhoods, across all age groups.

NINA: our backyard was 120 acres. So we probably spent our entire growing up in the outdoors, so I’ve always been absolutely fascinated by living things, plants and animals and how they work, how they function, all that.

RACHEL: we lived on a farm. And I used to spend hours and hours sitting around playing with grass, playing with trees, finding snake skins, looking under rocks, putting together cow’s skeletons, or trying to put them back together. All those things that kids do, just because. And I just loved being in the outdoors.

BELINDA: We had five acres, so we had bush and caves, a dam, horses, chickens, ducks.

OLIVIA: When we came to live in the city, Dad and I had a veggie patch up the back yard and chooks. We always did a lot of things together - gardening, boating and fishing.
JANE: I now live 5 doors from where I grew up which is a bit creepy, (laughing) when my parents came back here [city suburb] we built a house and at that stage there were quite a few empty treed blocks and we would play, constantly play Robin Hood and things you know, and we were certainly free range. But in front of the house was quite a busy road, and beyond that there’s a big area of bush, and we weren’t allowed play in the bush just the bush blocks, the suburban blocks of bush. ...My grandparents were country people, but by the time I was around, they had moved down and sold their property and moved to the city. But my other grandparents had a big bushy block with a big area that was just let go, nothing was ever done to it. ... We always felt very brave if we would venture down into there. Snakes and scary things (laughing).

M: So how big was that place?

JANE: It would have been about an acre. I suppose, not very big.

Despite the participants’ significant age range, their adventures in the natural environment appear to be defining influences for many of them. Reports have been made indicating that the opportunity to explore and enjoy free play that the participants enjoyed may not be as accessible for current and future generations, leading to identified psychological issues such as Nature Deficit Disorder (NDD) (Louv, 2008) and Ecophobia (Sobel, 1999) as discussed in Section 2.1. These psychological issues were a concern for a number of participants.

5.1.b Principles or Religion

Eighteen participants explicitly mentioned the influence of principles, spirituality or religion in this research (Section 4.1.b, Table 4.3). Some participants commented on church camps and their leaders as an influence on their pro-environmentalism, while others went further and specifically identified their religious and spiritual beliefs as an impetus for their values and subsequent behaviour.

Values form when people are young and these are often a reflection of family values. Deliberate choices in attitudes and values are usually made as individuals age. Some people embrace their childhood influences, while others choose other value systems and attitudes as they age. Environmental values have been identified as a reflection
of experience with knowledge as the individual matures, often developing during middle childhood. (Hart, 2003; Krathwohl et al., 1973; Reid & Petocz, 2004)

CHARLIE was horrified to hear from a friend that the traditional negative Judaeo-Christian view on the use of the world and environment which was perceived as one of use and abuse of the environment for personal gain was still present in society.

CHARLIE: somebody said recently, and I was horrified to hear, that the Bible said that ... all those things are put on the earth for us to use. I’m not a Bible reader, but I’m concerned if that’s what people who are feel, that some mystical presence said you’re the most important thing in the world, and all these other things here are for you, if you want to kill them or wreck them, then you can. It seems bizarre to me. But that’s in the Bible.

However, modern Christian theologians have modified the prevailing view to be one of care and stewardship of the environment (Hitzhusen, 2007; Louv, 2008; Thomas, 1998) as was recognised and revealed by other practicing Christian participants who saw their religious values as a positive influence and asset for the environment.

WENDY: While I had an interest in the environment I actually became highly involved with the church when I was about 15. And yeah, the Bible has its points where it says that divide and conquer and have dominion over everything. However I also saw it as being a reasonable side on stewardship as well, and there’s a lot in there that talks about caring for the environment, caring for fallow fields, and having a system of agriculture that’s actually a stewardship of the land. ... if I really wanted to talk in social culture crap, it’s the ideas of resilience, and the need for resilience to be incorporated into sustainability. So, yes, it is the Bible,[that influenced me] believe it or not.

NINA also expressed similar ongoing values when she revealed that her religious values and principles as an ongoing global responsibility were not just for environmental education, but also for sustainability.

M: Do you think your religion has influenced your environmentalism?

NINA: I feel very strongly that we were given stewardship of the environment. I do feel we have a responsibility to care for all of the environment to the best of our ability ... I guess for me too, it’s a very personal, you know people need to be personally responsible, as well as collectively responsible. ... So yeah, my Christianity is a very big part of caring for people and caring for the environment, and I also tend to think very globally and very global view of what
the world should be and sustainable education, sustainable development, I guess. [I've] Very much been influenced by a document called The Earth Charter which, at its very, very basic tenants is all about; take good care of the environment, caring for animals, plants and people. Yes to peace and no to violence, and we’re all equal. That’s just the very base level of the Charter document. So I guess that’s my philosophy that under-pins all of my teaching and hopefully the rest of my life.

Other participants with strong beliefs and principles apart from the Christian belief system are drawing their spiritual and ethical philosophies of life from other traditions, including Eastern religions.

MARY: I would probably say that meaning of life philosophy stuff would be my strong motivator. I see the environmentalism and spirituality as being intrinsically connected. I don’t see them as separate things, and I’m not particularly religious. To me it just seems that that common sense concept that everything is interconnected, so that’s where, for me, Buddhist thinking and the poets’ way of thinking matches in perfectly with and ecological art practice too. ... That’s the core fact of it, that everything is interconnected, that’s not really a belief system, it’s just that’s the way it is, and working with that makes the most sense.

The recognition of social justice, caring for others and the broader environment is an important element of both Environmental Education and Education for Sustainable Development. However, the conflict in interpretation of Christian beliefs and the apparent influence of principles or religion within this cohort could be a reflection of Western Civilization, as other cultural spiritual beliefs, such as Buddhism, incorporate a concern for other creatures and the environment as a norm.

5.1.c Education

All participants in this study have tertiary qualifications, with some going on to further post-graduate study. The influence of education here, as in Chawla (1999), refers to formal course work, field trips and participants’ inspiring teachers and was answered affirmatively by 15 participants (Table 4.3.a). GEOFF’s involvement in environmental education came from visiting an EEC while he was studying at university and a mentor, while DANA’s interest in animals and biology led to her lifelong experiences.
GEOFF: I was a student teacher at the [University] which is just up the road here, and during my 3rd year of that course we went to a field study centre as it was known, on an Island, so it was a field experience we did ecological studies, transects, quadrats, the typical ecological investigations, in the marine, estuarine and fore dune area. I just stood back from the centre and had a look at it, sort of metaphorically speaking and went, I really love the environment, because it was my passion, because I was doing my ecology science degree, and this other thing called education was sort of on the side line there, because it was an old school building, so it had the look and feel of a one teacher school, and I went environment, education, environmental education! And I went Ah Ha!

...I actually met up with my teaching mentor a couple of years ago and he was still in the same place and still doing the same thing, he just loved going out on the rocky shore ...and he had that way of teaching that was a little bit left field, he did geodomes and creative things and he was a scientist by trade, but he didn’t stick to that mould, so, he inspired me, and still does when I catch up with him.

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JANE: Yes, I’ve had a few mentors. One ... is a Doctor and he was a long term member of the Plant Society here. He now runs a group, ... He’s run that group since he’s retired he had the group, even before he retired, [if] it was his day off from his medical practice, that would be the day he would come over here. And one of my lecturers, when I was doing teacher [training] ... he’s been a great mentor ... he’s obviously now retired as well. But [at his] very first lecture, I remember when he taught science ... he got us all to draw a prawn, so we all had to draw a prawn, then he gave us a prawn (M laughs) and, you know, to draw it again (Both laughing)... it stuck in my mind and he was very engaging. And he is still connected with the University in the biodiversity walk ... Yeah. They would probably be the two I would say.

The influence of education on the participants has mainly been in the area of scientific knowledge accumulation. Participants were influenced by the actions of their teacher/mentors and the learning they were able to gain from these people. GEOFF was the only participant to refer to a course or formal learning as being influential, but also spoke of the personality of the teacher as being important. These participants’ love of the environment was actively encouraged by the different memorable exercises and mentors who were an inspiration in the classroom.
5.1.d Books and authors

This study is investigating the influence of literature on environmental educators, so the frequent references to books as an influence for pro-environmental actions is expected to be higher than in previous studies (Section 2.1 & Table 5.1). Where other studies have looked at books and authors as specific literature with an environmental message, included here are those who have mentioned books which are not specifically environmental in their intent, but that have been identified by participants as influential in their choices. Fourteen participants mentioned books, ranging from books by Harry Butler and David Suzuki through to fictional authors such as Tolkien and the poet Keats who have made an environmental impression on them. In-depth discussion of books and authors is included in Chapter 6.

GEOFF’s response below is consistent with responses Corcoran (1999) found that when he surveyed 510 U.S. environmental educators asking “Were there any particular heroines or heroes of any type (your grandmother, an author, an environmentalist, a fictional character) who positively influenced you?” and had 437 responses to the question.

*GEOFF:* I can say, Harry Butler, ... [it] was just phenomenal to see that Australian wildlife exposed in such a delightful way, and such an authentic way. ... And then that sort of moved on to David Suzuki and others and David Attenborough, but Harry Butler’s In the Wild, I was just fixated by that particular. I bought every book, and in fact when the repeat of the series was on, I could read it in the book and watch it on the TV and ... exactly what he was saying was in the actual book, so you’re reading ahead and there’s “Look over there” and you look over there and there it was on the page and on the TV so, Harry Butler.

PAM describes her journey of discovery of the environment through various literatures. These texts are important to her, but none of them are typical environmental texts. They involve the authors’ viewpoints on adventures and experiences in the natural environment through a variety of genres or types of literature.

*M:* Any environmental books, or any stories you can think encouraged you to become environmental?
PAM: A couple. So, have you read the Seven Little Australians? Books like that and The Chronicles of Narnia and while maybe not having any entirely environmental themes, I was thinking of young stories, you know where kids are getting out into the open and having adventures. It all must encourage me, and just, get outside and play and use your imagination and things like that. ... and so those two sprang to mind. A little bit of Charlotte’s Web would be another one. And that one maybe just because everyone thinks spiders are awful, but really they are actually good bio-indicators of an environment. (both laughing) So that was an interesting thing.

M: Did you realise that at the time?

PAM: Well, maybe not right then, but you know, I think it’s just that whole breaking down barriers of what is actually what we consider nasty or what we consider gross or whatever. A bit older, I started thinking the poet John Keats had a really big effect on me.

M: Why did Keats have an effect on you?

PAM: Possibly because he is an amazing poet who could write about the natural environment and things going on in just such a beautiful way. And so when you read beautiful poetry it almost tunes you in to actually what’s going on around you ... I started reading his stuff in year 9 and year 10 and by then we were starting to do more bushwalks and spending time outside. And so when you’ve got those poems in the back of your mind it just, some of it is just really tiny intricate details.

Links between some of the books and environmental issues are obvious, such as with GEOFF’s response about Harry Butler, and seven other participants mentioning authors such as David Suzuki and Richard Attenborough (Table 4.16). The influence of books and authors is discussed in detail in Chapter 6, however it is interesting to note that given the opportunity to talk about books, some participants, such as PAM began to see a link between the storybooks they were reading as children and their ongoing interest in the environment. PAM’s indication of reactive learning (Section 2.12) indicates that these non-environmental storybooks may subtly influence people with pro-environmental attitudes and values leading to later actions.

5.1.e Family
Chawla’s (1999) list of sources of commitment to environmental protection rated mentions of Family influence as equal highest with Experience in natural
environments at 77% of the study participants. When looking at the social and
cultural external factors in other similar studies (Easton et al., 2009), the most
important category of influence in Palmer’s study of the formative influences of
environmental educators in 1986 was ‘people’ which was reported equally as most
important among the respondents as ‘experiences with nature’. While these studies
findings are similar, Palmer et al.’s (1999) study includes all people in this section,
while Chawla’s (1999) is only family in this section.

Participants in this study often mentioned people as significant influences on their
values and actions as revealed by the mentors mentioned previously, for example
OLIVIA’s father, (Section 5.1.a) WENDY’s church (Section 5.1.b), GEOFF and
JANE’s university lecturers (Section 5.1.c). Within the category of family SALLY
comments that her father’s example was a strong influence on her while she was
growing up, HELEN’s aunt is an activist and CHARLIE notes that his brother is his
significant influence, while KAY reflects on her upbringing in general. Twelve of
the 31 participants in this study mention family as an important influence, with five
more mentioning Friends, which, for this comparison is in Section 5.1.j.

SALLY: well, my whole life, my father really encouraged me to be
environmentally friendly, he used to do lots of things to help the environment,
wrapped my food up in recycled things which was highly embarrassing when
you’re at school, unwrapping this big bread bag to go down and pull out your
sandwich at the bottom. Things like that, water conservation, short showers, all
of that stuff he talked about for my whole life.

HELEN: I had a mentor, who was an Auntie, who was an artist and a political
lobbyist about environmental matters, and I spent a lot of time, we were friends
actually, she was my God Mother. And then by the time I was seventeen we
were very firm friends, our relationship took on a different basis I think she had
a huge influence on me as a teenager.

CHARLIE: I guess my elder brother was probably the most important in that he
is very interested in animals and things, and my mum’s an animal tragic and so
we always had lots of pet animals. But my elder brother, who is 6 years older
than me, I often went into the bush with him and he would always catch things
and bring them home, ...so it is probably those formative times back then with my brother in the bush.

KAY: I don’t know. It’s more a personal thing I guess. Maybe it’s upbringing and appreciation for understanding that what we’ve got is just it. It’s not an infinite thing that keeps going, [it’s] that you have to look after the things.

INGRID’s story differs from most of the other participants as she was born and educated in Britain before coming to Australia. This gives her a different perspective on experiences, both in the natural and the built environment.

M: So do you feel you picked up some of your environmental bent from your parents?

INGRID: yeah. In very different ways from my parents. From Dad that big love and appreciation of the environment, and from Mum the activism. Mum’s always had a bit of fight in her. Mum and Dad are still going to protests and Mum took my brother and I, when we were in England, to a huge anti-whaling rally in London in Trafalgar Square which I’ll never forget, like it was such a shock for this little British country girl ending up in Trafalgar Square with thousands of people and, weird people with Mohawks and funny piercings and everything like that.

The influence of family on the participants in this study reveals their differences in upbringing and family priorities, from INGRID’s complementary parents with different priorities to SALLY’s father’s practical recycling, reusing and use-less philosophy. While it embarrassed her then, his philosophy fits neatly into messages governments are currently attempting to reinforce as normal behaviour with the public (Department of Environment, 2010).

CHARLIE’s family’s attachment to pets spread to his learning about native wildlife from his brother. Other participants recalled similar experiences within a theme of collecting lizards and frogs from bush places when they were young and felt they were responsible in their actions. Some lamented that the fun and learning experiences they undertook as part of this behaviour would now be frowned upon. KAY’s experiences expressed here were more general, but again reflected on family values and upbringing.
5.1.f Negative experiences

Previous research indicates the loss or degradation of a valued place as an influence on individuals’ pro-environmental attitudes and actions (Chawla, 1999; S. J. Hsu, 2009). KAY’s response is not quite personal loss of a valued place, yet reflects her concern for loss of the natural environment and its impetus to influence her pro-environmental attitudes and actions. Her intent to inform the students of both sides of the mining story is not only socially motivated; it is also a sharing of scientific knowledge with students. The staged political dilemma of privileging either the economy or environment is also mentioned by ADAM.

M: So what prompted you to get into environmental education?

KAY: In all honesty, it probably comes from a major event, just up the road there. [On] the other side of town they’re doing all the open cut coal mines and I know people who are affected by that on their land, and I thought, kids don’t get taught this in school. My idea is they get taught how to get a job to get into mining, that’s the push, and I feel that there should be a lot more done on the other side of that. It’s not all about continually ripping coal out of the soil and I’m quite concerned with the coal seam gas industry, and I feel the need for the other side of the story to be told. That’s just my personal view, that’s sort of what prompted me.

ADAM: I’ve always appreciated the environment and don’t like the destruction of the environment ... for the sake of commerce without looking at all the other aspects involved.

Participants’ negative experiences were not just related to destruction of a place and not everyone’s memories of initial experiences with animals in nature were all happy ones. ED’s story of the lizard was particularly revealing because he still constantly acts on his feelings of responsibility to care for wildlife.

ED: I’ve always loved animals and I can remember back when I was a 5 or 6 year old kid, when I had to euthanize a, when I had to drop a big rock on a blue-tongue lizard. It was damaged from the road, I grew up on the beach and that was one of the first animals I had to put down. And I remember it very clearly, and yeah, I’ve always had a soft spot and I try to do something for them.
ED’s ongoing actions could also be seen as agreeing with Monroe’s (2003) belief that people will act if they see negative consequences of actions that they can change. CATHY’s memory of school involvement in impending panda extinction spurs her on to encourage youngsters to actively care for the environment.

CATHY: I think because I wanted to make a difference to the environment, and if we run out of resources or see things go extinct, I remember that from being a child. The panda and things like that. And I think it extends from those sorts of things. And then being a teacher and doing it is even cooler because I get to encourage the next generation, indoctrinate them in my own beliefs (laughs) about being green and saving the world ... I don’t mind letting people know that I’m trying to create a little green army, yeah. (Laughs)

Negative experiences included loss of indigenous culture and knowledge that resonated with a number of participants. FRAN, like many others interviewed, is concerned for the human induced changes in the natural environment, even where it is protected in a National Park.

FRAN: A couple of things an Aboriginal fellow said when I was working with him, we were driving in the ... National Park and everyone said how it had come back from the bush fires in 1994 and, well, I don’t know the country as well as the indigenous people do. He looked at me and said ‘you guys have mismanaged it for 2 hundred and 30 something years, you’ve really stuffed it. It will take 600 years to understand it, and it will take you maybe 6000 years to fix it’. Depressing. But he remembers. He’s a native of here, he remembers going to a particular spot ... and collecting ... it’s a little berry, it’s not there now because the recurrent fires, it’s changed that, so it’s all changed because we sped up those fires in the bush.

HELEN also mentioned loss of indigenous knowledge as a significant influence on her work. She is concerned that losing the local traditional stories is a tragedy, but often feels she is not the appropriate person to be passing the indigenous traditional information and stories to upcoming generations. The emotions displayed by participants when answering these questions in the interviews were often intense, as can be seen from the passion involved in HELEN’s response.

HELEN: I found those [indigenous] stories through a traditional owner, who worked as an Aboriginal Discovery Ranger at National Parks and I formed a good relationship with him, and he was happy to share knowledge with me. And
he would say to me, (I would always ask permission to use traditional knowledge), and he would say to me ‘I’m happy for you to use it, somebody has to pass it on’. And, I have to say it used to make me feel a bit sad that, because I’m not Aboriginal, that I often felt that I was passing a lot of knowledge on. Not exactly that it wasn’t mine to pass on, because I had been given permission, and S used to say that I had an Aboriginal view of the land. He felt really comfortable with that, but it made me sad that young Aboriginal people didn’t have that knowledge. So ... I’m getting teary, (laughs, sniff). Yeah, so knowing places intimately, which is what Aboriginal people did, and if kids get to know places intimately ... then, I mean you can’t tell someone to care about a place, but that is an intrinsic learning ... and from caring about a specific place, that broadens out into caring about a lot more of the world in a world view sense.

While the sense of loss from the participants is not loss of a significant place as in other studies (Chawla, 1999; Easton et al., 2009; S. J. Hsu, 2009; Palmer et al., 1999), the emotional significance of loss is powerfully felt by the participants. HELEN was upset to the point of tears talking about the loss of local indigenous storytellers, and other participants’ voices went husky or quietly intense as their passion for the loss situations emerged. Participants showed signs of anger and frustration such as ED having to euthanize a lizard or KAY and ADAM when discussing the perceived damage economic imperatives place on people. However, determination to change the status quo was then revealed in their voices, along with CATHY’s plans for her ‘little green army’ to save the world.

5.1.g Concern for children and grandchildren
Intergenerational equity as an influence on pro-environmentalism was not common as a response amongst the participants. There were eight mentions, which were mainly for children in general rather than for participants’ specific descendants. Most participants happily responded to the question, talking about the books they read with children and the activities they undertake.

The exception to the positive responses to this question is ANNA who became upset when responding to this question half way through the interview. To set the scene, just as the interview began my phone rang and I found out I was to become a grandmother for the first time. This may have influenced ANNA’s response.
M: So why are you pro-environmental do you think?

ANNA: [5 sec delay] because one day, like you I’m going to have grandchildren (in tears) and we have to do something for them (talking through tears) don’t we?

M: Yes, we do.

ANNA: Not so much for me, but it’s for the future generations.

Again the passion of the participants for caring for the environment surfaced in responses. However, the impetus of future generations as a significant influence on the pro-environmental attitudes of the participants in this study is not obvious.

5.1.h Sense of social justice

In some people the influence on pro-environmental behaviour can build from a sense of social responsibility in personal values that develops into a personal norm. Chawla’s (1999) category of Social Justice covers respondents’ comments on poverty, rights for all and indignation at unfair treatment. This has been explored here in part in Section 5.1.b on Principles and religion and Section 5.1.f on Negative experiences, but participants offered other valuable comments on Social justice issues. Monroe’s (2003) research indicates that a way to encourage pro-environmental behaviour, includes creating a sense of commitment in individuals.

This theory [Stern 2000]. . . suggests that people are more likely to engage in environmental behaviors [sic] when they are aware of the negative consequences and when they believe they have some responsibility for changing the problem. (p. 16)

This sense of social responsibility or social justice is evident in the participants in this research and includes their caring for the environment from their individual perspectives. Participants talk about their various world views, and where humans fit on the planet. They believe in the threat humans are creating on the Earth, and discuss what they feel they can do about it. While each participant comes from a unique viewpoint, and in many cases not a childhood experience, the similarities among the following stories indicate how participants feel they have been influenced and have a moral responsibility to encourage environmental education.
FRED: I see the environment provides, it’s like the cornucopia of life, it’s what allows us to exist and if you don’t look after it then humanity is going to come a cropper somewhere down the track. So I guess that’s why I’m interested in it for one.

M: So why are you pro-environmental?

HARRY: That’s an interesting question, depending on what level it’s being asked and what the definition of pro-environmental is, I’m concerned about a lot of wants from some people wants being classified as needs. So I see a lot of wealth generated that’s unnecessary and creating issues in other areas. So lots of money is being earnt by certain parts of the sector and it’s always got a cost, an environmental and social cost, so I’m concerned with that. I’m not an active, out in your face environmentalist, but I’m following causes because we are isolated but we live by example, so we like to model that with kids and share the unique place we’ve got ... we model our environmental ethic and make sure that everything we do for the centre also models and we articulate it. But I’m not out there advocating or following causes. So I would say I’m not necessarily pro-environment as such, but certainly it’s how I see the world we need it more sustainable and share what we’ve got with more people.

M: Why are you pro-environmental?

TONI: Because I always wanted to save the world. I mean I know jolly well I won’t, but, there’s so much to be done and I think it’s important to look at other viewpoints and I think in hindsight as I get older that I suppose I enjoy working at the cutting edge. ... I suppose I just like to ask a lot of questions so, that’s why I’m here. But also I’ve thought we can do it better, we can, we don’t need to live like stone age people we need to do it better, and we can, and people need help with that thinking. Because not too many people think about what they’re doing, or make the connections to the fact that the air is polluted all through Asia because of the western world buying everything from China, they don’t see that as their problem, yet we’re all a part of that problem, so it’s that whole world view.

IAN: Why am I pro-environmental? I’m pretty what, some might call brown-green, I think I’m environmental from the point of view, from the background, or to the extent of, that if we want equality of life, and we are, then that really depends upon us working gently with the world, now that’s not a utilitarian attitude necessarily, but it recognises that we humans are part of a global
system and that you can’t just exploit, you can’t even exploit and have the world, and say ‘well, I’ll plant more trees over here’ sort of thing.

INGRID spoke about her social conscience and how that has continued to influence her life choices. She is not the only participant with a higher degree, but is the only one mentioning looking at the environment from a philosophical point of view.

M: Would you describe yourself as having a social conscience?

INGRID: yes, that’s thoroughly entwined with my values ... It’s that premise of recognising nature as important and then recognising the interconnection between people and that nature is important. And that’s where the social justice stuff comes in. Yeah, it’s more than just protecting an environment, that’s over there, [points to one side] it’s thoroughly related to who we are, where ever we are, ... In college, I must have been 16 or 17 a teacher introduced me to Deep Ecology the book, I think it’s by Devall and Sessions, it’s Deep Ecology Living as if Nature Mattered (1985) and I’d never seen all my ideas and feelings about the world in one place before. So that was a consolidating moment or book. So I’ve identified as a Deep Ecologist from then on ... I’d call myself an eco-philosopher. But that’s not very trendy so I didn’t tell many people that.

M: What’s an eco-philosopher when they’re at home?

INGRID: You’re interested in philosophy that takes nature seriously or nature as central. In traditional philosophy nature doesn’t really get a mention other than as a backdrop, it’s all very human centred But eco-philosophy is eco-centric, ecologically centre. But it’s not pragmatic enough for today’s world. So there are very few of us around.

Participants reveal here that their concern and care for the environment stems from the social justice reasons of first world needs/wants and greed. They are attempting to view the world from other viewpoints and see environmentalism as part of sustainability. They see the interconnectedness of the countries of the world as vital as the relationships between ecosystems. These are social justice values in action; they are modelling these values and ethics with the different children and classes they see every day.

5.1.i Organizations

Broadening out from the influence of family or a single individual, groups were also important social and cultural influences on participants. Only one participant in this
study, FRAN, mentioned belonging to an environmental group as she was growing up while JANE and BEN joined environmental groups when they were older and continue their interest in learning more about environmental issues from within and beyond the groups. Seven participants mentioned the influence of groups on their values, including Scouts and Guides as well as Sunday School and church youth groups.

FRAN: I think it probably goes back to high school, I was involved in the environment group “Inspect” which is a branch of Rotary when I was younger, it was painting garbage tins and things like that.

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JANE: Starting at [my] children’s school I think, and mixing with those people. They were very environmental people and just coming in contact with those people … they are an amazing group of very, very intelligent people from a huge range of walks of life, but very environmental because particularly the older ones, (laughing) their love of the native plants has come from the bush, rather than the plants themselves. It’s come from their experiences in the bush and out in the environment.

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BEN: I’ve been secretary of a Landcare group that … dealt with a highly rural area that was being urbanised. And it was quite enormous actually. But a lot of the things that I learnt there I have then developed into other activities wherever I go.

Involvement in the Scouting and Guiding movements have also influenced some of the participants towards pro-environmental life choices. Lord Baden-Powell started the Scouting Movement in 1907 and included in the activities for boys was camping and caring for nature. In his book *Rovering to Success* (1930?) as well as caring for themselves and others, he specifically encourages young men to enjoy and care for nature as it will benefit their physical and mental health. BEN, OLIVIA and FRED were all influenced in differing ways by the Scouting movement, with some parental example and influence, and other personal experiences. These initial outdoor activities influenced their ongoing values and life choices. Other participants mentioned Guides and Scouts in passing in their interviews.
BEN: My journey started when I was very small child in Scouts of course, in the Scouting movement, and up until fairly recently I had one of my very first journals about birds that I had to do for a badge, birds and plants, and I’d kept that for a very long time. Obviously because it was a prized childhood possession.

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OLIVIA: I’ve always been an outdoors sort of person. I joined Guiding when I was young and did a lot of camping. ... When I got into my teens I joined Guiding and Rangers, and started realizing how important the bush was.

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FRED: Probably if you go back into my childhood I was strongly influenced by my parents, my mother was a cub leader so I spent a lot of time in the bush.

Youth groups have been used to promote wellbeing since the early 1900s (Louv, 2008) and were started in the Anglican Church in Australia in the late 1930s as an important part of socialisation of young people, and were specially promoted after World War II (Burgmann, 1952). While no literature has been discovered specifying the influence of church youth groups on individuals’ pro-environmental experiences, Louv (2008, p. 301) does mention the advantages for children in accessing the natural environment and calls on groups of all sorts to promote the value of educating children outdoors.

Religious camps, youth groups and family mentoring were all important environmental leaning times for FRAN and GEOFF. As with all participants, these experiences were intermingled influences on their attitudes and values towards the environment.

M: So where did you learn your skills about the environment?

FRAN: From my Sunday School teachers. They did bushwalking with a group. I think it was a bit innate ... I remember the bush walks I did with the youth group; I remember the times we hung out at the river, with that youth group. That youth group was from about year 3 up. Year 3 to about 18 [years old] going on camp.

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GEOFF: We went every school holidays for a church camp for 10 days up at Lake C where we just lived with nature. Did the meditating and reflecting which
we now call magic spot, time in the forest where you just sit and contemplate the world around you and see what happens and flies by, and really connect with the natural environment. So it’s being in the natural environment through ... me, the church or my teacher of family, and that other, sort of me and some other sort of catalyst, that sort of triad arrangement.

There are interconnected influences present here from the participants’ involvement with organizations and groups. Participants such as FRAN and GEOFF recall involvement in more than one group when they was younger, while others, such as BEN have transferred their care for the environment from traditional youth outdoors groups, such as Scouts to more adult groups, such as Landcare. The majority of groups mentioned were school age groups, both church and Scouting with the only exception that of JANE who joined a pro-environmental organisation once her children were at school.

5.1. Friends
The influence of friends and peers to encourage pro-environmental behaviour is reported by seven participants. Most of these occurrences appear to have happened to them in high school and older, rather than as young, primary school aged children. FRAN and ADAM began walking and camping with friends, attitudes that still continue for both of them in some form.

FRAN: My friends and I started walking and camping big time. I guess that’s where it kind of came from.

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ADAM: I was probably late teenager [to] early twenties and I went to university and I started going out camping with friends at beaches and doing walks etc, and came to appreciate the Australian bush. The untamed bush, and that’s continued onto today. I still do a lot of bushwalking, not so much camping these days, but I like to get out in the bush, even if it’s only for half a day or something.

PAM’s adolescent friends took a more romantic angle, taking literature about nature to read to one another while they were surrounded by the natural environment.

PAM: I had some lovely mates who were also into, just outdoors and things like that. We’d, actually read to each other so we would go and sit in a park or on a
bush walk and then read little stories so part of that was ... thinking about what was around and enjoying that to the extent where we all started thinking that maybe there are a few things that we might need to do to help, ... some of my mates did that to the extent that they then became heavily into protesting about environmental issues, I didn’t get that far. ... but certainly [I gained] a much better awareness of the natural environment around me.

The influence of friends among the participants blurs somewhat into the organisations category of responses. No startling friend mentors were mentioned by the participants except HELEN’s aunt who became a friend in later life (see Section 5.1.e Family), rather general descriptions such as ‘friends’ were used in the interviews as responses to questions relating to these answers.

5.1.k Vocation
Chawla’s (1999) definition of vocation includes paid experiences that initiate or deepen environmental commitment. For five participants in this study it is the classes they have taken and the teaching they have done that has significantly deepened their pro-environmental ideas. They have seen and made changes in their approach to teaching in order to provide a more positive pro-environmental educational experience for their students and to provide a broad concept of environmental education, including education in, for and about the environment.

NINA: I grew up on the land ... so I have a bit of affinity with the land, always enjoyed being in the great outdoors, but I guess some further defining thing was teaching science in the classroom, secondary science, and dealing with a lot of disengagement. I took a break from teaching and came back, and I couldn’t believe how disengaged kids were, and I started dabbling in having kids outside the classroom as a regular part of teaching which did miracles in terms of engagement so I developed a bit of a model on action research in the science classroom and that seemed to lead into lots of other things, and I got involved in lots of other environmental type projects, and I just fell into environmental ed really.

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LOUISE: As you know primary teachers are generalists, we look across the curriculum, we teach at least 6 KLAs [Key Learning Areas] so, it came a point where I did a very luxury thing, which teachers rarely do, I enrolled in a course where they asked me to reflect on normal practice. When I reflected on my
practice, instead of just rush onto the next thing which is what we always do, I realised that things that had really engaged all my students, from the very lowest socio-economic to one who was the daughter of the local high school science department HOD [Head of Department], were the ones that had this environmental content, and I always did it with a very hands-on focus. Planting plants, or creating a scent garden, or frog habitat, and I guess, when I looked over my practice, they were the ones that really stood out, and I just thought – I’m on to something here. I know how we can engage our students ... I used to bring my classes out [to the EEC] when I was teaching at a local School, which is in town. ... it was when I bought my class out that I saw, for instance, you can help kids shine in the world out here, you know, shine rather than in a classroom, in an indoors academic situation.

HELEN: I think that outside classrooms are very significant learning places, and that it was just a natural progression, it was a transition over my teaching career to actually end up in environmental ed ... To do what I was passionate about, and I think it’s really important work, you know. If teaching children is important, teaching them about sustaining their worlds is. Yes, I can’t think that there is anything much too more important than that.

The expectation that people pick up their environmental values in childhood is not always the case. For DAVE ongoing learning is part of the job and as MARY points out, her interest in the environment is multi-faceted, with social justice leading to knowledge, and responsibility for a child prompting her to evolve into her pro-environmental attitudes and actions. MARY went to the EEC with another teaching priority, but has learned to appreciate the environment since her arrival, especially with the assistance of other staff at the EEC.

DAVE: I didn’t really have a passion for environmental education, until I was just jumped in here,

M: So your passion for environmental education has jumped since you moved here?

DAVE: oh, certainly, as did my appreciation of sustainability and topics like that have improved. I must admit not enough.

MARY: I wasn’t environmentally trained and I’ve learnt them [environmental information] as I’ve gone along here. I just was in a bit of a daze. I knew that
nature was wonderful, but for me, my activism was more human rights stuff previously. I was a street marcher for women’s rights, indigenous rights, and so on, so that’s – my activist thinking was wired for that in the community. And so environmentalism was probably the next logical step. And once I’d had my child my thinking probably became a little less ego-driven and more in terms of the whole planet, rather than just me and my identity and that kind of thing. I think I probably grew-up a bit ... I understand it now. I understand the environment since being here. So I don’t generalise it, I’m intimate with it. I would have to credit our Botanist actively with that ... he’ll know all of the details of that plant or insect or the creature, or the relationship is between each element, so those of us who are more people oriented have been able to, not personify, but identify the details of the way that life form works, does that make sense? So we’ve become more intimate with all of it. I think that would be the case for me.

GINA’s introduction to environmental education from outdoor education is not unique. It again highlights the importance of experiences in the natural environment for encouraging pro-environmental actions, regardless of age.

GINA: It’s definitely something I that I became more passionate and aware about as I got older, rather than from any childhood influences. I think that working in outdoor education showed me that I love being outdoors and in natural environments and from that came the need to look after them. Also, the people you work with in both the outdoor and environmental fields are generally very passionate people and I love this.

While learning about environmental issues appears to be an ongoing task for all the study participants, some have found they are gaining more pro-environmental attitudes from their workplaces. Some, like DAVE, MARY and GINA quoted here, moved to the EECs for other work placement reasons and have had the environmental aspects of their work enlarge and reinforce their pro-environmental knowledge and values.

5.1.1 Overlapping influences
Conclusions formed after talking to the participants as revealed in the excerpts of interviews in this section echo the findings of Easton et al (2009) that the combination of reasons why people are pro-environmental is complex, with overlapping and varied influences and motivations forming their individual values
and resultant actions. In *Conservation Psychology* Clayton and Myers (2009, p. 33) state at the end of their chapter on attitudes, values and perceptions that the way participants think about the environment helps understand how they behave towards the natural environment, but it is not necessarily the key influence for any specific behaviour. By understanding the way the participants think about the environment, from a scientific (CE) or social justice (SJ) aspect, this chapter reveals that they are all pro-active for the environment in differing ways. Highlighting the background influences of the participants in Table 4.3.a reveals the important formative aspects each one remembers. While these influences coincide with previously reported studies, the perceived importance of the influences overall is somewhat different from those studies, as this study, unlike previous ones, is focusing on the influence of literature.

In examining participants’ early influences and motivation it can be noted that social justice is a significant driver for many of them. The high ranking of social justice issues among the participants is significant because it reflects in their ongoing learning and teaching. An example of the ongoing influence of social issues by the Social Justice (SJ) participants is the frequent mention of indigenous culture as tied to environmental education as part of their teaching of social justice/equality/sustainability issues.

*OLIVIA:* We’re trying to work with indigenous aspects. We don’t do enough indigenous references and to me it’s everywhere here. This should be an integral part of everything we do because there is so much wisdom. ...One of the things that really, absolutely amazes me is hearing the wisdom with an Aboriginal or the indigenous emphasis.

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*HARRY:* We’ve got very, very significant indigenous movement through the area, so in the ... forests, ... certainly reconnecting to place there, looking at sustainability there through traditional people’s eyes and looking at the notion of cycles, living in cycles of movement through country. ... Traditional education focusing on meeting contextual needs, we do a fair bit there.

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NINA: we do quite a bit of storytelling wrapped around indigenous culture, so stories of what it was like to be an indigenous person, and to live like an indigenous person. ... we have a very strong indigenous focus, so the sort of storytelling and yarning from the indigenous perspective as well, so it just fits in really nicely with our programs and our whole ethos and philosophy really.

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LOUISE: Particularly what fascinated me were the indigenous people, how they can track the course that someone walked 10 years ago. I saw this all the time when I worked on indigenous community. That bird that walked in [bird wandered in the open door of the office], that would be, you know, Aunty Joan is sick, and so they would go and ring her up and she would be sick, (laughs) All these sort of things that seem to us like just to be beyond the rational kind of way of thinking.

This openness to alternative views of caring for the environment, similar to those expressed by HELEN in Section 5.1.f, reveals that environmental education for many of these participants has gone beyond nature study to encompass sustainable practices. The participants view environmental education across a spectrum from the conservation or natural science side through to Education for Sustainable Development (EfSD). The participants’ passion for their teaching and the environment is obvious as they talk about environmental education (EE) and how it relates to Education for Sustainable Development (EfSD).

5.2 Environmental Education and Education for Sustainable Development

Environmental education began as nature study, natural history and botany subjects, teaching students how to appreciate and understand the environment they live in (Kopnina, 2012; Palmer, 1998; Tilbury, 2001). This changed last century when environmental education became an ecological study, as a multidisciplinary subject under the science umbrella. As the century progressed and people became more aware of human induced damage to the environment, the focus of environmental education expanded to include the social ramifications of human actions in the environment and what could be done about them. In this century ongoing debate continues about the definitions and differences between Environmental Education
and Education for Sustainability or Education for Sustainable Development within the literature, with discussion over specific definitions including whether the words ‘sustainable development’ should ever be in the same sentence as ‘environmental’ (Kopnina, 2012; Reid, 2009).

As mentioned in Section 1.1 the definition used in this study sees Environmental Education (EE) as the traditional teaching about, for, and in the environment. This comes from the 1975 Global agreement on Environmental Education, the UN Belgrade Charter which has the environmental education goal:

> To develop a world population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones. (UNESCO, 1975, p. 3)

Many participants and Environmental Education Centers, (EECs) go beyond the ecology and science of the traditional environmental education to challenge students to consider the social and cultural sides of Education for Sustainable Development (EfSD) along with the environmental learning. Within EfSD three main area of learning, namely social, environmental and economic, are interrelated and EfSD promotes principles which encourage students to think about and make changes to the ways they make choices about their environment (Tilbury, 2004).

The ongoing debate of definitions and directions for environmental education is obvious in the participants interviewed. Participant opinions vary when asked if they see a difference between EE and EfSD in their EECs and their own teaching style. All are adamant that their style and content work well for their situation and they are meeting the expectations of the students and staff visiting the EEC. All see that learning and empowerment of the students was an important aspect of the EEC’s presentation.

*ED: I don’t understand that world sustainability. There are too many definitions of it really. I get confused with it to be honest with you. … It’s got a lot of meanings. What I think is I will reiterate that the education about the environment is very, very important.*
Both primary and secondary trained teachers are spread evenly along the Environmental Education (EE) to Education for Sustainable Development (EfSD) spectrum, as are the Environmental Education Centre (EEC) priority areas of teaching. Those at the EE end, predominantly interested for, about and in the environment, see that the science side of the learning activity is important for the students, both in school and beyond. Their priority is to encourage environmental education rather than sustainability.

With many years of experience and observing changes in EECs, FRED and JANE are still committed to encouraging environmental education at their respective EECs. Like the other participants, they find experience in the outdoors to be the best way to pass on their knowledge and love of the environment.

FRED: To me, the core of it is still, leading children to connect with the environment, the outdoor environment, the natural environment, because that is at the base, those systems are at the base of our very survival. Whether it be our food, whether it be our clothing, the resources we use, even the manufactured resources, or the natural resources, such as air, and water. The best way to deal with that is to be outside dealing with it as close, as much as possible with firsthand experience.

JANE: I think people need to experience the environment, and I’m a great believer of the first paragraph of the [state environmental education] policy, which is learning about the environment, in the environment, for the environment. And you need to experience things in real life, touching, feeling it, you know, hug a tree (laughs) to appreciate things and then be in a position to be able to make decisions for the environment. But I do think that the way it is going with education at the moment, the integration through all key learning areas is a good thing. And I’m a great believer in school playgrounds being an important part of the school environment.

BEN has only been teaching in an EEC for a few months, but reports being environmentally active in his private life and previous teaching jobs for many years. He sees environmental education as vital for the survival of the species. He is determined to educate the students and staff on reducing waste and using resources more sustainably.
BEN: I think that environmental education is paramount to us as a race, for society’s survival. I think that if we don’t take stock of our consumption, our consumerism, ... the whole golden money cycle of money, manufacturing, employment, and we’re seeing it again, we’re seeing it try to develop again in Australia whereby if we want jobs, ... we’ve got to create jobs, so we spend money, and where are we getting the money from? We’re selling our resources.

Some teachers do see a difference in the terms Environmental Education and Education for Sustainable Development. Young teacher CATHY, from a coastal EEC trained as a high school science teacher and sees that it is possible to define the difference between Environmental Education and Education for Sustainable Development.

CATHY: I think environmental education and education for sustainability are different, because we do environmental education here and you can do it without focussing on sustainability necessarily, so we can go for a walk through the mangroves and talk about that eco-system, and that’s environmental education really, not talking about sustaining that eco-system at all.

CHARLIE has been teaching in EECs for over ten years and enjoys working at his rural EEC, especially the freedom it gives him to be outdoors and to pass his love of the outdoors on to school children. As more of a nature study teacher he sees that changes in environmental education are in the wind that may not suit him.

CHARLIE: I think that the future of environmental education probably lies in people learning to make better choices in day to day life and, every now and then I hear murmurs ... that I’m not really an environmental educator if I don’t talk about how to save the world with kids, and if I just take them for a bush walk and show them some cool spiders and climb a tree, that perhaps I’m a natural historian, a science nature teacher rather than an environmental educator. I don’t necessarily think that’s 100% right, but I think if you’ve got that grounding in natural history and you have a deeper connection and feeling for the natural world, then it tends to follow that you’d make that choice to make more sustainable choices in your own life. But I think that the way things are, those people have opportunities to be in nature and so I think that probably the future of environmental education will be about teaching people about solar panels and new technologies that allow you to live a little lighter on the planet and things like that. I’m not sure I’m ready and willing to jump on that bandwagon completely, myself. Maybe I’m selfish and I just want to take kids into the bush, but I think that there’s really good reasons for doing that as well.
JANE also can see the changes and is not so sure about the terms EE and EfSD being interchangeable.

JANE: The shift is going across to sustainability. The environmental education unit is now called the Sustainability Unit, which I am not all that fussed on because sustainability has so many other connotations and so many other areas, it can be monetary sustainability, and I think it is very easy for the environment to fall off that bundle. I think you need to make sure that the word environment is still there, even if it is attached to sustainability, not just having sustainability meaning the environment, because it has so many other things it means as well.

Some teachers from both the humanities and science teaching backgrounds see no difference in their definitions of EE and EfSD. GINA works at the humanities end of the EEC spectrum, predominantly with primary aged children, encouraging their initial investigations of the natural world and all its wonders. When asked, she sees no real difference in the terms EE and EfSD.

GINA: Education for Sustainability encompasses more about the educating for the future in its title, but I don’t believe the two are very different. It’s what is done in the educating rather than what the name of it is I think.

DANA, with a science background, works with all ages of students from lower primary school through to adults and believes they are two sides of the same issue.

DANA: I think they go hand-in-hand, because you’ve really got to have sustainability or there’s no point in environmental education, so I think they should be treated as two parts of the same issue, to a great degree.

NINA is a science teacher involved in promoting the Earth Charter and looks to the future with sustainable education.

NINA: I think at the moment there is quite a strong push with it [EE] and education for sustainability ... I think that’s a very important thing that we’re getting or empowering students to be eco-citizens for the future. I feel really well placed here to be able to do that. To encourage and empower. ... For me, it’s even more about sustainability education, for me it’s more about sustainable development and education for sustainability is one aspect of sustainable development. This is part of my global view, it’s more than just teaching for sustainable viability without poverty and social justice and peace and economics and all that sort of stuff, and so for me those are the...
overarching things sustainable development and education for sustainability is within that and environmental education is part of education for sustainability. That’s how I view it. That’s one aspect of a much more global view.

TONI, with many years of experience with predominantly primary students in the EECs, definitely places herself on the side of EfSD:

TONI: What’s the difference? ... we have a program that was written from the Parliamentary Education Office called “A Parliament of Birds” where we look at birds and habitats but we run a parliament, so they get to see how you can advocate, they get to see a consensus debate as opposed to just an adversarial debate, which, why is that important? Because some ideas in schools are good ideas, but they just need to be better, better to work with those ideas than to be continually fighting against them ... So, yes they are learning science and about those things, but they are also learning that everyone has a good idea that everyone has a right for a voice and everyone needs to be heard. And I think that’s really important because environmental ed’s not just about naming and labelling, environmental ed is about being able to have a voice or see things that others may not be able to articulate as well ... it doesn’t have to be about making the world a better place, or saving the trees, that’s just about enabling that individual to be a good citizen.

Environmental ed and education for sustainability or environmental sustainability or whatever you want to call it, to me are one and the same and I’m not going to spend time naming and labelling differences because that’s our business here. Because it’s environmental, social, cultural, economic, the whole thing’s intertwined.

While some participants have definite ideas one way or the other, other teachers discuss the dilemma they feel they are in, and some of the answers they are considering while promoting care for the environment. HELEN and MARY, both experienced environmental education teachers consider the question in the EECs and in life in general.

HELEN: I guess the question I keep asking myself now is how can I insert more environmental education and more sustainability education into everything that happens here. Because, in my head, I think that it needs to shift emphasis a bit ... I just think we need to consciously evolve what we are doing and talk about the things we do ... and a connection ... there has been a lot of debate about the difference between environmental education and sustainability education, and at first I was really uneasy about that ... I felt and feel that along with education towards behaviour change, there still needs to be taught, or
encouraged a real connection to and caring for PLACE. That just to deal with behaviours and not the underlying or driving beliefs, emotions, understandings and learning’s is not a holistic approach. If you only deal with issues in a shallow way – and not treat people and issues with dignity – then we fall into the fast, glossy, inane trap!!...

Some people who were pushing sustainability education were saying there really isn’t a place, for environmental education, that it can’t provide measurable evidence of behaviour change. That what we’ve got to do is work on behaviour change and I really disputed that for the reasons I stated above. I disagree with it very deeply. There needs to be more than just mindless behaviour change, there has to be still that attachment and that care about natural environments, and built environments. You have to care deeply enough about those environments to ensure that behaviour change is substantial and lasting. That’s what drives the sustainability education in my mind.

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MARY: I see it as a Venn diagram, and the connection in the middle is that, is understanding. To want to sustain you need to understand and value it, so the more intimate you are with the environment, the more the respect comes, the more passionate the care comes and therefore the motivation to live sustainably. But I do think they’re very much connected with care for humans too. If you care for the future of the planet, you may feel more motivated to buy organically.

IAN, another experienced teacher, sees a changing future for environmental education, with the evolution of EE, but still sees problems with combining the two.

IAN: I see environmental education in its current manifestation, and that is in education for sustainability, I think it will continue to evolve and if one takes the issues ... the environment now won’t go away. I think it will always be a social issue, and no matter how bad jobs or economies ... I think the exact nature of environmental ed will continue to evolve but the earlier forms of nature study, you went out and you looked at birds and that kind of thing, was very much agricultural or horticultural based and you were supposed to know what kind of plants to put in ... I never went down that path, but, environmental sustainability is certainly in its current manifestation, where one is looking at ways to have sustainable environmental practices, I have some problems with that. You know, there is still very much a consumption attitude to education for sustainability it just means you can continue to consume, it just means that we can consume for longer ... but it will continue to evolve. What it will be in the future, I haven’t got a clue, because it will certainly be in response to situations that arise.
The varying opinions of these participants reveal a consciousness of the importance of EE in its varying manifestations. Yet again, it highlights that despite their passion for the environment, no two teachers are the same. This kaleidoscope of environmental education paradigms illustrates the continuing and evolving thoughts of the participants ensuring they provide the best and most appropriate educational experience for the students visiting the individual EECs.

5.3 Conclusion
The question posed for response in this chapter is: Do these environmental educators have similar formative pro-environmental experiences to other environmental educators previously researched? It would appear that experience in the natural environment is very important to the participants, both as children and as part of their ongoing lives. This experience has been shared with families and friends and through traditional organizations such as Scouts and church youth groups. Pro-environmental influences blur in together as participants expressed their appreciation of their own complex webs of personal influences, similar to the multiple influences found in previous studies (Section 2.1). Participants’ concern for social justice issues is evident in most of the sections with most responses here being positive reminiscences of childhood influences, except for the incidents participants raised in the Negative experiences in Section 5.1.f. Yet while these influences were negative, they encouraged the participants to positive action for the environment.

While the participants see different definitions of environmental education and sustainability, they are all involved in encouraging sustainable practices among the students they influence through their Environmental Education Centres.
Chapter 6 Book types and favourite reading

Introduction
Chapter 6 is responding to the question: If fiction does influence people, what kind or genre of fiction appears to work best in this situation? To answer this complicated question Section 4.2 of the Results chapter in this thesis employs multiple strategies to investigate the importance of the types of texts participants remember reading when younger and as adults. All the texts mentioned by participants at any stage in the interviews are coded using this simple first coding system, as explained in Table 4.4. The chosen categories encompass large areas of interest and are devised as an initial sorting of material to ascertain if any particular type of text was preferred by any specific group.

6.1 Discussion of Results section 4.2
Participants’ overall reading, as detailed in the tables in Section 4.2, indicates that books about People are their main interest. This encompasses both fictional tales and adventures and creative non-fiction such as biographies and memoirs. While most adult books have human characters as the focus, many children’s books have animals, either natural or anthropomorphised as the focus and main characters. The literature suggests (Guthrie & Greaney, 1991) that popular pre-school and early primary school aged books are often animal books, so it can be surmised that this could explain the drop in interest in animal books as the participants aged.

Table 4.5 shows a comparison of the changes in reading types of the participants from their childhood to their current or adult reading. Investigation of the participants’ overall remembered reading was undertaken to discover if any particular type of book appeals to pro-environmental individuals throughout their reading lifetime. Figure 4.1 is a graphic representation of the data in Table 4.5, highlighting that reading about people remains at similar levels for both age groups, as the most popular interest. Encyclopaedias are no longer read by the adult
participants, this is suggests that they now have access to search scientific texts for specific information they require, potentially within the Info texts identified.

Tables 4.6.a and 4.6.b break the data into different groups revealing the number of times participants mentioned the books or texts. Table 4.6.a looks at the data according to the participants’ teacher training, namely primary and humanities based (H), science and geography based (S) and other training (O). Table 4.6.b breaks the participants into their predominant formative influences, into concern for the environment (CE) and concern for social justice (SJ). These two tables differ as the two methods of grouping the participants are different. Because individuals are variously influenced, and approach their teaching from two different directions, the frequency of mentions of types of texts may be significant.

The interests of the three (O) participants coincide with the other groups, (S) and (H) in preferring people books and show an increase in interest in Info books (texts with environmental information in them – see Table 4.4) as the participants mature. The Adult Other (AO) group join the Adult Humanities (AH) group in an increased interest in Social texts (texts about social issues or social justice) which do not appear significant to the Adult Science (AS) group. Table 4.6.b indicates that the Social Justice (SJ) and Care for the Environment (CE) participants both increase their interest in Info texts, while the (SJ) group also increase their interest in the Social texts.

Table 4.8.a, graphically represented in Figure 4.2, reveals the percentages of participants interested in the texts rather than the number of mentions of the texts in the interviews. Table 4.8.b shows the marked difference in the reading of Social and Religious/philosophy books between the (SJ) participants and the (CE) participants, both as childhood readers and as adults. Both groups have concerns for social issues, but it would appear that the (SJ) group are interested in reading more of these types of texts. The (SJ) group also mention that they feel social justice and principles and religion are significant influences in their pro-environmentalism (Table 4.3.a)
confirming that the (SJ) participants’ adult reading coincides with their interests here.

As interest in the Religion and philosophy books was higher for the (SJ) participants, an expectation for a higher interest in the Animal texts was anticipated amongst the (CE) participants. However, Table 4.8.b shows there is not this corresponding interest in animal texts among the (CE) group, with similar interest levels for both (CE) and (SJ) groups in animal books. The interest in Info texts in both groups increases as the participants’ age, and their interest in Fantasy/SF decreases. It could be surmised that the increase in Info texts is possibly due to the necessary reading involved with similar work for all the participants (Guthrie & Greaney, 1991).

Female participants generally remembered more texts, both as children and as adults than the males (Tables 4.9 and 4.10). While both genders read books as children, two males revealed that Info texts are all they currently read. They no longer read for pleasure for very different reasons.

JOHN: I read very little ... If you’re talking about fiction, I never go near fiction. I think it’s a male trait. That most fiction is bought by women, I think is a truism in Australian culture, and I’m a stereotype male in that regard. I think why read about something that’s made up when the real world is much more fascinating ... I basically read for work and that’s it. I wouldn’t read for recreation. Even when I’m reading the paper at the weekend, it’s really to keep up with what you have to keep up with for work. As well as general interest in current affairs. I’m a bit of a news junkie, I want to know what’s going on in Somalia, it obviously doesn’t affect your work, but I very seldom do reading for pleasure.

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M: What are you reading at the moment?
IAN: Nothing, ... Accounts, invoices, (both laugh) for the tape record, we have indicated the floor is covered in invoices and bits and pieces that I have got to try and read, stamp, assign a cost centre, etc, yeah.
M: There’s nothing on the bedside table at home?
IAN: Reading for recreation is something I just haven’t had a great time for a number of years, especially since I undertook Doctoral studies, and you find that any spare moment is probably spent reading some other researcher or
The various tables in Section 4.2 of the Results chapter culminate in Table 4.13 for childhood reading and Table 4.14 for adult reading. Using the definitions in Table 4.4, the most popular childhood reading overall is the category of People texts, with a significant drop in numbers to Social texts, and then another drop to Fantasy/SF, Animal then Info texts. Table 4.14 showing the adult reading responses is different with the People category still most important but there is a huge jump in interest in Info texts, before a significant drop to Social, and then another drop to Fantasy/SF. The popularity of both Social and Fantasy/SF does not change from Table 4.13 to Table 4.1 indicating a sustained interest in both these forms of text.

With the overwhelming popularity of Info texts as adults, it appears that participants already have an emotional attachment to the environment, which encourages them to further their pro-environmental knowledge. It is interesting to note that the literature regarding environmental knowledge and attitude indicates that knowledge alone is not enough to make people act pro-environmentally (Section 2.4), that an emotional involvement with the situation is usually necessary for positive action (Chawla & Cushing, 2007; Kollmuss & Agyeman, 2002) (Sections 1.3 & 2.2).

The personal reading habits of the participants as detailed in Appendix 5 shows that individuals usually keep reading similar kinds of texts as they mature, with a significant number, 17 of the 31 participants, not recalling reading any scientific or non-fiction books when they were children.

This simple initial coding in Section 4.2 indicates that overall participants favour books in the People category at both reading stages. It would appear that Info texts become more important to them as they age, and that their interest in social texts and Fantasy/SF stay the same. The increase in the number of mentions of Info texts reflects the findings of previous studies into pro-environmental influences (Chawla & Cushing, 2007; Corcoran, 1999; Palmer et al., 1999), where book and author mentions are from these areas of interest.
6.2 Discussion of Results Section 4.3 Books by Type, Science and Humanities.

Participants mentioned over 400 books, types of books and authors when talking about their current and childhood reading habits. According to the memory literature (Janssen et al., 2011; Rathbone et al., 2008), the clearest memories should be from adolescence or early adulthood, from the period known in the literature as the reminiscence bump (Section 2.11). That the participants can remember childhood books from before this period in such numbers and with such depth is amazing and defies this reminiscence bump as before this period of time individuals generally suffer from childhood amnesia and remember very little detail. The overwhelming number of memories of early stories that participants revealed suggests that these books impacted on their sense of self and influenced their attitudes and values which in turn influenced their actions. Classifying these texts into genre or type is difficult, and in this section, the texts are classified using local library categories and, if mentioned, the participants’ own classifications of the books they read. They have been broken up into humanities reading (Table 4.15) and scientific reading (Table 4.16) as defined in section 3.4.f in Tables 3.1 and 3.2.

Table 4.15 reveals that children and adults read only some book types, such as Junior Fiction (JF) for younger readers and Psychology, Education and Travel books for older readers, while both age groups have read other book types such as Australian history, Literature, Autobiographies, Fantasy/SF, Philosophy and religion and Social issues. As discussed in Section 6.1, the humanities and primary school teacher group (H) read significantly more books than the other groups, science teachers, (S) and others (O).

In the childhood reading, the Australian, English and US literature and Poetry category is popular, comprising school textbooks, which many participants mentioned when asked about their childhood reading. For some participants they were the only books they remembered reading. Other categories with significant numbers in childhood reading are the Fantasy/SF category with the highest number
of mentions by participants (86), and adventure stories (43). The (H) participants also frequently mentioned philosophy and religious texts. The (YS) group appears to appreciate Adventure stories and Fantasy/SF.

In the interviews, participants were asked what they were currently reading and to indicate their current reading preferences. Table 4.20 indicates all the adult groups read more scientific books, and all groups are reading humanities books as adults. Table 4.15 shows that adult reading is significantly different to childhood reading, with Autobiography and Biographies becoming more important for both the (AH) and (AS) adult groups.

Table 4.16 reveals the scientific type books the participants recalled and again there are some materials, such as encyclopaedias, that they read as children, but no longer use, increasing their use of specific scientific texts when necessary. Science writers, such as Suzuki and Attenborough remain popular with the participants.

The comments participants made about the influence of experiences in the natural environment in Section 5.1 and revealed in Table 4.3.a is reinforced by their interest in adventure and books with outdoor settings, such as the Blyton and Tolkien books.

The significant number of mentions of the Fantasy and SF books revealed in Table 4.15, with 57/246 references (23%) to young reading and 29/119 mentions (24%) of adult reading, suggests that these types of books may be an important influence on the early pro-environmental attitudes of these participants. These numbers are highlighted because previous studies into recalled books classify responses of 2% to 10% as being significant (Russell, 1949). It is difficult to compare this information with the public’s interest in this genre, as library statistical data of children’s fiction is collated under different headings, such as Children’s series, Children’s stories and Early Learning (Library, 2012). The potential of the influence of Fantasy and SF is discussed further in the following Sections 6.2a & 6.3 on participants’ current or older reading preferences.
6.2.a Fantasy and SF

Fantasy and SF books are very common amongst the participants most often mentioned books, with 14 authors, and three main series specifically listed; Harry Potter (Rowling, 2001), Lord of the Rings (Tolkien, 2002) and Robin Hobb’s series The Liveship Traders (1999a; 1999b; 2001). Tolkien’s and Rowling’s series’ will be discussed when specific reading is addressed in Section 6.3, but the influence of the environment on participants from non-specific environmental texts was recognised by participants as reactive learning and commented on in a few interviews.

INGRID: There’s a science fiction author called Robin Hobb, and she does these great big trilogies ... That’s got a lot of environmental stuff in it in a sci-fi sort of way.

Two named authors of Fantasy/SF were Robin Hobb and Marion Zimmer Bradley. An example of their treatment of the environment in their books follows. Like many fantasy series, Hobb’s Liveship Traders series is set in an almost medieval world with a twist. The twist here is magic with ‘livewood’ enabling sailing ships to become individual entities after three human generations have died on the decks. The novels are not specifically environmental, but address social change, cultural differences and appropriate use of the environment. In an example here from the first book, Ship of Magic (1999b) one of the characters observes the landscapes around her town dramatically changing as more people come to the region to exploit the resources.

It was when she lifted her eyes to gaze out over the surrounding hills that she realized how much things had changed. Hammersmith Hill, where the oaks had always stood tall and green now showed a bald pate. She gazed at it in a sort of awe. She had heard that one of the newcomers had claimed land there and was going to use slaves to log it. But never before had she seen a hill so completely stripped of forest. The heat of the day beat down mercilessly on the naked hill; what greenery remained looked scorched and sagging.

Hammersmith Hill was the most shocking change, but it was by no means the only one. To the east, someone had cleared space on a hillside and was building a house. No, Ronica corrected herself, a mansion. It was not just the size of the building that jolted her, but the number of workers employed in
its construction. They swarmed over the building site like white-coated ants in the heat of the mid-day sun. (p. 90)

There is frequent exposure to environmental ideas in fantasy. In Marion Zimmer Bradley’s (1983) *The Mists of Avalon* as the environmental message is subtly placed in the text, often as a discussion between characters.

“It is true that there seems to be more and more of the old worship every year – I had thought that as the old folk died off, year by year, it would grow ever less. I was willing to let it die out with the Old People, who could not accustom themselves to new ways. But if the young people are now turning back to heathen ways, then we must do something – perhaps, even, cut down the grove.”

*If you do, I shall do murder*, Morgaine thought, but schooled her voice to gentleness and reason. “That would be wrong. The oaks give pig food and food for the country people – even here we have had to use acorn flour in a bad season. And the grove has been there for hundreds of years – the trees are sacred –“

“You sound too much a pagan yourself, Morgaine.”

“Can you say the oak grove is not the work of God?” she retorted. “Why should we punish the trees because foolish men make a use of them that Father Eian does not like? I thought you loved your land.”

“Well, and so I do,” said Uriens fretfully…

“But the Old Ones are your subjects too, Morgaine said … “Would you deprive the Old People of the grove that is their food and shelter, and their own chapel built for them by the very hands of God and not of man? Would you then condemn them to die or starve as they have done in some of the cleared lands?” (pp. 657-658)

These authors use environmental issues as background information for the plot of the story. The observations of the environment are not pushed or forced, rather they fit into the narrative or thoughts of the characters (similar to product placement in Section 2.17) thus decreasing the opportunity for the reader to place mental barriers at factual information being presented (Section 2.14).

**6.2.b Biography/autobiography/ personal adventure**

The books mentioned in the adult reading responses (Table 4.15) differ from the younger recalled reading list because the majority of participants did not appear to be
particularly emotionally involved in what they were currently reading. For many
their current reading is work related, or light entertaining reading for relaxation.
There is an ongoing interest in adventure books, but no longer the children’s
adventures of Enid Blyton. Now the participants are reading action and adventure in
autobiographies, biographies and real adventure stories rather than the fictional ones
of their youth. Adventures in the natural environment, people pushing their
individual limits and wilderness experiences characterised participants’ relaxing
reading in this area, such as NINA and her partner’s current reading material.

NINA: The other thing we do read a bit of is how people pit themselves against
the environment. So, one that I, read not that long ago... Three Men in a Raft
(Angus & Mulgrew, 2004) which was people rafting in the Amazon from start
to finish... stories about mountain climbing, climbing Everest, that sort of
thing, I guess personal challenge. But at the moment we seem to be reading a
lot of autobiographies and biographies, especially around sports people and
adventurers.

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BEN: I also have a really big section of books that are purely personal
adventure. I’ve got a book about the first woman ever to ride a bicycle across
the Amazon Highway when it first opened (L. Sutherland, 1990), she was a New
Zealander and she did it 20 years ago when it first opened. She wasn’t a tourer,
she just wanted to do this thing. She was living over there, she wanted to ride
this mud highway. I’ve got lots. I’ve got Three Men in a Leaky Boat (Kozel,
2003) which is the story about the three blokes who paddled the length of a
river from Mount Everest to the Arctic Circle, across Russia. So that’s my
collection. I love to read about other people’s adventures in really out of the
way places.

The adult vicarious adventure reading indicates the participants are interested in
adventures in the natural environment and interested in others (Bigger & Webb,
2010). Their enjoyment of adventure reading has gone from the fanciful tales of
Blyton to the not-so-fanciful stories of people’s adventures. The popularity of both
the Fantasy/SF and the Auto-biography/biography/adventure books indicates that the
adult participants enjoy vicarious adventures in natural environments. Their
emotional attachment to the natural environment transfers from their own
experiences to the experiences in the books they choose to read. In their thirst for
knowledge, they explore the unknown by immersing themselves in a story – true or fantasy. It is, as Kilbourn (1998) describes, an immersion in a situation to better understand the truth.

“Let’s go back to the question of research and fiction,” Laura said.

“Okay.”

“I agree that I have to face the empirical facts of the war of 1812, problematic though they may be, if I’m to understand that particular war. But if I want to understand war in general, I’ll read good fiction. I’ll read Tolstoy rather than research. Research won’t give me the existential understanding about war I need to comprehend the facts and figures about that particular war.”

“I don’t see it.”

“It isn’t an either/or situation. Experiential, academic, and poetic truths are all helpful in different ways for understanding the nature of a situation. Each has a unique contribution. With fiction it’s plot and characterisation. Tolstoy teaches me something about war because I’m able to live in the situation through his characters. It’s like being a fly on the wall.” (Kilbourn, 1998, p. 184)

The in-depth understanding of a situation or characters as described here by Kilbourn corresponds to the research by Oatley (1999) and Mar and colleagues (Mar et al., 2006) which indicate people learn significant amounts of social knowledge from fictional reading (Section 2.2 & 2.7). As individuals read the books they may be transported to the situation (Section 2.8) and not question the background environmental information supplied.

**6.2.c Scientific Reading**

Within the scientific reading material in Table 4.16, the most often mentioned type of book overall were Textbooks with 21/82 named or described, followed by Magazines and Popular science authors with 15/82 listed. When separated into the two main groups (H) and (S), textbooks appear to be the most popular with the (H) group, with 40.9% while the (S) group preferred magazines, at 25.9%, followed by popular science authors, 22.2% and then textbooks, 18.5%.
The amount of time participants spent reading per day was not discussed, however Guthrie and Greaney (1991) list adults reading priorities as relaxation, followed by keeping abreast of work and the third priority as reading for knowledge (p. 70). Participants said they predominantly read textbooks for work related commitments. They read them for personal updating and reference to ensure they were providing their students with the most relevant and up-to-date material. The textbooks listed (Table 4.16) comprised comprehensive marsupial and bird identification books, through to information on growing trees and natural history texts.

Participants also identified popular scientific authors such as David Suzuki, Tim Flannery and Richard Attenborough as influential in assisting their teaching. The magazines mentioned included National Geographic, and wildlife magazines, along with specific interest topics. The mixture of specific knowledge text type books and the scientific based but more generalised magazines is potentially an adult hang-over from the childhood reading of encyclopaedias.

6.3 Adult books
Previous studies into reading have their significant remembered popular books listed as responses of as low as 2% to just over 10% (Russell, 1949). In this study, while not as large as Russell’s, the response rate for the books seen as significant is 10%, or if the book is listed by three or more participants. In Section 6.3 the books are listed by those most often named by participants. Table 4.17 shows multiple books by authors with more than three mentions.

6.3.a Specific books
The most mentioned individual book in the adult data (Table 4.17) was *Last Child in the Woods* (Louv, 2008), which is mentioned by five (H) participants. This is a work related book particularly relevant to environmental educators as it discusses the importance of actual contact with nature to encourage people to be pro-environmental. It uses examples of the benefits of nature to human health, and
especially concentrates on getting children into nature to avoid fear of the natural environment or ecophobia and Nature Deficit Disorder as discussed in Section 1.1. Louv uses the term Nature Deficit Disorder for describing children’s lack of experience in the natural environment, resulting in poorer physical and mental health. He quotes studies that show children suffering from psychological ailments, such as Attention Deficit Hyperactive Disorder (ADHD) or Autism may benefit from hands-on involvement with the natural environment (Louv, 2008).

Participants in this study agreed it was a valuable book for them to be reading in their workplaces, while some found it a struggle to read, others like Louise and Toni found it much easier.

LOUISE: It is because ... there are theorists out there who have already thought and expressed the things. ... The Last Child in the Woods . . . all about the fear of nature and scared of insects and all that type of thing, and also conversely Edward O Wilson’s book Biophilia ... It is about how people have a natural urge or affinity for living things and that we can cultivate that, the way we educate.

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TONI: I took it [Louv] away when we went to Europe and [my daughter] said “Mum, why are you reading a work book?” I said, “Oh, because it’s not work.”

The other major mention in the adult reading section, again by five of the (H) group, were Jared Diamond’s books, *Guns, Germs and Steel* (Diamond, 2005b), and *Collapse* (Diamond, 2005a). These books examine the rise and fall of various civilizations, and what causes these changes to occur. In *Guns, Germs and Steel* Diamond (2005b) explores the different environmental variables that historically influenced the formation of various societies. These insights are useful for environmental educators as they expand their knowledge base attempting to understand the current world we inhabit by investigating the past. In *Guns, Germs and Steel* Diamond begins his book in Polynesia exposing the environmental influences dictating the type and denseness of the early settlements and their ability to provide food for a warrior class over and above self-sufficiency.
Contributing to these differences among Polynesian societies were at least six sets of environmental variables among Polynesian islands: island climate, geological type, marine resources, area, terrain fragmentation, and isolation. (p. 58)

On some islands these variables also led to the creation of a complex social/political structure, with Diamond suggesting that the denser the population in a political unit, the higher its technology, economic and social organization (Diamond, 2005b, p. 62). This rings true for modern western populations where technology is constantly progressing and books such as these are relevant to the study participants who are trying to integrate this technological growth with their respect of natural environments.

One other book was specifically mentioned in the adult reading by three people (3H), *The Brain that Changes Itself* (Doidge, 2008), which examines neuroplasticity and the ability of a brain to retrain the way an individual learns. This may be interesting for participants looking at different approaches to learning, just as different Environmental Education Centres are exploring different methods of teaching their students (e.g. NINA, LOUISE & HELEN in Section 5.1.k). Other specific mentions by three participants were the espionage and spy author John Le Carre (2H1S); Robin Hobb (2H1S); the *Harry Potter* books (2H1S)(Rowling, 2001); and *The Lord of the Rings* (1H2S) (Tolkien, 2002).

6.3.b Childhood Favourite Reading
‘It was a dark and stormy night’ starts a horror or thriller story, while ‘the sun was shining and the birds were singing’ suggests to the reader a more light-hearted story, but how influential is the environment in the books on children’s attitudes and values? To go beyond the basics of describing weather for scene setting and to look for examples of pro-environmental attitudes and values embedded in the childhood books that participants specifically mentioned, reading or re-reading some of the favourite books mentioned in their interviews was undertaken to see if there was a pro-environmental message evident in the storylines.
Relating to Table 4.18 and looking at the most often mentioned books/authors of the participants while they were younger, the percentages of Humanities trained (H), Science trained (S) and Other trained (O) readers, along with the Social Justice (SJ) and Concern for the Environment (CE) participants are detailed at the start of each following book or author section. This is to indicate how many of which kind of participants mentioned the book/author in Section 6.3. This differs to the number of times the book/author is mentioned as in some cases participants mentioned numerous books by an author. Because of the participants’ responses to childhood reading, this section is mainly discussing at the ‘fiction’ rather than the ‘scientific’ books.

In examining the impact of stories on individuals’ lives, Russell (1949) questioned teachers about their memories of childhood reading and came to the conclusion that remembered childhood reading was a significant influence in his/her development.

The total influence of a book on a child’s development can never be evaluated in terms of his [sic] adult memories of the book, but there is some reason to believe that highly significant reactions to a story will be remembered longer than less significant experiences. If an adult remembers certain parts or effects of a book read as a child, it may be argued that these passages or effects were fairly important influences in his [sic] development during childhood and adolescence. (1949, p. 477)

6.3.c The Hobbit & Lord of the Rings Trilogy

Readers: Overall 26%, (H) 29% (S) 27% (O) 0% (CE) 25% (SJ) 26%

*Lord of the Rings* (LOTR) (Tolkien, 2002) is a trilogy comprising the three original books; *Fellowship of the Ring* initially published in 1954, *The Two Towers* published in 1954, and *The Return of the King* published in 1955. The books have become widely known since motion picture releases of versions of the stories in 2001, 2002 & 2003. However, the worldwide popularity of the series predates the movies, with the books having already been translated into 30 languages (Morgan, 2010, p. 383)
and often topping the most popular book lists in the UK at the end of the twentieth century (Mendlesohn & James, 2009).

The story is set in the mythical ‘Middle Earth’ a medieval type countryside populated by the main human-type species of hobbits, elves, men, and dwarves. The epic includes creatures with ‘powers’ such as the wizards on the sides of good and evil, and other magical characters such as ents and orcs. This is the most popular book/series mentioned by the research participants. Some participants recognised it as an ‘environmental’ book and gained significant encouragement from its pages.

JANE: my favourite book was Lord of the Rings, which is looking at different environments and what happens when you don’t maintain and look after them, they’ve got those images in them.

The images JANE mentions are the comprehensively described landscapes, as Kathryn Kramer is quoted in Louv (2008) as saying

I had all the weather I needed in Tolkien’s books … Page after page Tolkien’s books go on like this, using more words in English to describe place than most of us use in a life time. (p. 167).

The trilogy has been seen as an epic examining social and environmental injustice (Morgan, 2010) which encourages readers to think and translate the story back to their own reality. Tolkien used his own real life experiences as ideas for LOTR. This included his childhood experiences in the country, but he does not appear to agree with some commentators about his inspirations.

[I]t has been supposed by some that "The Scouring of the Shire" reflects the situation in England at the time when I was finishing my tale. It does not. It is an essential part of the plot, foreseen at the outset, though in the event modified by the character of Saurman as developed in the story without, need I say, any allegorical significance to contemporary political reference whatsoever. It has indeed some basis in experience, though slender (for the economic situation was entirely different), and much further back. The country in which I lived in childhood was being shabbily destroyed before I was ten, in days when motor-cars were rare objects (I had never seen one) and men were still building suburban railways. (Tolkien, 2002, p. xvii)
The description of the industrialization of the mill in the chapter, ‘Scouring the Shire’ as Tolkien referred to in the quote above, illustrates the use of ‘modernization’ of the mill to increase its capacity for production, but the problem of a lack of essential supplies makes it a lesson in greed. Modern readers could see a similarity to the expanding production in China rapidly consuming raw materials while attempting to create a world market for various goods, such as detailed by HARRY and TONI in Section 5.1.h and BEN here.

BEN: I think that’s where we’re going wrong, we’re allowing people to spend their wealth consuming more resources.

'Take Sandyman's mill now. Pimple knocked it down almost as soon as he came to Bag End. Then he brought a lot o'dirty-looking Men to build a bigger one and fill it full o'wheels and outlandish contraptions…. Pimple's idea was to grind more and faster, or so he said. He's got other mills like it. But you've got to have grist before you can grind; and there was no more for the new mill to do than for the old. But since Sharkey came they don't grind no more corn at all. They're always a-hammering and a-letting out a smoke and a stench, and there isn't no peace even at night in Hobbiton. And they pour out filth a purpose; they've fouled all the lower Water, and it's getting down into Brandywine. If they want to make the Shire into a desert, they're going the right way about it.’

(Tolkien, 2002, p. 990)

Other participants have the book as a favourite from childhood and have read the book more than once but do not see it as an ‘environmental’ work. Their motivation for re-reading the book appears to be the concept of fantasy and escapism to a better place. It is interesting to note that they feel a natural environment with no technology is a better place to be living. DANA also specifically mentions often-referred environmental part of the chapter ‘The Scouring of the Shire’ (Morgan, 2010) as her most memorable part of the book.

M: is there anything that jumps out that you read when you were younger. Is there any book you’ve kept since you were little?

DANA: Ah yes, but it wasn’t an environmental one. I was given The Hobbit as a school prize when I was about 10, and then my Father gave me Lord of the Rings when I was 12, that was a big influence on my life. That was one of my all-time favourite books.

M: Why?
DANA: I don’t know. Maybe it was as simple as living in [the city] and subconsciously wanting to go to a different world where trees spoke and magic was “real”. Maybe that's what I'm trying to do now, wave a magic wand and make the world a slightly better place or something.

M: Did you continue to read any of those fantasy kind of books?

DANA: Yes I have. ... But Lord of the Rings and to a lesser extent The Hobbit really grabbed my attention.

M: It’s amazing what we do pick up out of books like the Hobbit and Lord of the Rings.

DANA: yes, like when they’re chopping down the trees in the Shire I was outraged! How could this possibly be happening! On reflection, it [literature and pro-environmentalism] probably is much more interrelated than I had imagined.

DANA shows here another example of a reactive learning experience as detailed in Section 2.12. She now sees the influence of the stories on her other knowledge and is able to reflect on them.

In LOTR Tolkien (2002) describes many environments and landscapes in detail, with the majority of the descriptions being of unhealthy regions. These descriptions include the needless cutting of trees - not only in the ‘Scouring of the Shire’ - and the increasing industrialization of the landscape, something that was happening in Tolkien’s lifetime (1892 – 1973). When looking at the industrial pits of Saurman’s domain, Gandalf (the good wizard) says:

I looked out on it and saw that, whereas it had once been green and fair, it was now filled with pits and forges. Wolves and orcs were housed in Isengard, for Saurman was mustering a great force on his own account,... Over all his works a dark smoke hung and wrapped itself about the sides of Orthanc. (Tolkien, 2002, p. 254)

The idea of needless destruction of the natural environment, portrayed with the cutting down of trees, Morgan (2010, p. 391) suggests came from the cutting down of a willow tree when Tolkien was young. Anthropomorphism is used throughout the book, such as when the character Treebeard the Ent (an aged walking, talking tree), talks about the needless destruction of trees, he makes it clear that the overcapitalization of the land and its ruler are to blame.
'Only lately did I guess that Saurman was to blame. He and his foul folk are making havoc now. Down on the borders they are felling trees - good trees. Some of the trees they just cut down and leave to rot - orc-mischief that; but most are hewn up and carried off to feed the fires of Orthanc. There is always a smoke rising from Isengard these days.' (Tolkien, 2002, p. 462)

Comparisons of the landscape before and after industrialization are made when Tolkien describes Wizard's Vale, encouraging an emotional response from the readers.

Once it had been fair and green, and through it the Isen flowed, already deep and strong before it found the plains; for it was fed by many springs and lesser streams among the rain-washed hills, and all about it there had lain a pleasant, fertile land.

It was not so now. Beneath the walls of Isengard there still were acres tilled by the slaves of Saurman; but most of the valley had become a wilderness of weeds and thorns. Brambles trailed upon the ground, or clambering over bush and bank, made shaggy caves where small beasts housed. No trees grew there; but among the rank grasses could still be seen the burned and axe-hewn stumps of ancient groves. It was a sad country, silent now but for the stony noise of quick waters. Smoker and streams drifted in sullen clouds and lurked in the hollows. The riders did not speak. Many doubted in their hearts, wondering to what dismal end their journey led. (Tolkien, 2002, p. 540)

Emotions are further evoked in readers when the hobbits return to their home village of Bag End after their great adventure to find that things have changed while they were away. The destruction inspires dismay amongst the hobbit characters in relation to the loss of a significant place of their childhood.

It was one of the saddest hours in their lives. The great chimney rose up before them; and as they drew near the old village across the Water, through rows of new mean houses along each side of the road, they saw the new mill in all its frowning and dirty ugliness: a great brick building straddling the stream, which it fouled with a steaming and stinking outflow. All across the Bywater Road every tree had been felled.

As they crossed the bridge and looked up the Hill they gasped. Even Sam's vision in the Mirror had not prepared him for what they saw. The Old Grange on the western side had been knocked down, and its place taken by rows of tarred sheds. All the chestnuts were gone. The banks and hedgerows were broken. Great wagons were standing in disorder in a field beaten bare of
grass. Bagshot Row was a yawning sand and gravel quarry. Bag End up beyond could not be seen for a clutter of large huts... .

'This is worse than Mordor!' said Sam. 'Much worse in a way. It comes home to you, as they say; because it is home, and you remember it before it was all ruined.' (Tolkien, 2002, pp. 993, 994)

Participants’ memories of the emotions raised in the book were not all positive as shown by TONI’s response to HARRY mentioning his memories of the series when he was talking about books that meant something to him as he was growing up.

HARRY: Lord of the Rings is another one that connected with me.

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TONI: I could never read Lord of the Rings because it was just too violent. I even hated the movie, and I know that it’s just the reason for them being there, it’s just I could never read it, It’s too violent.

Traditionally LOTR has been described as a children’s fantasy novel, however Tolkien himself said it was written for an older age-group who could appreciate the social, economic environmental and political nuances of the story. (Morgan, 2010, p. 387). Participants read the novel at various ages, from INGRID whose father read her the books,

INGRID: Yeah, The Hobbit, Lord of the Rings yep, Dad started reading those to us out loud at night, especially when we went camping. So, yeah, I read those books.

and DANA who was given the series at about 12 years of age, through to FRAN who read it for the first time at university.

FRAN: Yeah, I Didn’t read The Hobbit until I was probably at uni, and then I re-read it, and then I read Fellowship of the Ring twice, Lord of the Rings twice I think.

Just as TONI couldn’t read LOTR because of the violence, MARY tried reading it to her young son but he was not interested.

MARY: I tried to read The Hobbit and The Lord of the Rings [to her son] but it just didn’t stick.
Perhaps as Morgan (2010) suggests Tolkien said, the young son needed to be older to appreciate the nuances of the book.

LOTR touches on the most important pro-environmental influences mentioned by recent researchers (Chawla & Cushing, 2007; Kollmuss & Agyeman, 2002; Palmer et al., 1998) and discussed in Section 5.2. The hobbits have experiences in the natural world, have mentors and guides, and suffer the loss of special places throughout the books. The main characters’ vocations are to save the world for future generations and do this by following their principles and with a concern for social justice. This is reinforced by the emotional attachment the reader makes with the characters and their investment into understanding the society of Middle Earth.

This parallel of real influences and fictional ones shows an insight into the author’s possible intent in books such as these, as they (sometimes unwittingly) meld their knowledge into the fictional worlds where readers sometimes unwittingly absorb the knowledge. This incidental learning from the LOTR fantasy books, becoming reactive learning as shown by DANA in this section is similar to that shown by INGRID in Section 6.2 and possibly shows how social justice and environmental information may bypass a reader’s mental barriers and be used in real life situations without conscious deliberation and ensuing recognition.

6.3.d Enid Blyton Books

Readers: Overall 26% (H) 24% (S) 36% (O) 0% (SJ) 21% (CE) 33%

GINA: I always loved reading stories when I was little and I one of my favourites was The Magic Faraway Tree by Enid Blyton (2007), so maybe I was a bit of a greenie at heart although I didn’t really realise it until I got older!

One of the more popular authors mentioned was Enid Blyton with over a quarter of the participants mentioning her books. The Famous Five (a series of 21 novels), Mallory Towers series, The Magic Faraway Tree and The Adventures of the Wishing Chair, are books they read as children, and as books some are reading or handing on to the next generation (Table 4.26 and Section 4.7). Blyton wrote hundreds of
children’s books over a 40-year span from 1915 that included adventure, manners, magic and mystery, and although somewhat dated in their language and some of their attitudes, recent reprints are available.

Environmentalism was not a concept when Blyton was writing. It was more often described as “natural history” and focused on the beauty of the outdoors and caring for nature rather than on the human impact on the natural world. *The Magic Faraway Tree* is a story about the adventures of four children and their magical friends who live in the woods at the end of their garden. The environment is not specifically mentioned in the book which was first published in 1943. Rather it focuses more on the imaginative worlds that ‘land’ at the top of the tree that the children visit, but real world scientific or environmental information is there. An example of this is information about woodpeckers where the children are trying to save their magical friends stuck inside the tree.

'They'll be starving!' said Frannie, beginning to cry. 'Oh Joe, do think of something!'

But nobody could think of anything at all. It was only when the woodpecker flew by to go to his hole in the tree that any idea came - and then Joe jumped up with his eyes shining.

'I know! I know!' he cried. 'Let's ask the woodpecker to help us.'

'But how could a bird help?' said Rick.

'Well, a woodpecker pecks holes in wood to make his nest,' said Joe. 'I've seen them pecking hard with their strong beaks. They make a sort of drumming noise, and can peck out quite a big hole in no time. If we asked him, I'm sure the woodpecker could peck a hole at the back of this room, right into the slippery-slip - and then we could pull Silky, Moon-Face and saucepan through the hole.'...

'Woodpecker! Come here a minute!'

The woodpecker stared round in surprise. He was cleaning his feathers by running each one carefully through his beak. He was a lovely bird with his bright, red-splashed head. He spread his wings and flew down.

'What's the matter?' he asked.
Joe told him. The bird listened with his head on one side and his bright eyes shining.

'Do you think you could possibly help us to rescue Silky and the others by pecking a hole at the back of Angry Pixie's house?' said Joe, when he came to the end of his story. 'You have such a strong beak.'

'Yes, I know I have,' said the woodpecker. 'The only thing is I generally only peck rotten wood - that's easy to peck away, you know. It just falls to pieces. But good, growing wood like the Faraway Tree - well, that's different. That's very hard indeed. It would take me ages to peck a large hole through that.' (Blyton, 2007, pp. 191 - 193)

Another Blyton favourite with the participants is *The Adventures of the Wishing Chair* originally published in 1937. This book is a collection of the adventures of two children and a pixie riding to magical places on a flying armchair, and also introduces some basic information for the age group, such as this excerpt about clouds.

It was raining. Mollie wished that they had brought an umbrella. 'Tell the chair to fly above the clouds, Chinky,' she said. 'It's the clouds that drop the rain on us. If we fly beyond them, we shan't get wet because there won't be any rain.'

'Fly higher than the clouds, chair,' said Chinky. The chair rose higher and higher. It flew right through the misty grey clouds and came out above them. The sun was shining brightly! It made the other side of the clouds quite dazzling to look at. (2008, p. 97)

While neither of these examples is obviously pro-environmental, they use anthropomorphic attributes to educationally inform the young audience and provide information within the story that children could learn and then remember when needed.

One of the Famous Five novels, *Five Have a Wonderful Time*, gives advice on how to care for snakes, the building of castles and adventures with Circus People. However, Blyton also manages to include information about local bird habits.

The jackdaws circled around the old castle, calling to one another in their cheerful, friendly voices. The five children looked up and watched them.

'You can see the grey at the backs of their necks,' said Dick. 'I wonder how many years jackdaws have lived round and about this castle.'
'I suppose the sticks lying all over this courtyard must have been dropped by them,' said Julian. 'They make their nests of big twigs - really, they must drop as many as they use! Just look at that pile over there!'

'Very wasteful of them!' said Dick. 'I wish they would come and drop some near our caravan to save me going to get firewood each day for the fire!'

(Blyton, 1952, p. 115)

Apart from GINA, the participants interviewed did not really remember the environmental side of the stories, they were more interested in the fantasy and outdoor adventures the characters were having in the books.

_JANE:_ when I was very young I used to always like stories that were outside, I used to like fiction that was very active, The Magic Wishing Chair used to go to different environments... I would love those.


_WENDY:_ I guess my real start was in year 2, and I read through all of Enid Blyton’s stuff pretty much.

The availability of storybooks has increased over the years with millions of stories now accessible to young people. When some of the participants were young story books were not as common as they are today. When looking at the age or era of the participants responding with Blyton, surprisingly they were all in the middle and younger age groups, with the younger ones remembering more titles than the older participants.

_IAN:_ Because of my education period, most of our books read in our youth were very much classics,... and you might have read a bit of The Famous Five like the English so-called children’s books, and all that stuff by Enid Blyton and books like that.

_DANA:_ Going way back to early primary school, another big hit of mine was Enid Blyton. ... yes, she was a driving force, probably especially around my era I suppose ... I guess that is a sort of precursor for that fantasy theme. That was a different world. But they all involved different sorts of creatures and I
Blyton’s books carry some of the pro-environmental influences identified by participants in this study. The stories are often set outdoors with an adventure experience in the natural environment for the major characters. Sometimes there are negative experiences where places of significance for the characters are threatened, and the characters learn about the environment from friends and family, as in the quote above about the anthropomorphic woodpeckers. The influences within the book of principles and of social justice issues are often the values of the characters doing the correct thing in the situations in which they find themselves.

DANA’s comment about the fantasy element of the Enid Blyton books an interesting tie-in with the fantasy element of Tolkien’s writing and further recognition of reactive learning in the interview data. This fantasy theme moves through to the next most popular book series, that of Rowling’s *Harry Potter* series (Rowling, 2001). Here again the environment is not a focus in the series, but part of the backdrop to the events unfolding through the characters and the storyline.

### 6.3.e Harry Potter Series

**Readers: Overall 23% (H) 29% (S) 36% (O) 0% (SJ) 32% (CE) 8%**

Participants started reading the Harry Potter series when it was first published in 1997. Their memories and use of this series indicates its currency with school students today. The age group mentioning this book are mainly the young and middle age group participants. It was not current reading for any of the participants; rather it was mentioned as reading material when they were younger. It has the dubious honour of being the only text mentioned where participants (FRED and BEN) are diametrically opposed to using the stories in the series at work.

*FRED: I often read kids’ books, like I’ve read all the Harry Potter stuff I’ve read the Tolkien stuff and that, but that, particularly the Harry Potter, I think it’s important to know what kids are reading and to be able to bring it in. I often bring in little snippets out of Harry Potter into what I’m doing and so then*
kids go “oh yeah, right, yeah” … I think it’s important to read contemporary children’s literature so you can fit into their world.

BEN: Well, I love the fact that you can relate to them [students] your story. Even to the point that you can go, well, the last time we did this activity this is what happened, so that’s retelling, the recall. Some of that happened in a story form, but as to identifying authors and titles … I couldn’t do that. I wouldn’t go – “well in Harry Potter this happened, and this is going to happen today for us”. So I wouldn’t do that, but I do recall and I do make stories up in the sense that I don’t … they’re not fantasy stories, but I do relay incidents that have happened.

The Harry Potter books are not specifically environmental; in fact they barely mention the environment except to use it as a background to the plot. The influence of the Harry Potter books may lie within the fantasy and social justice angles as the stories have a moral to them, that of good versus evil. In an example from *Harry Potter and the Chamber of Secrets* (1999a) the headmaster of the school explains to Harry;

‘Exactly,’ said Dumbledore, beaming once more…. ‘It is our choices, Harry, that show what we truly are, far more than our abilities.’ (p. 245)

However, there is more than this in the novels. The social justice issues raised are discussed and reasons are given for Harry’s choices. These are a powerful tool for values education amongst children of all ages. In *Harry Potter and the Prisoner of Azkaban* (Rowling, 1999b) Harry is faced with following the information he has – that Pettigrew gave his parents up to be killed for greed - and choosing to kill Pettigrew, or following his own values and sparing his life.

'There!' said Pettigrew shrilly, pointing at Hermione with his maimed hand. ‘Thank you! You see Remus? I have never hurt a hair of Harry's head! Why should I?’

'I'll tell you why,' said Black. 'Because you never did anything for anyone unless you could see what was in it for you.' (Rowling, 1999b, p. 271)

‘You should have realised,’ said Lupin quietly. 'If Voldemort didn't kill you, we would. Goodbye Peter.'

Hermione covered her face with her hands and turned to the wall.
'NO!' Harry yelled. He ran forwards, placing himself in front of Pettigrew, facing the wands. 'You can't kill him,' he said breathlessly. 'You can't.'

Black and Lupin looked staggered.

'Harry, this piece of vermin is the reason you have no parents,' Black snarled. 'This cringing bit of filth would have seen you die, too, without turning a hair. You heard him. His own stinking skin meant more to him than your whole family.'

'I know,' Harry panted. 'We'll take him up to the castle. We'll hand him over to the Dementors. He can go back to Azkaban . . . just don't kill him.'

'Harry!' gasped Pettigrew, and he flung his arms around Harry's knees. 'You - thank you - it's more than I deserve - thank you-

'Get off me.' Harry spat, throwing Pettigrew's hands off him in disgust.

'I'm not doing this for you. I'm doing it because I don't reckon my dad would've wanted his best friends to become killers - just for you.' (p. 275)

Rowling also uses the anthropomorphism of plants and animals to make them easier for readers to relate to and to form an emotional bond (Gebhard, Nevers, & Billmann-Mahecha, 2004). In *Harry Potter and the Chamber of Secrets* (Rowling, 1999a) Harry and his friend Ron are in a flying car that runs into a ‘magical’ tree. The story of the ‘Whomping Tree’ is then further humanized when it is given what appears to be ‘human like’ first aid. Again Harry’s emotions are explained and a sense of justice remains.

Ron gasped. Staring through the windscreen and Harry looked around just in time to see a branch as thick as a python smash into it. The tree they had hit was attacking them. Its trunk was bent almost double, and its gnarled boughs were pummelling every inch of the car it could reach.

‘Aaargh!’ said Ron, as another twisted limb punched a large dent into his door; the windscreen was now trembling under a hail of blows from knuckle-like twigs and a branch as thick as a battering ram was pounding furiously on the roof, which seemed to be caving in –

‘Run for it!’ Ron shouted, throwing his full weight against his door, but next second he had been knocked backward into Harry’s lap by a vicious upper cut from another branch.

‘We’re done for!’ he moaned, as the ceiling sagged, but suddenly the floor of the car was vibrating – the car had restarted.
‘Reverse!’ Harry yelled, and the car shot backwards. The tree was still trying to hit them; they could hear its roots creaking as it almost ripped itself up, lashing out at them as they sped out of reach. (Rowling, 1999a, pp. 59-60)

Professor Sprout’s arms were full of bandages, and with another twinge of guilt, Harry spotted the Whomping Willow in the distance, several of its branches now in slings. (1999a, p. 70)

KAY and SALLY are younger participants in this study and the Harry Potter series was available for them as children. KAY is a repeat reader of the books, while SALLY returned to regular reading of books rather than magazines after starting reading the series.

KAY: Harry Potter (laughs) That’s my generation though ... I grew up with that and so that’s sort of been, when I get a chance I read that again.

M: Did you read any kind of book in high school or just what you had to?

KAY: Oh, I would have read the Harry Potter series then as well ... I always want to read, it’s more trying to find time. But I’m a shocker, when I get a good book, that’s all I do. I will sit down and read and I know it’s no good when it’s uni time and you’re reading something that doesn’t deal with uni and I’m sitting there. I must admit, the last Harry Potter book I sat down and I probably read the entire thing in about 12 hours or so. And didn’t do anything but eat, go to the loo, come back and read,

SALLY: Oh my goodness, ... classic kids’ books like that which are kind of fantasy and possibilities in the world, like maybe there are mermaids or maybe they’re among us,. Oh I read Harry Potter that’s right, maybe got me back into reading. You never know.

The Harry Potter series does not appear to use many of the pro-environmental influences LOTR utilises to encourage pro-environmental behaviour; the characters have some experiences in the natural environment. It does use anthropomorphism (Section 6.1), the ideals of justice and the power of good over evil to provide a moral to the stories. This could be seen as a social justice/responsibility issue which reflects the strong sense of justice in the participant cohort (Section 5.3).
6.3.f Colin Thiele’s Storm Boy

Readers: Overall 13% (H) 0% (S) 9% (O) 67% (SJ) 10% (CE) 17%

Storm Boy by Colin Thiele (2002) was another popular book amongst some of the participants of the study when they were young readers. First published as The Rim of Morning by Rigby in 1963 a 40th anniversary reprint is available as Storm Boy in local libraries. This book is deliberate in its environmental message, especially about the birds and cultural significance of the Coorong in South Australia. This book obviously uses experiences in nature, mentors and the loss of a special place as well as social justice issues to promote its pro-environmental messages.

Storm Boy lives with his hermit father, Hide-Away, in a humpy made of recycled building materials on the beach of the Coorong in South Australia. After he sees three or four young men destroy a pelican nest in the bird sanctuary and kill the parent birds, Storm Boy saves three young pelicans. Eventually the young birds are returned to the bird sanctuary where two stay, but the third, Mr Percival, returns to the boy on the beach. After some adventures, hunters come to the Coorong to shoot ducks illegally and they deliberately shoot Mr Percival when he frustrates their aim by scaring the ducks away. There is no happy ending here. The pelican dies and Storm Boy goes to boarding school in Adelaide.

This story reflects the negative experiences Chawla (1999) and others found in previous research into significant pro-environmental influences (Section 5.1.f). The negative experiences in the book, including the death of the pelican parents and of Mr Percival are balanced with the positive aspects of the story, the heroics of the pelican and the freedom of the beach as a home for Storm Boy.

When asking the participants why they felt this book was important, their reasons for remembering the book reflected their interests in life. ELIZABETH is both a humanities and science based teacher and loves children’s books that portray the environment to children. Her response was: “Colin Thiele is one of the best
ED is a native bird lover caring for native birds at his home, which is perhaps why he remembers the book so fondly.

ED: I read a lot ... but one that sticks in my head, that actually Mum tried to take off me, because I was balling my eyes out so much was Storm Boy Colin Thiele. That made a big mark on me.

M: And why was that?

ED: I just found it very moving, touching, emotional. And I liked Percival, and I’ve done a lot of [work with] pelicans over the years since ... I love my reading, but Storm Boy sticks out.

And while not specifically listing it as a book he remembers reading, JOHN referred to an influential period of his childhood as being similar to that of Storm Boy in the book.

JOHN: We were one of only three families’ resident along that beach, and it’s hard to believe now because there’s thousands there now. It was a very remote place to live and, for reasons I won’t go into, the two youngest in the family, my brother and I, spent the whole of one year not going to school at all. Living in a house with direct view of the ocean, literally sand just outside the back door, we lived almost the life of Storm Boy, you know, getting around in bare feet all the time, and what classes my mother gave us we often did down the beach, and we spent the entire year not going to school, so that environment and that experience of not going to school I think marked my brother and I forever more. I guess I had a real yen for being in the environment, but I guess that also sowed the seeds for doing something for the environment later on. I didn’t become a 10 year old activist. I think it’s hard to pin point anything in schooling or beyond that. I think it is more to do with home life.

There are entrancing descriptions of Storm Boy’s carefree beach life in the book with one of his favourite times, just after a storm, being potentially like JOHN’s real experiences:

Storm Boy liked best of all to wander along the beach after what Hide-Away called a Big Blow. For then all kinds of treasure had been thrown up by the wind and the wild waves. There, where the wide stretch of beach was shining and swishing with the backward wash, he would see the sea things lying as if
they’d been dropped on a sheet of glass – all kinds of weed and coloured kelp, frosty white cuttlefish, sea urchins and starfish, little dead seahorses as stiff as starch, and dozens of different shells – helmets, mitres, spindles and dove shells, whelks with purple edges, ribbed and spiral clusterwinks, murex bursting out their frills of blunt spines, nautilus as frail as frozen foam, and sometimes even a new cowry, gleaming and polished, with its underside as smooth and pink as tinted porcelain. (Thiele, 2002, pp. 14 - 15)

This descriptive passage about the water and then the listing of different shells and sea life thrown up by the storm tide is a valuable information source for young people who may never see the actual seashells and creatures mentioned, but can search the internet for pictures and information about the various creatures.

Throughout the story Thiele addresses the importance of sanctuaries by providing detailed descriptions of what is not appropriate in these situations, as well as giving the reader an insight into amazing natural occurrences.

Some distance from the place where Hide-Away and Fingerbone had built their humpies, the whole stretch of the Coorong and the land around it had been turned into a sanctuary. No-one was allowed to hurt the birds there. No shooters were allowed, no hunters with decoys or nets or wire traps, not even a dog.

And so the water and the shores rippled with and flapped with wings. In the early morning the tall birds stood up and clapped and cheered the rising sun. Everywhere there was the sound of bathing – a happy splashing and sousing and swishing. It sounded as if the water had been turned into a bathroom five miles long with thousands of busy fellows gargling and gurgling and blowing bubbles together. Some were above the water, some were on it, and some were under it; a few were half on it and half under. Some were just diving into it and some just climbing out of it. Some who wanted to fly were starting to take off, running across the water with big fat feet flapping their wings furiously, and peddling with all their might. Some were coming in to land, with their wings braking hard and their big webbed feet splayed out ready to ski over the water as soon as they landed.

Everywhere the crisscrossing wakes of ripples and waves and splashes. Storm Boy felt the excitement and wonder of it; he often sat on the shore all day with his knees up and his chin cupped in his hands. Sometimes he wished he’s been born an ibis or a pelican. (pp. 16 - 17)

By blending Aboriginal Cultural and historical information into the dialogue, Thiele further informs readers about aspects of Indigenous culture that they may not know.
Sometimes in the hollows behind the sandhills where the wind had been scooping and sifting, Storm Boy found long white heaps of seashell and bits of stone, ancient mussels and cockles with curves and whorls and sharp broken edges.

‘An old midden.’ Said Hide-Away, ‘left by the Aborigines.’

‘What’s a midden?’

‘A camping place where they used to crack their shellfish,’ Fingerbone stood for a long time gazing at the great heaps of shells, as if far off in thought.

‘Dark people eat, make camp, long time ago,’ he said a little sadly. ‘No whitefellow here den. For hundreds and hundreds of years, only blackfellows.’

(pp. 12 - 13)

The deliberate environmental information in this book also includes a segment about a dangerous snake.

But the only time Storm Boy ever saw Fingerbone kill anything was when a tiger snake came sliding through the grass to the shore like a thin stream of black glass barred with red hot coals. As it slid over the water towards his boat Fingerbone grabbed his blunderbuss and blew the snake to pieces.

‘Number one bad fellow, tiger snake,’ he said. ‘Kill him dead!’ Storm Boy never forgot. For days afterwards every stick he saw melted slowly into black glass and slid away. (pp. 10 - 11)

This deliberate placement of scientific knowledge in a fictional setting is possibly what attracted this group of participants to remember this book while none of the (H) participants mentioned it. The story has the pro-environmental influences of experiences in the natural environment, the negative experience of the loss of a significant place, the positive influence of family and friends and utilises principles and social justice issues within the characters.

6.3.g Robert Louis Stevenson’s Treasure Island

Readers: Overall 6% (O) 67% (SJ) 5% (CE) 8%

Snakes again get a mention in the 1883 Classic *Treasure Island* (Stevenson, 2001) where the environment is still seen as natural history. Only two participants, both males, made passing comments about this book. Set in natural environments the text
has descriptions of the plants, landscape on the island and potential threats to the young hero as environmental messages.

I had crossed a marshy tract full of willows, bulrushes and odd, outlandish, swampy trees; and I had now come out upon the skirts of an open piece of undulating, sandy country, about a mile long, dotted with a few pines and a great number of contorted trees, not unlike the oak in growth, but pale in the foliage, like willows. On the far side of the open stood one of the hills, with two quaint, craggy peaks shining vividly in the sun.

I now felt for the first time the joy of exploration. The isle was uninhabited; my shipmates I had left behind and nothing lived in front of me but dumb brutes and fowls. I turned hither and thither among the trees. Here and there were flowering plants, unknown to me; here and there I saw snakes, and one raised his head from a ledge of rock and hissed at me with a noise not unlike the spinning of a top. Little did I suppose that he was a deadly enemy and that the noise was the famous rattle. (p. 106)

And then later in the book more information about strange animals is revealed to the young reader:

[N]or was that all, for crawling together on flat tables of rock or letting themselves drop into the sea with loud reports I beheld huge slimy monsters – soft snails, as it were, of incredible bigness – two or three score of them together, making the rocks to echo with their barking.

I have understood since that they were sea lions, and entirely harmless. But the look of them, added to the difficulty of the shore and the high running of the surf was more than enough to disgust me of that landing place. I felt willing rather to starve at sea than confront such perils. (pp. 184 - 185)

Stevenson is perhaps ahead of his time when he mentions human involvement in landscape destruction when Jim describes the inside of the stockade that the previous inhabitants of the island have built.

The slopes of the knoll and all the inside of the stockade had been cleared of timber to build the house. And we could see by the stumps what a fine and lofty grove had been destroyed. Most of the soil had been washed away or buried in drift after the removal of the trees; only where the streamlet ran down from the kettle a thick bed of moss and some ferns and little creeping bushes were still green among the sand. Very close around the stockade – too close for defence, they said – the wood still flourished high and dense, all of fir on the land side, but towards the sea with a large admixture of live-oaks. (p. 147)
Treasure Island was named by participants, but without comment. The book is seen as a classic text with the outdoor setting and adventure experiences.

6.3.h Individual Books and authors with special meaning for participants
Some participants elaborated the importance of experiences in the natural world in discussing their childhood reading. Their passion for certain texts shows the special meaning these books have for the participants named, reflecting Russell’s (1949) interpretations of significance as reported in Section 6.3.b. NINA and others loved adventure stories, especially if animals were involved.

NINA: Certainly I’ve always loved adventure stories, and I think my main reading as a child was adventure stories. And animal stories, the Silver Brumby series (Mitchell, 1958) I came from a family of very voracious readers, my father read incessantly so we all read, he even used to read to us when we were teenagers, so, yeah, we all read. Certainly the Silver Brumby series … it’s a long time ago.

ELIZABETH: I remember in primary school my diet was the Seven Little Australians (Turner, 1994) and all those adventure stories.

M: Any environmental books, or any stories you can think encouraged you to become environmental.

PAM: A couple. So, have you read the Seven Little Australians? I mean, books like that and The Chronicles of Narnia (Lewis, 1998) and while maybe not having any entirely environmental themes, I was thinking of young stories, where kids are getting out into the open and having adventures. It all must encourage me, and just get outside and play and use your imagination and things like that. So I’m trying to think of books when I was really young, and those two sprang to mind.

PAM had a unique view as she felt that Keats’ poetry was an important influence on her in her teenage years when she and friends would go into the bush to read the poems.

M: Why did Keats have an effect on you?
PAM: Possibly, because he is an amazing poet who could write about the natural environment and things going on in just such a beautiful way and so, when you read beautiful poetry it just, it almost tunes you in to actually what’s going on around you.

M: Do you think you’ve learnt many environmental things through fiction?

PAM: In terms of thinking about the environment itself? I reckon being a bit more observant is probably something I learnt, especially I mean the books that I’ve mentioned [Seven Little Australians, Chronicles of Narnia, Charlotte’s Web], all had some, for me, beautiful imagery within the natural environment and so, when you’re reading about those things, you then become aware of what kind of images are around yourself.

Identifying with charismatic and anthropomorphised animals is another recognised way of encouraging pro-environmental feelings and behaviours amongst people (Swonke, 2000) (Section 6.1). CHARLIE agrees with this in his comments about Watership Down (Adams, 1972), while PAM talks about the scientific knowledge she feels she may have gained from Charlotte’s Web (White, 1952) and ELIZABETH also fondly remembers books about animals. This identifying animals and caring about parts of nature leads children to empathise with the natural world (Kellert, 2005) and creates emotional attachments which go beyond the specific text.

CHARLIE : Anyway environmentally, when I was maybe, late teens, I read Watership Down, and I thought that from then on that I would read everything that Richard Adams ever wrote, and I remember reading another story of his after just loving Watership Down, I read another one which was about dogs, and I couldn’t really read it. I don’t know if it was the fact that the rabbits in Watership Down were wild animals or something, and the dog one was about a unit at the university that tested the animal learning and that sort of stuff and they escaped blah blah, or something. But I didn’t actually finish it, so I was disappointed, so I never tried to read another Richard Adams, … But Watership Down yeah. I went to a conference recently and listened to a to a guy from one of the universities, La Trobe maybe, who spoke about the natural history of education, and getting kids in touch with the natural world and he talked about becoming the animal in a way, sort of feeling a deep sense of empathy with them, and trying to put yourself in their shoes, and how they’d be feeling about this and about that. And I think that’s what resonates from Watership Down, you really become the bunny and you’re running around with the rabbits and you have all the problems that they have and you can really empathise with them so, that’s probably a biggie.
PAM: Charlotte’s Web would be another one. And that one maybe just because everyone thinks spiders are awful, but really they are actually good bio-indicators of an environment. (both laughing) So that was an interesting thing.

M: Did you realise that at the time?

PAM: Well, maybe not right then, but I think it’s just that whole breaking down barriers of what is actually what we consider nasty or what we consider gross

ELIZABETH: I remember a picture book that I had as a very young child and it was a British thing of course, as most books were at that time, and it had, it was like an ant’s eye view of a vegetable garden. So there were hedgehogs and small invertebrate type creatures and vegetables and things, but the cabbage was the full size thing in the page and it was sort of a microscopic view and everything was a little bit humanised, a little bit anthropomorphised and I remember I spent a lot of time gazing at the pictures in that book.

The books highlighted by participants here include the pro-environmental influences of experiences in the natural environment, principles and social justice issues and the anthropomorphising of animals. It is unclear whether PAM realised as a child or later the importance of spiders as bio-indicators of the ecosystem.

6.3.i Encyclopaedias

Not all the books participants remembered were fiction. Some people fondly remembered hours spent finding out about the world around them with reference type books such as encyclopaedias. CHARLIE remembers quiet times with an animal encyclopaedia when he was younger.

CHARLIE: The books that I remember the most, my mum invested in them when I was very little, because I’ve got older brothers and sisters, was in a set of encyclopaedias and we bought the whole set of encyclopaedias and we got this other little sort of a picture encyclopaedia set thing as well, but it wasn’t set up A to Z as well, it was set up into themes, one was about space, and one was about animals. There were about 12 and they are the only two I remember. But the animal one was about 3rd or 4th in, they had their place in the thing, but to look at that bookshelf, If I was ever bored, which wasn’t very often, or if I had nothing to do and I was inside, I would often pull the animal world book out and just sort of finger my way through that, look at the pictures, and read the captions and things, so it was very untidy looking book compared to the others
after a short time, a few years. Probably the book that meant, that that I really enjoyed it.

Using natural erosion measures for unobtrusive measures of calculating frequency of use (Webb et al., 2000, p. 37) CHARLIE’s fingerprints on the animal book indicate the book was providing the pro-environmental influence of (vicarious) experience in the natural environment.

6.3.j Specific science influence
Other participants remembered other non-fiction books, such as ANNA who was one of four participants who remembers Rachel Carson’s *Silent Spring* (1962).

*ANNA*: Rachel, Rachel Carson’s *Silent Spring*. That’s the Bible. And also *Ehrlich’s book on The Population Bomb* (Ehrlich, 1971) would have to be the two in my undergraduate years that inspired me to go on to science and to be a supporter of the environment.

The other mentions included the authors David Suzuki, David Attenborough, and Harry Butler, along with encyclopaedias and National Geographic Magazines. All these texts provide vicarious experiences in the natural environment which may be seen as influences on pro-environmental attitudes. Book such as *Silent Spring* also exhibit the pro-environmental influences of negative experiences of loss of a favourite place, the concepts of principles and social justice issues, and a concern for future generations.

6.3.k Social justice reading
ELIZABETH is an older participant with significant experience in environmental education with differing educational age-groups and aspects. Her response to the question about early reading is unusual because she mentions her recognition of social justice in her school based reading of Dickens and Steinbeck.

*ELIZABETH*: and then once I got to year 6 or 7 it was all Dickens and all that British sort of stuff and social injustice and social stuff ruled. . . . I can clearly remember in high school reading the *Grapes of Wrath* (Steinbeck, 1939) and feeling - that was about the creation of the dust bowl in the mid-west during the 30’s I think it was. And having a deep sense of what was happening to environment there so, yes, I was aware of the social issues and the suffering of
the families there when the dust bowl was created through their actions, but I was also appalled at the environmental devastation that was being portrayed through that story.

ELIZABETH’s interest in the use of fictional stories to teach children extends to a book list she created to relate children’s stories to various aspects of environmental issues in the school curriculum. I believe this recognition is because she is actively interested in contemplating her pro-environmental influences, as she describes here.

ELIZABETH: I read literature about how to make environmental education more a part of what we do. I just think that as a society, part of us is shut down, it’s just not looking around and seeing what the real issues in the world are, and I don’t know how to change that. I really don’t know. It’s like the dolphin guy said last night, he said ‘if you wait for the world whaling commission to change things you’ll be waiting forever. It’s up to individuals to garner the support of others.” Very sad isn’t it?

ELIZABETH’s social justice reading predominantly covers the pro-environmental influences of experience in the natural environment and the negative experience of loss of a significant place. Principles and social justice issues are covered, along with a concern for future generations.

6.4 Conclusion
This study is able to answer the two part question posed: If fiction does influence people, what kind or genre of fiction appears to work best in this situation?

Fiction does appear to have influenced the participants when they were young, both as children and during their adolescence. While responding to questions in the interviews two participants recognised the influence the fiction may have had on their learning by recognising reactive learning (Sections 6.2.a, 6.3.c & 6.3.d) while another has created a booklist of fictional stories that she finds useful for various parts of the environmental curriculum (Section 6.3.k). The participants’ preferred genre appears to be Fantasy/SF with their favourite childhood books by the authors Tolkien, Blyton and Rowling.

Reading habits within the cohort have mostly changed from their childhood reading. While most participants still read books, their reported adult readings are broad and
different for the two major groups in humanities and science based reading habits. To update their knowledge, the two groups have different priorities with the Humanities (H) participants – without the specific science based background – reading and referring to textbooks and popular science authors to reinforce their knowledge base and skills. This group are also the individuals investigating social issues, such as Nature Deficit Disorder, human induced changes in the environment over the centuries, and neuroplasticity. The Science (S) group choose to update their knowledge by reading magazines and popular science authors, and not specifically reading about the social issues involved in environmental education.

Within the humanities books both groups still enjoy reading Fantasy/SF and Autobiography/biography/adventure books for relaxation. They appear unconscious of the learning potential of the material they are perusing. However, research indicates that as they read this material they are opening themselves to improving their social skills (Mar et al., 2006).

Table 4.15 shows that the participants have a significant interest in Fantasy/SF texts both while they are young, and continuing as adults, which suggests that the imagination necessary for enjoying Fantasy/SF incorporates the ability to use Theory of Mind for comprehending both the social and emotional events in the texts. Theory of Mind (TOM) is a stage of childhood development, usually around four years of age, when a child develops the ability to see others as individuals, to be able to attribute mental states to themselves and others, and to recognise that others may have different needs and wants (Bee, 2000; Stone, 2006). As discussed in the Literature Review (Section 2.5), fiction has been shown to help develop imagination (Mar et al., 2006) and to help us understand our own emotions (Oatley, 2009) to assist us in comprehending our world.

Readers of Fantasy/SF go beyond life-like scenarios in the books they read and exercise their imaginations in dealing with something beyond the normal environment (McMahon, 1989; Nikolajeva, 2006). Just as small children have empathy with animals (Monroe, 2003; Sobel, 1996) (Sections 2.2 & 2.10), Fantasy
and SF readers can create an empathy with unusual characters in the texts. This means that Fantasy/SF readers are willing to use their concept of TOM to go beyond human people and include animals, mythical or faerie creatures, plants, or even to grant TOM to inanimate objects, such as a magical wand. Because the ‘other’ does not have to be human, ecosystems and the Earth may be considered by some to have TOM. This empathy and emotional attachment with a non-human ‘other’ opens them up to caring for the ‘other’ which in many cases appears to be the environment as portrayed in the texts.

As described in the Oxford Encyclopaedia of Children’s literature "Fantasy allows the writers to deal with important psychological, ethical and existential questions in a slightly detached manner, which frequently proves more effective with young readers than straight forward realism” (Nikolajeva, 2006, p. 6). This subversive potential has been recorded in literature addressing the influence of fiction on environmentalists and other scientists.

In the book Caught in the Act Castagna (1982) uses autobiographies and biographies to reflect on the influence of reading on famous people. He reports fiction inspiring the well-known environmentalist Rachael Carson who was inspired by the fictional story Tarka the Otter (H. Williamson, 1945) and The Outermost House by Henry Beston (1974, 1928), saying she was often re-reading the books as they are influential for her (Castagna, 1982, p. 91). Robert Goddard, a pioneer of rocketry is also listed as being influenced by the science fiction stories of HG Wells in the tale War of the Worlds (1946) and Jules Verne’s Journey from the Earth to the Moon (1978). Castagna also reveals (1982, p. 93) that American astronomer Carl Sagen was influenced by Edgar Rice Burroughs, John Carter’s Adventures on Mars (Burroughs, 1973) which encouraged him to look at richness of biology on other planets. These fictional adventures led to Sagen going to a local vacant lot and pretending he was exploring Mars. Castagana concludes that there are “other influences”, in these people’s life choices, but stories “appear crucial in determining their lives and work. … They seem to have the ability, found among creative people,
to see significant relationships that others miss. And they are able to put their perceptions to work in innovative ways.” (Castagna, 1982, p. 97). Other authors have reported the influence of science fiction on the real-life choices of scientists, such as Asimov (1996, pp. 288 - 289) who also lists Roger Goddard and other rocket scientist Weerner von Braun, and names other robot specialists from a foremost robotic firm who have been influenced by his science fiction stories (pp. 221 - 222).

Literature has been used in science education programs for teaching (Lapp & Flood, 1993) and Bigger and Webb (2010) see an opportunity for developing environmental agency and engagement through fiction. However, the most appropriate type of fiction to be used is still being questioned. Research is currently underway into the use of environmental fiction with children as reported in Section 2.4, however the research is focusing on the accuracy of the science rather than the impact of the story (Hug, 2011) and adult perceptions of appropriate stories. Galda, Ash and Cullinan (2000, p. 368) reported that there is a difference between what adults honour as a good book to read and what children think are good books to read and that there is a negative correlation between the adult opinions and those of the children. These differences are reported as being mostly in style, with children preferring fast paced action stories with optimistic endings.

The participants in the interviews mentioned very few ‘environmental’ books as being influential to them as they were growing up, yet current environmental education research into children’s books appears to be focusing on this area (Section 1.1). Table 4.18 shows that 47% of the Humanities (H) participants and 46% of the Science (S) participants read science books resulting in overall 42% of participants mentioning these kinds of books. This is a significantly higher proportion than other studies into pro-environmental influences (Section 2.1, Table 2.1), but understandable as participants were specifically asked about their reading habits. It is unusual however, that only one participant mentioned reading ‘environmental books’ as a child, but gave no detail, while the well-known environmental text *Silent Spring* (Carson, 1962) was commented on by only two participants with another two
naming the text when asked specifically or in passing during the interview. This is significantly different to the previous studies of environmental educators (Chawla, 1999; Corcoran, 1999; Palmer et al., 1999), where the books and authors reported have specifically named these kinds of books.

Table 6.1 Categories of pro-environmental influence (from Table 4.3.a) apparent in the texts with multiple listing and special meaning for participants

<table>
<thead>
<tr>
<th>Categories of influence</th>
<th>Tolkien</th>
<th>Blyton</th>
<th>Rowling</th>
<th>Thiele</th>
<th>Stevenson</th>
<th>Carson</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature experience</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>6</td>
</tr>
<tr>
<td>Family</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Organizations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Experience</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Vocation</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Sense of social justice</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Book or author</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principles or religion</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Concern for children, grandchildren</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Anthropomorphism</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

As the fictional texts appear to be more memorable for the participants, with 97% of them remembering specific authors and titles from their youth (Table 4.17 & 19), it would appear that these books that create reactive learning experiences should be the
books recommended for encouraging pro-environmental attitudes. The major aspects of pro-environmental influences from Table 4.3.a are listed in Table 6.1 to show a relationship between the recognised significant influences for pro-environmental participants, and the pro-environmental influences placed within the books.

Table 6.1 shows the importance of experiences in the natural environment in the texts, potentially reinforcing the actual experiences of the participants. It highlights the negative experiences of loss of a special place as being significant within the texts along with the principles and sense of social justice. This indicates that the most significant and therefore most memorable types of books for the participants are those with an adventure in the natural environment where the storyline includes the loss of a special place and where the characters exhibit their principles and sense of social justice. The humanising of creatures and plants with anthropomorphism, while not a listed pro-environmental influence, appears important for the popularity of the story, especially if it is within the category of Fantasy/SF.

The participants’ recall of early childhood books, those books they remember from before the reminiscence bump of adolescence and early adulthood, indicates the importance of these stories on their individual development. The stories must be significant for the memories to have survived childhood amnesia through to the participants’ current adult states.
Chapter 7 Discussion of Comparison Results

Introduction
Chapter 5 shows that the participants in this study experienced similar pro-environmental influences in their early lives as participants in previous studies. However, the participants in this study have spoken more about different kinds of stories and texts from their childhood than previous studies into pro-environmental influences. While the amount of reading discussed in the interviews is understandable as their reading is the main area of questioning in the interviews, this study has uncovered a collection of favourite or influential fictional texts whereas the previous studies have listed only ‘negative’ non-fiction books. Chapter 6 highlights the types of books the participants remembered reading, and the potential influence they may have had on their development at the time, and later, when they are recognised as reactive learning experiences. The impact of Fantasy/SF as the main kind of influential book cannot be overlooked as a significant discovery of this thesis.

Chapter 7 continues the discussion section with the results from Chapter 4 Sections 4.4 to 4.7 and addresses the other questions posed in this thesis: **What age group appears to be most influential?** As reported in Section 2.10, middle childhood appears to be important to human development and reading, so the preferred reading ages of the books discussed in Chapter 6 are considered here. Library statistics are then used to compare participants reading with that of the public to answer the question: **Are environmental educators’ reading habits different from those of the general population?** Finally, participant use of stories at work and at home is discussed in responding to: **What stories do participants pass on to future generations? (At home and at work).**

7.1 Publishers’ recommended ages
Participants were not asked at what age they read the books they listed in the interviews, so the publishers’ recommended reading age was chosen as the best
system of coding the childhood books (Section 3.2.f.i). Using publishers recommended reading ages for the children’s texts, Tables 4.21 and 4.21b show that the highest number of remembered children’s books are from the 8 to 11 year age range. In many cases this is the age group exploring text as their grasp on language develops and they become more confident individual readers beginning to look for adventure and enlightenment on social and other issues (Section 2.10).

This classification by reading age is important because research into direct outdoor environmental learning suggests that this 8 to 11 age group benefits from indirect experiences, such as electronic media and books, to reinforce their experiential learning (Kola-Olusanya, 2005). This is also the age that Hart (2003) suggests children are developing their environmental consciousness and has also been identified as the stage when children begin their exploration of their surroundings, of taking an interest beyond their own backyard (Sobel, 1999; Thomashow, 1995).

The blending of these ideas, as discussed in Section 2.10, that children benefit from indirect experiences; that middle childhood is a time of developing their environmental consciousness and that it is also the stage in life where personal adventure and exploration begins, suggests that the books read at this stage in children’s development could have far-reaching influences on their values, attitudes and subsequent actions. Reinforcing this idea is the specific individual texts highlighted by the participants that fall into this age group. It includes the previously discussed Tolkien’s *The Hobbit* (1976) (but not *Lord of the Rings*, it is in the 12 upwards age category), also Blyton’s books, the Harry Potter series (Rowling, 2001), Stevenson’s *Treasure Island* (2001), *Storm Boy* (Thiele, 2002), and *Seven Little Australians* (Turner, 1994).

These books are not all fantasy, and, as children’s books, are not included in the SF & Fantasy section in the bottom adult books section of Tables 4.21 & 4.21b, but include adventure in a natural environment that should appeal to this age group. They also encompass a moral dimension, addressing social issues that challenge and inform the readers at this morally developing stage in their lives. The moral
dimension is also revealed in their reading of older age group texts, at the bottom of Tables 4.21.a & 4.21.b such as Philosophy & Religion and Body, Mind & Spirit. This coincides with Sobel’s (1999) research suggesting children’s social action interest begins at about age 12, the reading age for many of the other books mentioned by participants, including religious texts and *Lord of the Rings* (Tolkien, 2002) in the Young Adult or 11 – 15 age group. Other texts mentioned within these parameters included *Catch 22* (Heller, 2004) books by Paulo Coelho (2002; 2006) and Marion Zimmer Bradley (1978; 1983).

Animals are an important part of empathy creation for young children as they begin to explore their world (Sobel, 1999). Empathy for others begins in toddlerhood as children begin to see and feel for other people and animals (Bee, 2000) and broaden their own horizons of understanding. The prevalence of animal books in the young reading of Under 7 and Picture books indicates that authors and publishers have utilised this interest in animals for book sales for many years. Children’s identification with animals may go into later years with books such as *Watership Down* (Adams, 1972), but generally animal based books are written and produced for the young age group. Not all the animals in the books are portrayed as plain animals; the use of anthropomorphism is often used to heighten the child’s empathy with the animal characters.

Tables 4.21.a & 4.21.b show the number of participants reporting books, the number of different books listed and the number of mentions in the middle childhood range of 8 to 11 years to be nearly double the number of participants, books and mentions from the under seven years and 11 to 15 years age ranges. This shows that this middle age range is the most remembered childhood age range for books.

These Tables (4.21.a & 4.21.b) also show that number of adult books listed as remembered from childhood reading (64), is the same as the number of children’s books listed (64). However, the number of mentions of adult books (99) is slightly fewer than the children’s books mentioned (108). These similar numbers are important as according to the memory research as discussed in Section 2.10 & 2.11
& Figure 2.1, childhood amnesia should reduce the number of childhood books remembered, especially under the age of 11 years. The literature states that the reminiscence bump of better memory begins in adolescence and early adulthood, so more books should be remembered from this period of the participants’ lives. The memory of the large number of books form the middle childhood age group implies that this age, as well as adolescence, is an important and influential time for the participants in this study.

7.2 Discussion of Section 4.5 Library comparisons of Adult reading

Section 4.5 in the Results Chapter compares the participants reported reading with data from the Newcastle Area libraries to discover if the participants reading habits appear to be similar or different to the public’s reading habits. The comparisons made use only part of the Newcastle Library data, as it covers nearly 240,000 items in a three-month borrowing period (Library, 2012). Many of the items listed are not relevant to this study, so the relevant texts only are used in the comparisons.

As illustrated in Figure 4.4, the study participants have different reading habits to the public in a number of areas; noticeably, the participants read a significantly higher percentage of Non-fiction & Reference texts – which is most likely due to their work related reading. The public may also read more reference books in the library, but be unable to borrow them or have purchased them for home reading. The more relevant reading differences are the participants’ higher percentages of reading in the areas of SF & Paranormal, Social Issues, and Psychology, New Age & Religion. As can be seen in Tables 4.21 & 4.21b, their reported current reading reflects these results.

Figure 4.4 also illustrates that the participants have a lower than usual interest in Horror, Crime & Mystery, and Romance and Literature. Participants also differed from the public data as no-one reported reading popular library categories such as Entertainment, Food & Cooking, or House & Garden.
Figure 4.5 shows the data in the Humanities teachers (H), the Science teachers (S) and the Others (O) groups reveal that the different groups also have different reading preferences. It reveals that the (H) group’s interest in Australian, Autobiographies & Biographies is similar to the public; however, the other results appear very diverse.

These differences in reading habits are important because it reveals that the snapshot of participants’ reading interests appear to be different to those of the public in areas of particular interest to the participants. The difference in Social Issue texts between the two groups - library 1% & participants 8.6% - (Table 4.22), Psychology & New Age – library 5.3% & participants 10.4%, and SF & Paranormal – library 10.6% & participants 17.9% confirms the correlations made in other parts of this study revealing participants’ interest in texts related to social justice and SF/Fantasy.

In other comparisons, online booksellers’ popular book lists highlight only the best sellers for the year. However, in 2011 the Australian Broadcasting Commission asked for contributions for Australia’s favourite books. In the ABC Top 100 Australian books (Commission, 2011b) Tolkien is most popular with Lord of the Rings and 26th with The Hobbit in adult books, and these books are 1st and 7th rating in children’s (top 10) books (Commission, 2011a). Rowling’s various Harry Potter books are placed at 6th, 15th, 36th, 59th, & 93rd in the adult favourites and 2nd, 3rd and 9th in children’s favourite book list. Blyton’s only mention in the list is at 94th in the adult list. The prominence of both Tolkien and Rowling in the ABC list as well as the participants’ responses in this study show these are common favourite reading books amongst Australian ABC audiences.

In research into what Australians read (Alder, 1992) a survey undertaken by the Australia Council reported that 49% of books people were reading came from libraries, 18% from bookshops, 17% from friends, and 16% from other outlets (pp. 94, 95). There were no categories of books from the different sources mentioned in the study, so, while confirming that other sources of reading material are used in Australia, no comparisons of types of books from specific sources can be made here.
7.3 Discussion Results Section 4.6 Stories at work
The Environmental Education Centres (EECs) provide educational activities for children in the natural environment. Their main focus is to promote hands-on experiences in the natural environment, and the way environmental educators choose to provide this experience is often dictated by the geographical position of the EEC and the priorities of the current educational philosophy.

7.3.a The Environmental Education Centres (EECs)
In this research, no two of the 19 EECs visited present the same programs for students. Each EEC has its own particular focus, usually dependent on where it is situated, with the coastline or rivers EECs utilising the available water dependent creatures, mangroves, tides, and water experiences as their focus for learning; while those in the countryside focus on changing landscapes, different eco-systems, land-based creatures and exploring the bushland. The EECs confined by suburbia make the most of the confined areas of bushland they have access to by encouraging use of the natural space available with walks and discovery of smaller animals and existing plants (Table 4.23). The unique geographical situation of each EEC promotes specific teaching methods and material available for the students, both onsite and back at school. The EECs are in constant use, as GEOFF explained for one state:

GEOFF: we’ve got outdoor and environmental education centres that are working across all ages, and they see up to one hundred and ten thousand students a year through their programs.

The local natural environment is a background for all the EEC activities, which cover a spectrum from science based activities for senior high school students, through to humanities based activities for pre-schoolers just beginning to explore their environment. The majority of EECs visited provide a mixture of these activities depending on the site of the EEC, the priorities of the centre and the training and abilities of the staff.

While each of the EECs has their priority teaching areas, they have tailored their presentations to each target audience (Table 4.23). Participants from seven of the
EECs talked mainly about their science-based activities, while those from ten EECs talked about a mixed presentation of programs, and participants of only two EECs talked predominantly about humanities based programs. The humanities based programs often focus on leadership and personal development of the students while the science based programs have scientific environmental information, often fulfilling required high school science competencies.

Deliberately using stories in the EECs is not seen as a regular practice, as the teachers often want to provide an outdoor experience for the students. As CHARLIE put it when asked:

> CHARLIE: I see reading stories as perhaps a bit more passive than I would like to see at the centre. I think there are some really great environmental education stories and books, and in my last centre we set up a display of really good environmental stories and ... we would encourage teachers to have those books in schools.

The value of experiences in the natural environment on learning is highlighted by the teaching staff in the EECs, with five of the participants mentioning they were, or had recently read a book about this phenomena, Last Child in the Woods (Louv, 2008) (Section 6.3.a). This book examines the use of the natural environment in dealing with challenging children, such as those with ADHD, autism, and those suffering from Nature Deficit Disorder. However, also mentioned in the Louv book is an alternative opportunity to influence people’s opinions and attitudes towards the environment by the use of literature.

The concept of Eco-phobia or Nature Deficit Disorder (NDD) appearing in children was one of the motivators for this study. As children have less exposure to the natural environment, alternative strategies for encouraging pro-environmental attitudes and behaviours are required. Research suggests that lack of experience in the natural world detrimentally influences children’s psychological and physical health, with NDD defined by Louv as:

> [D]iminished use of the senses, attention difficulties, and higher rates of physical and emotional illness. The disorder can be detected in individuals,
families and communities. Nature deficit can even change human behaviour in cities, which could ultimately affect their design, since long standing studies show a relationship between the absence, or inaccessibility, of parks and open space with high crime rates, depression, and other urban maladies. (p. 36)

Gough (2002) suggests the socio-economic climate has the potential to prevent access to the natural environment for ordinary people,

I share Corcoran’s concern that environmental education ‘in natural places’ might become increasingly available primarily to the economically privileged, and therefore wonder who is doing the research that might reduce our ignorance about how to deliver all modes of environmental education in socially just and equitable ways to all learners? (N Gough, 2002, p. 20)

These calls are significant because they suggest that alternatives to the current and forecast situation of a lack of experience in the natural environment are required for dealing with this identified rise in social and health problems.

Participants mentioned that the lack of experience in the natural environment is appearing as an issue for environmental educators and provided different responses to the perceived problem. With a primary teaching background and experience in a number of differing EECs providing for a spectrum of ages and programs, JANE identifies stories as a tool for dealing with such issues.

JANE: I think children are being disassociated with the environment. There’s a lot more awareness that it’s a scary place out there, and I think people need to experience the environment, ... I’m really nervous about kids these days getting Nature Deficit Disorder as they’re calling it, you know, that nature, out there is a scary place, and trying to take away those fears, I think a good way to do it is through stories.

NINA, with a science teaching background, who works at an EEC with a spectrum of programs, is also concerned about the children’s lack of experience with the natural world. She addresses the perceived problem using a different method, hands-on experiences and listening to parts of nature.

NINA: we do find the odd nature deficit disorder, there are a lot of kids who come who don’t seem to have been out in the bush or bushwalking, or having a chance to hug a tree, or listen to a tree with a stethoscope,... yes you can hear [the sap in the tree moving] . . .
You know, just things like catching macro invertebrates in a pond and they get such a buzz out of all these things. These things that, with our kids, it’s stuff that we’ve always done, always had them outdoors and looked at rock pools and that sort of thing, but I think a lot of kids these days aren’t [getting outside]. So that’s where environmental ed and outdoor centres have a real role to play in trying to address nature deficit disorder.

TONI addressed the issue from a more urbanised EEC perspective while HARRY spoke from a rural EEC aspect, yet both have found students with little or no experience of the natural environment.

TONI: I think it’s important that as society changes, preps and year ones for example, some of those children, in fact even up to year 4/5, some of those children have never been in a natural place ... I ask them all the time “Who comes into the forest lots? Who comes in sometimes, who’s never been before?” and you will get that spread but children. Never? A lot of children, never. Even the local schools here, you know when I ask them “Who comes to this forest?” the only time the year 8s say yes is from the various levels they’ve come from the schools they’ve come from. I found that staggering ... the forest’s changing a lot because of suburbia ... now the forest is surrounded by the suburbs as clearly as that [gestures to the table in the middle of the room]. People use it, as you’ll see in the afternoons to walk their dogs, ride their bikes, it’s shifting its use, but natural places ... children are being exposed to them less and less.

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HARRY: I’d follow that up with [what] a child wrote on - we have laminated leaves for reflection places [at the EEC] - this child said “I love the hut building because I don’t have any trees to lean the sticks up against. I’ve never made a hut.” So these children were completely devoid of any sort of forest ... kids who’ve never been in the dark, when the lights go out. They’ve had total light for their lives and noise, so it’s quite surprising.

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TONI: But while it seems unimaginable and trite to us, it’s mind blowing, it’s particularly sensational. That’s the thing these sites provide, different stimulus when they’ve [students] never been in a forest.

The EECs here are providing both day and night hands-on natural environmental learning experiences for children who have little or no experience in the natural environment. It appears to be a valid concern that for some children the only time
they experience the natural environment is on school excursions to the environmental education centres.

LOUISE saw ecophobia at a more personal level as she passionately described her nephew’s experiences as being similar to other children:

LOUISE: I see it as high priority, because of the kids not getting into nature, like my poor nephew, he never would have got to get dirty if it hadn’t been for me. And I think that there’s a whole generation of kids like that out there, They’re living ... in high rise buildings where they haven’t got access to gardens and that kind of thing. And in my heart I think I go back to this idea that if the kids don’t go through this first bonding process where they, and it’s not just intellectual, but where they actually feel [natural experiences]. It would really be just wrong and undoable, to wipe out whole eco-systems, like we have done in the past. So I think it’s really our ticket to survival as a species, we’ve gotta teach kids not just to know stuff, but to really care, and that’s more effective you know.

These comments indicate that while exposure to the natural environment is necessary for appreciating nature, alternative pathways to accessing the natural environment for some students need to be considered and undertaken. Emotional attachment is involved in caring for the environment, and to paraphrase LOUISE, if people learn to care about the environment they will not destroy it, and personal contact and hands-on activities are best for leaning. The psychological problems mentioned here, Nature Deficit Disorder (NDD) and ecophobia appear to be modern problems that have the potential for being diminished or avoided if children are granted free play time in the natural environment. As NDD and ecophobia are seen in some Environmental Education centres (EECs) then further investigation may be required to discover the extent of these problems.

The participants’ highlighting here the diminishing opportunities for children’s involvement in the natural environment reinforces the calls made in the literature highlighting the emergence of such issues (Sections 1.1 & 2.1).
7.3.b Using Published stories in the EECs

Published stories are used in EECs variously to highlight the activities students will be undertaking on the day, to help assimilate previously understood concepts and to help the students become emotionally involved in the activities they are experiencing at the EECs. The targeted ages for the stories vary, as do the topics, with some EECs using stories specifically written for their programs (See Table 4.24).

Sixteen of the 19 EECs visited use published stories with pictures for youngsters as part of the program. At one end of the spectrum, a coastal EEC uses *Turtle Song* (A. Brown & Toft, 2001), which describes the life cycle of a turtle with beautiful silk painting pictures.

I must hide from the
dolphins, hide from the sharks,
I must hide from the nets of the fishermen,
hide from their hooks, hide from their spears.
I go to the secret places,
feast on feathery floaters, and grow.
As the years pass I graze on the seagrass,
and grow.
Grow, little Turtle, grow! (p. 12)

Turtles are used as a local environmental example at the EEC that uses this story. Local children see the turtles on the news and on the local beaches suffering from pollution issues such as swallowing plastic bags. This makes the story particularly relevant to the children visiting this EEC.

PAM, at an inland bush EEC uses books for social justice reasons.

> *PAM: I read a lot of picture books that could be used for upper primary too. ... Refugees* (Miller, 2003) *about 2 ducks,... I actually have a bunch of them there ... these ones had more of a social element thinking about differences in people. Or the classic Jeannie Baker books that don’t have words at all, like Window, and Where the Forest Meets the Sea. They are fairly classic and can be used in lots of different programs. There are some lovely picture books out there that*
can be enjoyed just because they are beautiful books, or you can then use them to discuss different issues.

The books *Refugees* (Miller, 2003) about two ducks looking for a new home as their habitat has been disturbed, *Where the Forest Meets the Sea* (Baker, 1989) which looks at the impact of people on the Daintree in north Queensland and *Window* (Baker, 1991) a picture only book, created in collage looking at the changes of landscape outside a young child’s window as he grows up, are all deliberate message books. The environmental message is obvious in the texts and illustrations.

Dr Seuss’s classic tale of environmental destruction, *The Lorax* (Seuss, 2002) is mentioned in passing as a book read at work by a number of participants, but no-one highlighted it as particularly important. It was almost as if it was taken for granted as an important piece of work. *The Lorax* is a book participants’ discussed reading to their children and grandchildren which is reported in the following Section 7.4.a.

Older age students are also catered for in the EEC stories list, with one participant mentioning Gary Larson’s *There’s a Hair in my Dirt* (Larson, 1998) using the Far Side comic characters to appeal to teenagers and older readers in looking at the real importance of nature, especially trees in this excerpt.

Once upon a time, in a forest not too far from here, lived a beautiful young maiden. Her name was Harriet, and Harriet loved the magic of Nature, with all its magnificent plants and animals.

One lovely spring morning, she decided to take a stroll along her favourite woodland trail. "What wondrous things will I see today?" Harriet thought to herself. I must say, she was as excited as a tape worm in a meat patty!

With her first steps, Harriet took a deep breath and filled her lungs with the fresh air. "Oh thank you trees and other plants!" she called out. "Thank you for making the air so crisp and clean!"

Well, as any worm with half a ganglion knows, the plants did a little more than make the air crisp and clean - they made the air air! Every molecule of oxygen in the earth's atmosphere was put there by a plant, and - last time I looked - the Living were quite fond of oxygen. (Heck, even the Dead need it, or they'd hang around a lot longer and get on everyone's nerves.) (pp. 4 - 5)
Towards the middle of the EEC science/humanities educational focus spectrum, books highlighting both ecological and social issues such as *The Best Beak in Boonaroo Bay* (Oliver, 2011), are used. In this book the birds hold a competition to see who has the best beak and discover that they all have suitable beaks for their food gathering. Some of the birds in the book are easily recognised by the local children as they are present in the immediate vicinity of the EEC. JANE explains how she uses the book:

**JANE:** If it’s a rainy day we will formally sit down and read a story to them if we can’t get out at all, but that happens very rarely. ... we’ve got a bundle of books in there. My favourite is *The Best Beak in Boonaroo Bay*....It shows all the birds were fighting, over who had the best beak. So the pelican decided he would have a competition to see who had the best beak. So it began a series of activities, a series of competitions or events and of course the bird with the most appropriate bill won each one, so each bird won one event, so each had the best bill, so each bill was designed for a specific purpose. (laughing) ... The oystercatcher could open the oysters, and the curlew could reach down into the mud, and the darter could spear into the fish and it goes on like that.

**M:** How do the kids react to the stories?

**JANE:** They love them it gives them interaction with their imaginations and linking it to things that are actually happening in real life.

Although he claimed he didn’t use books with children at the EEC, CHARLIE gave an example of the use of the traditional Indian folk tale *The People Who Hugged the Trees* (Rose, 1990) and how story books can be successfully used:

**CHARLIE:** I think, perhaps I’ve done more than on ... Yes, actually there was another story that we used to read, again it was an infant’s program, and what was it called? *The People Who Hugged the Trees* it was called. It was based on a true story about India or somewhere, where people were concerned about trees being left in the desert areas. So I guess I have read a couple [of books] as part of some programs.

*The People Who Hugged the Trees* (Rose, 1990) is a tale of people caring for forests as the forests care for humans and finishes thus:

“Trees,” she whispers, “you are so tall and your leaves are so green! How could we live without you?”

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For Amrita knows that the trees shade the people from the hot desert sun.

The trees guard the people from the howling desert sandstorms.

And where the trees grow there is water, and it is a good place for the people to live. (p. 5)

CHARLIE then went on to remember another successful story use, which he hasn’t had the opportunity to repeat.

CHARLIE: I remember a prac student one time did a story which I thought was an awesome idea and I always said I was going to do it again, but I never did. They incorporated it into water quality assessment that we were doing and it was called Cry Me a River (McRae, 1991), and she read it to the kids as part of learning about water quality, and their part in that or our part in that, which was a really great idea I thought, but I’ve never used it again (both laugh).

The theme of trees helping people is also in the Silverstein (1992) book *The Giving Tree* where a tree can be seen as nature, as it gives of itself to the boy until there is nothing left but the stump, WENDY explains how she uses this book for some classes:

WENDY: He [the main character] loves the tree so much that he played there, and the tree said to him, “use my branches to climb on” and then he grew, and the boy said “I need money” and then the tree said “here, take my fruit, you can go and sell it” and the tree was a little sad because he wasn’t around anymore. Then he came back and [said] “I need to build my family a house”, so the tree offered his branches to build the house, and the tree’s a little sad that the branches aren’t there anymore. Then he comes back, he goes “I really wanted to take my family overseas” so the tree goes “well, here’s my body, take it, cut it down and [make a boat]”. Then he comes back as an old man and the tree says it doesn’t have very much to offer any more and as an old man he goes “Oh tree, my life is almost over and I haven’t got much to show for it,” and the tree says “Here, have my stump to sit on” and the tree and the man were happy. How I’ve used that is to talk about is how we use these things and it takes longer to replace than our lifetime to regrow a tree.

Social Justice and self-discovery issues in Education for Sustainable Development are further explored in some EECs with participants mentioning *The Bunyip of Berkeley Creek* (Wagner & Brooks, 1990), which is the story of a bunyip trying to find out who he is.
One night, something very large and muddy heaved itself on to the bank of Berkeley’s Creek.

‘What am I?’ it murmured. ‘What do I look like?’

A platypus told him he was a Bunyip. But what is a bunyip?

Although everyone had an opinion, no one really knew. So the bunyip
Set off to find out for himself. (p. inside cover)

OLIVIA uses the bunyip story as part of a pre-visit activity for very young students
to get them thinking about their experience before they arrive at the EEC. She
describes the use of the story as part of a multimedia introduction for students
encouraging them to enlarge their experience in the natural environment.

OLIVIA: We say to the students before they come that we are the forest rangers
and we think we’ve seen a Bunyip in The Forest. But we don’t know what a
Bunyip is. Can you come and help us? The teachers are given a whole lot of
pre-visit activities before they come. They get their students primed up. There’s
a beaut website on the National Library website about Bunyips. It is cartoon-
styled, and youngsters can link in, play Bunyip games and other activities. I
developed a Pre- and Post- Visit Activities Booklet for teachers to use. The
teachers do things in their classroom and the kids come in and say ‘Oh, a
Bunyip must have been in our room.’ There’s a footprint here, a chair out of
place there. The students look for Bunyip clues out in the schoolyard. So, when
they come here to the EEC they burst off the bus looking for Bunyips. We all
just have a ball. To develop a program to that stage takes a lot of looking at
and working on things. Yes, it’s pretty exciting when that happens...

M: So do the kids ever find the Bunyip?

OLIVIA: No, but when we get back here to the centre there’s a note from the
Bunyip saying, ‘I’ve been watching you. You saw my eggs’. It’s a sensory trail
so we do some sounds, then we find the eggs, and we wonder, ‘Do Bunyips lay
eggs? Ooh. What sort of animals lay eggs?’ Turtles, lizards, platypus and birds
lay eggs. ‘I wonder if Bunyips lay eggs. They might do.’ We have these
‘dummy’ eggs sitting there in a nest in the grass. ‘They might be Bunyip eggs.
We’d better leave them there because, you know, it’s their nest and they’ll be
coming back. You never know. If they are Bunyip eggs, we don’t really know.’
So it’s all worked out as a mystery trail and we go all around and then we come
back and there’s this note. ‘Wow! Look! It’s got a footprint on it. The Bunyip’s
left a note. Then we give the students a big chart with the route that we took and
they take that back to school so they can trace back over the map and revisit
their search in the forest back at school. They can see where they heard the sounds and they smelt the smells and they felt the feely things.

These stories are used mainly for younger groups at the Environmental Education Centres (EECs) and most include anthropomorphising animals and plants to help children gain an empathy and understanding of creatures and plants in their environment. The exception in these are Turtle Song (A. Brown & Toft, 2001) which relies on rhyme and pictures to entrance its audience, and the Baker books (1989; 1991) with few or no words and the very descriptive pictures.

To encourage the very young students to open up to an adventure at the EEC, WENDY uses her own version of We’re Going on a Bear Hunt (Rosen, 1996) with young classes to help them face potential fears of the natural environment by recalling a story they know quite well.

WENDY: I actually draw on their prior knowledge of their stories, especially with stage 1 and 2. Do you know the stories from Playschool; you may have heard it in your classroom, We’re Going on a Bear Hunt.

You say “we’re going on a bug hunt” do you know that one? And they’ll go “where?” and then “Follow after me” - “We’re going on a bug hunt. Then We’re going on a bug hunt. But it’s such a small one – but it’s such a small one. We’re not scared - we’re not scared. It’s a beautiful day, it’s a beautiful day. Oh oo. Forest. Can’t go over it, can’t go under it, gotta go through it. And then I’ll go “stumble, stumble trip and stop” No just stop, we don’t want you to stumble stumble trip.” So that’s where I finish it off, ... What I actually want by doing that, what I try to do is to give them a sense of adventure because that’s a real sort of moving story. And also too, a lot of kids are scared of bugs, and it’s getting that out of the way that we’re not scared of bugs.

The participants reveal that they use published stories in the EECs to help students by taking them from a known teaching strategy – that of using a story – to helping them accept their adventure at the EEC and to be open to enjoying the activities planned for the day. The focus of all the EECs is outdoor experience for students and the published stories used are pre-planned and executed to enhance the learning potential of the experience.
7.3.c Stories in the EECs

Within six of the 19 EECs, preparation for student visits include specific stories written or told to the students either before or when they visit as part of the program. These stories are often from the humanities and sustainability end of the Environmental Education spectrum rather than the science end and designed to evoke emotions from the students.

As discussed in Sections 2.2, 2.5 & 2.7, emotions generated by exposure to fiction can have a powerful impact on people (Green, 2004; Oatley, 1999, 2002a; Whalen, 2010), encouraging their critical thinking skills and ongoing learning of social skills for the real world from story characters.

One EEC works predominantly on a story based curriculum by using stories as the main vehicles of passing on environmental sustainability information to the students. An interactive story is used to involve the predominantly primary aged students visiting this EEC, informing and educating via this deliberately chosen format. As MARY reveals, the principal devised the concept of using stories to teach students at this EEC.

MARY: The Principal would probably say, some of his thinking mentors were Vygotsky, he would think a lot about that free-spirited play space child centred kinds of ways of being in the world, Thoreau, environmentalists for whom there was a spiritual ecology I think would have influenced him. URSULA has written a lot of the stories that are our pre-texts, so in the lesson today we made reference to the story of “The Bush kids of X Creek”. Well, that’s a little booklet that she’s written and the bush kids stopped a man damming the creek by hiding his cows. She’s written the story of “Mrs M” who’s cat takes a possum. Well, that happened because her cat took a possum and she was upset by it, and so she made a story and the program developed from there.

GINA believes the idea of stories came from the teachers for integrating stories as a major part of the presentation to students in the EEC. She confirms the importance of students getting emotionally involved with the characters in the stories.

GINA: The stories were written by the EEC teachers and are used as a means of getting the students involved in the day, thinking about the characters in the story and how they relate to them. The stories are used as part of a pre-visit
strategy, as well as during and a post-visit strategy ... The students really get to know the characters in the story and this helps with getting them emotionally involved in the environmental issue underpinning the storyline. In this way, when they arrive on the excursion day they are focused and seem to get the most out of being at this EEC.

SALLY agrees with the emotional link and explains why she feels the programs work for the students. She is very positive about the responses she receives from the students, both while they are at the EEC and the ongoing effect after they return to school.

SALLY: I would probably say stories work here because the kids get fully immersed, their whole body is involved in the story. We take the story off the page and bring it to life. The kids get involved to the point where they... even the grade 5 kids ... they’re crying because they think the criminal is real, or because they’re so scared because their imaginations are just going crazy, because that’s their world, their imagination, their creativity and to understand the world they act it out. ...[the principal] probably knew that stories were a good avenue to go down but probably didn’t realise how amazing they were until he’s worked on it, and worked on it, and worked on it, and it wasn’t something that was come-up with overnight... it’s the old thing of the fables isn’t it? That stories have always been used to, like aboriginal stories, there’s so many cultures that use stories to help you understand the world, so, and give you a lesson in life, so bringing it to life, getting it off the page is even more fun. (both laugh) and kids love it. And I guess that’s the thing, you do something and then you see it in their eyes, and their bodies, and they’re so excited and they love it and they say things at the end of the day like ‘this is better than when I went to Dreamworld’ and once you start to see that starting to work, you realise you’re onto something. You keep doing it.

Where GINA, SALLY and MARY’s centre’s stories require the students to use their imagination to enhance the story, it is interesting to note that the EEC, from the social justice end of the education spectrum, does not appear to use any anthropomorphising of animals or plants in their stories.

Other more science based centres use anecdotal and fictional stories for the younger students to help them get more involved in their visit to the EEC and to help them understand environmental issues. OLIVIA developed a program at her more science
based EEC, which includes a story she wrote, and she is pleased at the response the staff at the EEC get both to the scientific and sustainable aspects of their teaching.

OLIVIA: Well, I’m a writer, so I write stories. For our program, we have a story for the Bunyip. We employed an artist to do the art work where there are two little eyes on each page. This story book highlights beautiful, natural bushland. There might be a bird flying by, or maybe a butterfly, but there are always 2 little eyes there on the page as well. The youngsters are looking for the Bunyip in the pictures. It’s a very basic thing. It’s a story we read to the students before we start the program. We say ‘Hello. Welcome. It’s great to have you here. You are the experts on Bunyips, and we’ve been wondering if we’ve got a Bunyip in [our bush]. We’ve got this great story...’ and then we read the story ...

I think we should be more into storytelling rather than story reading. An example could be: when we go out into the bush usually there’s something we can develop a story around. When we go in the bush near here there’s a tree that’s caught by another tree. Before we walk down the path I usually say to the youngsters, ‘You know we are so lucky that we live in Australia. What does it mean to be lucky?’ Then you get the kids talking about what it means to be lucky. How very fortunate we are to live here in Australia - what a wonderful country we live in and how lucky we are. How lucky you are to have parents that care for you, and so on. ‘Just down this path there’s a lucky tree. I wonder how a tree could be lucky?’ I don’t tell them the answer yet, of course. So we wander down the path and as we get nearer to it I say, ‘Don’t forget we’re looking for a lucky tree. It must be down here somewhere.’ Then there’s a tree standing, and another tree that’s fallen over and been caught by the first tree. They find it and say, ‘Could that be the lucky tree?’ ‘That’s it, but why is that tree lucky?’ Then we investigate the idea. That tree could have fallen right over onto the ground and all of its roots would have been exposed and it would have died. But because another tree caught it, these roots are still in the ground, even though some of them are poking up. If you follow up that tree you can see there are branches growing there. That tree is still alive. Isn’t it lucky it got caught? If it had fallen to the ground it would have died.’ Then we talk about mates and how mates take care of each other. The teachers can take that back to school and talk about all sorts of similar issues. I think that’s the storytelling and the weaving of the story into what you’re doing. It’s not chapters but you start off here, and then you do something else and get distracted, and you do come back to it again so you see whether they’ve taken any notice of what you’ve told them about earlier.
From three different EECs, TONI, HARRY and JANE see stories as having a broad definition, which includes using anecdotes, fiction and real life stories when appropriate for the students, situation and program. Anecdotes enhance understanding by using story examples and, according to Hart (2003), reflect the authentic values of the teller/teacher. This anecdotal insight into the teacher’s thinking reveals that, just as cultures have done for thousands of years, valuable information is passed to future generations through stories.

TONI: I think every environmental ed centre uses stories, anecdotes and stories of what they’ve done and where things have passed, or stories about a pet koala, or something like that. … but the stories we use for say, year 8 and above are stories about environmentalists or real live yarns that have happened that are relevant to their area of research.

HARRY: I use storytelling and again its stories about my life in the bush, stories about indigenous people and stories of experiences that are turned into fictional stories about magical creatures. But it’s mainly narrative of first hand experiences.

JANE: I love telling stories, particularly the little presentation we have with the introduction for the primary children. . . and through that we’ll tell little bits of stories, not a long story, but little stories about things that are happening, and we tell a story in the activity room as well using puppets, we get the kids to actually role play, and there’s a script, and we do present stories that way.

M: You say you use some anecdote stories, what kind of stories are they?

JANE: Well, they’re more like the things that have happened here on the site, like with the eels. With the secondary students it’s a story that when all the eels were taken out of the site, and what happened, so the story is actually linked to what is happening on the site, more than imaginative stories, but yes we like to use those linking in stories now and then.

M: So what did happen when they took all the eels out?

JANE: well, we had a huge bloom of mosquito fish, which meant that we weren’t getting any macro-invertebrates in the pond, because the top level of the food chain had been removed, so that meant the feral fish took advantage of that and had a huge outbreak of those animals, and we didn’t have any macro-invertebrates, so it wasn’t until the eels made their way back into the system
that it all levelled out again. Though we do still catch mosquito fish, but we get everything else as well.

Anecdotes about pet koalas, real people, indigenous experiences, high tides stranding students, and high school students learning the value of eels to the environment, are all valuable learning opportunities that teachers have developed as lessons for the students. Stories are a constant tool in teaching students about the environment. Despite denials of using stories at work and in some places being overlooked by participants.

Participants repeatedly mentioned the fun students had at the EECs, involving themselves in the activities at the centres. Alternative methods of presentation of the information at the EECs create positive and surprising responses from some students. In many cases the participants are showing their personal value for nature in their daily teaching practices.

SALLY: I think having those experiences in nature is probably what made me feel connected to it. If you don’t spend time in it, you don’t care about it, you don’t love it, so why would you want to do anything to help it. So I guess that’s what we’re trying to get through to the kids here too. And I think all of us have had those experiences as we were young, . . . [we don’t want] this generation now to miss out on that because they’re sitting in front of their X-boxes, and they comment on that a lot when they’re here, ‘oh, I can’t believe I had fun and it was cool, and there was no X-box’.

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OLIVIA: We just get caught up in the theme, you know, do really fun stuff out in the bush, and then the work that the teachers have done with their students comes out.

Student visitors to the EECs appear to remember their class visits many years later, as DANA recalls. Students appear to recall the fun and enjoyment of the activities in the environment, along with the non-schoolroom design of the teaching and learning programs presented.

DANA: So it’s the way you put things across I think. And it’s the same with the kids, too. Rather than telling them ‘you will learn this and you will learn that’, it is better to try to make it as fun as you possibly can, and making it something that they’re going to remember rather than the same teaching methods they
could experience anywhere, which is why I like to bring them here to my [EEC] and experience hands-on activities rather than go into the classroom. Here it is a different environment and something they’re more likely to remember; you can go out and do some field work and collect some seeds of white gums or whatever ... after you’ve explained to them that they [certain birds] rely on this species of Eucalypt for their survival...

I work mostly with 10 to 12 year olds, and they’re like little sponges, absorbing information and taking a real interest. It’s really fun working with them and I know it’s great to see the amount of information that you can put across to them. I never assume that they’re not going to understand something, it’s amazing how much comprehension they have. So, it’s very rewarding. They might temporarily forget through their teenage years but become involved again as they get older. That’s what you can hope, anyway, and I think it’s been working as I’ve had a lot of kids who are now adults who have said to me ‘remember me, you taught me in primary school? I remembered what you said, and taken it on-board because it’s made me realise the importance of my actions to wildlife and habitats.

Participants in EECs are using stories, both printed and oral to evoke emotions in their students to encourage them to better comprehend the social and scientific aspects of their surrounding environment. While all the participants stated that actual experiences in the natural environment were essential for the development of pro-environmental attitudes and behaviours, they use stories, anecdotes, books and tales on a regular basis to encourage positive emotional responses from the students and to reinforce their teaching. As one of the participants put it:

**FRAN:** I think environmental literacy and people being aware of sustainability in the world, and understanding of that, is pretty important ... but that’s where we can encourage people that write stories for kids, that’s got good stories in it, and that it’s relevant to kids, and useful, it’ll appeal to teachers.

**7.4 Discussion of results Section 4. 7 Reading to future generations**

Values are usually acquired through incidental or non-intentional learning (Section 2.12), and, as discussed in Section 2.18, they are often formed when children are very young. Reading to young children promotes a love of books and learning as well as influencing their values and attitudes towards aspects of their lives (Cutter-Mackenzie et al., 2010).
Reading about nature with a child is another way, as an adult, to revive a sense of natural wonder. Unlike television, reading does not swallow the senses, or dictate thought. Reading stimulates the ecology of the imagination. Can you remember the wonder you first felt when reading *The Jungle Book* or *Tom Sawyer* or *Huckleberry Finn*? Kipling's world within a world; Twain's slow river, the feel of freedom and sand on the secret island, and in the depths of the cave? Environmental educators and activists repeatedly mention nature books as important childhood influences. (Louv, 2008, p. 166)

The three adventure stories Louv cites – *The Jungle Book*, *Tom Sawyer* and *Huckleberry Finn*, are all adventure stories in the natural environment placed in the publishers’ reading age category of 8 to 12 years. Here Louv recognises the importance of reading fictional adventure stories in the natural environment. However, the end of this quote shows confusion in revealing important or influential texts for encouraging pro-environmental attitudes among environmental educators, as the books they appear to mention ‘as important childhood influences’ are ‘nature books’.

### 7.4.a Popular Stories for future generations

Like Louv in the above quote, the majority of the participants pass on their love of reading to others including their children and grandchildren. Participants mentioned 50 different authors or books in the interviews as stories or books they pass on to their children and grandchildren and give as gifts because they feel they are important. Twenty one of the 31 participants mentioned books they passed on to these children (Table 4.25). They appear to be predominantly story books with a small number of science teacher (S) participants saying they give and/or read science books to the following generation. The most popular author was Dr Seuss, with *The Lorax* (Seuss, 2002) named four times.

Seuss’s (2002) *The Lorax* was originally published in 1971 and is an environmental protection story written about destruction of eco-systems due to greed for a product. The Lorax creature,

> He was shortish. And oldish. And brownish. And Mossy. And he spoke with a voice that was sharpish and bossy.” (2002, p. 23)
is trying to protect its environment from a greedy creature, the Once-ler, who wants to keep chopping down and processing Truffula Trees to make Thneeds.

A Thneed’s a Fine-Something-That-All-People-Need! It’s a shirt. It’s a sock. It’s a glove. It’s a hat. But it has other uses. Yes, far beyond that. You can use it for carpets. For pillows! For Sheets! Or Curtains! Or covers for bicycle seats!” (2002, p. 26)

The tongue-twisting story encourages care for the environment by caring for ecosystems, waterways, plants and other species and uses the environmental triggers of loss of place and individual responsibility to encourage this care. The colours in the pictures also get duller through the story as the Once-ler destroys the trees and ecosystem.

LOUISE: we knew The Lorax off by heart, there’s a world of wonderful children’s literature.

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ADAM: The Lorax! That’s it, yeah. My kids all loved that, yeah. I think they still refer to it, yeah.

The aspects of social responsibility and personal participation are highlighted in the end of the story of The Lorax as readers are instructed by the author to care for the environment.

And all that the Lorax left here in this mess
Was a small pile of rocks, with the one word. . .
“UNLESS.”
Whatever that meant, well I just couldn’t guess.

...“But now,” says the Once-ler,
“Now that you’re here,
The word of the Lorax seems perfectly clear.
UNLESS someone like you
Cares a whole awful lot,
Nothing is going to get better.
Passed down for generations, May Gibbs 1946 Australian bush classic *Snugglepot and Cuddlepie* (Gibbs, 1972) was mentioned three times as a book read to children. Set in the Australian bush, the stories reveal only small amounts of environmentally educational material, as can be seen from the excerpt below, where the gumnut babies see a trapped possum.

When he had seen the poor Possum lying so still, he had grown frightened, and shouted, "Help! Help!! Help!!!" And he shouted louder and louder, until Snugglepot heard him and coo-eed back and came hurrying to find him, while little Ragged Blossom, who was hiding, crept out and came after him. A lot of Bush creatures were running in the same direction, and quite a crowd had gathered by the time Snugglepot reached the place.

When Cuddlepie saw Snugglepot he burst into tears, and cried. "See! Oh see what the humans have done."

Snugglepot was filled with grief and the tears ran down his cheeks, while all the Bush creatures cried in their own way. Nothing could be done. No one was strong enough to open the great trap. The poor, gentle Possum must stay there till he died.

Now, as everyone stood there weeping for pity, a great noise came sounding on the breeze. All the Bush creatures turned pale. "Humans! Humans!" they cried, and scuttled away, tumbling over each other in their haste to hide.

Snugglepot and Cuddlepie stood spellbound as the great noise came nearer. Then little Ragged Blossom ran to Snugglepot. "Come, hide quickly!" she cried, and led them up the Possum track to a cave in the side of the tree.

Just as they reached it a monster Dog came crashing through the Bush and stood over the trap barking, while close behind him, came a monster Human.

"Why, it looks like a giant nut," said Snugglepot, "and he's got eyes like ours."

"Look! what's he doing!" whispered Cuddlepie. "Oh! Oh! he's going to kill poor Possum."

But no! The monster Human opened the trap with his strong hands and gently lifted out the little Possum. Then he bound up the poor broken leg, and they heard him say, "These rotten traps, I hate them." and then he pulled up the stake and flung the trap into the stream. And then he said "Come on", to the
monster Dog, and they both walked away through the Bush... . "I wish," said Cuddlepie, "that all Humans were kind to Bush creatures like that." (pp. 42 - 44)

It can be seen that these traditional books still influence the participants, with them recognising the attitudes and values of the stories as pro-environmental for their children.

ANNA: well we read, you know, Snuggle Pot and Cuddle Pie, and that alerted you to the environment, not so much environmental issues, by any means, but to the environment, what’s out there.

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JANE: I can remember my grandfather reading Snuggle Pot and Cuddle Pie to me. And I read that to my children. I haven’t started reading it to my grandchildren yet, but I read that to my children when they were little.

While specific environmental information is sparse in the books, the overall feel of the texts is one of caring and concern for the environment. The positive view of humans in the two different environments of a) the Australian bush and b) the land of the Once-ler is a valuable role model for children because if they are transported into the fictional worlds as they hear or read the stories there is a potential for significant influence in later life (Green, 2004; Mar et al., 2008; Whalen, 2010) (Section 2.8).

Many of the books read and recommended by participants use the themes of accepting life as it is and promoting and social justice issues. One participant mentioned three separate Shaun Tan books which have detailed drawn pictures and simple stories with a moral in them. NINA was adamant that everyone should read The Short and Incredibly Happy Life of Riley (Thompson & Lissiat, 2005), a children’s picture book shortlisted by the Children’s Book Council of Australia. This book’s simple message is again highlighting the inappropriateness of greed for a sustainable future.

NINA: Well, one of my favourite picture story books... a book that I tend to buy and give I to people, is called The Short and Incredibly Happy Life of Riley
it’s a picture book but it’s about people not being materialist and consumerist really, it’s very good. ... A book that you’ve got to read.

The book’s main character, Riley is illustrated as a happy simple loveable pink rat, whereas the humans appear gross and complicated, both in their appearance and their lifestyles. The humans are portrayed as unhappy with life, or sad at what life has provided for them. As can be seen from the following quote, Riley is happy with his simpler life.

All Riley wanted was some fruit and maybe a couple of slugs on Tuesday or Friday now and then.

People, of course, want more than that, which is a shame because it’s about all you need, apart from a cup of tea and some toast and maybe not the slug.


Some of which is gross, some cruel and most, unhealthy. (pp. 9 - 10)

This is why it’s never a good idea for people to compare their lives to animals. You will only end up feeling depressed…

Because realising that rats have a better life than you do, is really, really sad.

And the answer is very simple really – you just have to be happy with a lot less.” (pp. 29-30)

Reasons for reading books to children varied, with modern authors Mem Fox, Andy Griffiths, Roald Dahl and Steve Parish each mentioned twice, as were ‘animal books’ while CHARLIE planned to tailor his youngest child’s reading towards a love of animals.

CHARLIE: These day’s I’ve got a one year old and I don’t want any truck books in my house really, things about Postman Pat or monster trucks or Fire engine Sam. I don’t really want him to read that. When there’s special reading time to be done, I really like to do natural history sort of stories instead … but when I buy a book for my [son] then, I tend to buy him books like that, about animals.
M: Steve Parish?

CHARLIE: I’ve collected those for my kids in the past and I like those ... if that’s a real genre, the faction, then those books are pretty good ... They tell a story but there are also facts about bilbies, things about bilbies if it’s that, or things about birds. We’ve got a cockatoo calling one, ... and the bilby one and the dolphin one. ... my partner is a vet by trade and so she’s interested in animals as well, and having that, and developing in [our son] a respect for animals, not just wild animals, but pet animals as well ... it’s good. He gets both barrels. Poor kid. (both laugh)

In most cases the books mentioned here are animal books incorporating anthropomorphic aspects to encourage the readers’ empathy with the animal characters. Many have environmental messages and address a social issue as one of the main themes in the story.

7.4.b Childhood stories reread to children
When reading to children and grandchildren as shown in Table 4.26, eight of the 31 participants (6(H), 1(S) and 1(O)) particularly mentioned reading the same author or book as they remembered reading when young. The recurring attraction of these books indicates the participants have probably gained insights and enjoyment from this literature that they wish to pass on to future generations. By recognising their attraction to these books, participants have deliberated on the texts (Section 2.13), and made a conscious decision to pass these stories onto future generations

LOUISE and JANE both mention the traditional story of *Snugglepot and Cuddlepie*, (Gibbs, 1972) while CATHY and SALLY name the modern author Roald Dahl as an ongoing favourite. GINA is still reading *The Magic Faraway Tree* (Blyton, 2007) to children, while LOUISE’s early interest in myths and legends is passed on to her children, and ED is reading his son *20,000 Leagues Under the Sea* (Verne, 1978). MARY is reading one of her favourites, *The Lorax* (Seuss, 2002) and HELEN the book she is passionate about, *The Snow Goose* (Gallico, 1942).

HELEN has very powerful memories of the book
HELEN: And I think now, from saying that, an example of a story that I loved reading to kids was quite an old story called The Snow Goose by Paul Gallico, and I found that incredibly emotional that story and it was about the relationship between a young girl and a wild creature and the relationship that developed between that wild creature and a crippled man. So, I’ll need the tissue box, and it got to the stage that I actually couldn’t read that story to kids anymore because it was just so... it was such a good story. It was, well, no, it’s not that I couldn’t read it anymore, I would get really upset, you can see that because this little girl showed amazing empathy to a rather ugly, misshapen person, so she acknowledged him as a person where he was shunned by society in general and, like that relationship between her and him and the wild creature, and then he actually would, during the first world war and when Gallipoli was happening he actually sailed a boat from the south of England across to France and would rescue and bring sailors back and the snow goose would fly above them [weeping] sorry, and eventually he was killed. Sorry [more weeping]

M: You’re right. It is amazing the effect one story can have.

HELEN: Oh look, Absolutely. It’s about, to me it’s about having empathy for things [still weeping] [pause the tape for a minute or two.]It’s about kids having a true connection and really caring about things. Instead of the glossy shallow stuff that is thrown at them by the media. I think that’s incredibly important. So, the TV is ok, and media is fine, but as long as kids can see way beyond that and, and really care about things that are really important. ... Um, I’ve lost my train of thought, sorry.

M: Something about caring deeply about things

HELEN: I guess in the environmental sense it’s about caring deeply about place and earth and, and going beyond the pap that’s thrown at us by the media and generally commercial media, so, yeah, so there’s a balance.

The intense passion HELEN feels for the story and the memories evoked in telling it to classes was very obvious as she wept with the recalled memories of using the story as a teaching tool. Her passion for social justice issues reflects the Education for Sustainable Development ethos (Section 5.2) many of the participants feel when relating stories about teaching various aspects of environmental education to children.

Participants pass both their favourite books and newer books on to their children and grandchildren. Many of the participants described themselves and their children as
‘avid readers’ and are perpetuating the love of good stories through future
generations. The re-reading of childhood favourite stories to following generations
also indicates a particular ongoing interest in some special stories as JANE shows
with her fond memories of May Gibbs’ (1972) work.

JANE: I can remember my grandfather reading Snugglepot and Cuddlepie to
me. And I read that to my children. I haven’t started reading it to my
grandchildren yet, but I read that to my children when they were little.

ED is also influencing his eight-year-old son’s reading by encouraging him with
his own favourite books.

ED: I’m reading him “20 Thousand Leagues Under the Sea” at the moment.
The same book that I read when I was about his age, it’s the same copy. I gave
him my Hardy Boys books, and he’s just getting into his reading a lot more
now, so, it’s early days.

It is interesting to note here that the books participants are reading to future
generations depend on the reasons for reading the books. The EEC based reading is
environmental based, whereas the participants’ private reading material for children
and grandchildren is a mixture of their favourite fiction with and without a specific
environmental message – except CHARLIE who plans to encourage a love of
animals with his young son through natural history types of books.

7.5 Conclusion
The data gathered from the interviews shows that the storybooks that participants are
using at work are not the books that influenced them, rather they are ones chosen for
specific curricula purposes. The stories currently being used and investigated for
encouraging pro-environmental behaviour are the ones designated as purposeful
(Wason-Ellam, 2010) and worthy enough to be used with correct facts rather than
focussing on the worth of the storyline (Hug, 2011). These are the books regularly
used in the Environmental Education Centres (EECs), deliberately to target
knowledge rather than emotion or the storyline. Yet, if the vehicle of the storyline is
not attractive or acceptable to the student/child audience, the messages will be
entirely ignored (Section 2.15).
The reading ages of these favourite stories (Table 4.26) highlight the important influence of middle childhood to the participants, with only the May Gibbs books from early childhood (under 7 years) and the other books from the middle childhood (8 to 11) age group.

This chapter has been addressing three main questions about the reading habits of the participants in this study. In response to the first question: **What age group appears to be most influential?** Using the data collected and the publishers’ recommended age groups for reading, the childhood age group of books most remembered was from middle childhood, from age 8 to 11 (Section 7.2). Participants also remembered a high number of adult books within their childhood reading. This indicates that the participants are in step with the research on memory with their recall of events and books from their adolescence and early adulthood, but out of step in their high response rate of recall of books from middle childhood where childhood amnesia should have significantly reduced the number of texts remembered. The recall of specific books from the middle childhood age range suggests that these books were significant to the participants, resulting in the books being highlighted in their memories. This then implies that these books are particularly influential during the formative ages of the participants as discussed in Section 6.3.b.

Comparing participants’ reading to that of the public by using library statistics, Section 7.3 responds to the question: **Are environmental educators reading habits different from those of the general population?** There are difficulties in validating this data as libraries are not the only source of books to read, many people chose to buy books or borrow them from friends (Section 4.5). The data gathered indicates that there are significant differences between the participants’ reading and the reading recorded in the library data (Section 7.3 & Table 4.22). The greatest differences are in the reading of Non-fiction and Reference books (Participants: 28.9%; Library: 5.6%), Psychology, New Age & Religion texts (Participants: 10.4%; Library: 5.3%), texts about Social Issues (Participants: 8.6%; Library: 1%), and the SF/Paranormal books (Participants: 17.9%; Library, 10.6%). The high percentages of
participants’ interest in reading books from the categories of Reference books, Psychology and Social Issues may be connected to the participants’ interest in work related reading such as the books by Louv (2008) and Diamond (2005a; 2005b). However, their higher than Library interest in SF & Paranormal is unlikely to be work related and may be seen as a different reading pattern to that of the public.

Identification of the different kinds of EECs visited for the data collection is examined in Section 7.3.a where 21 of the 31 participants identify using stories in their work at their EEC (Table 4.23). The participants’ use of stories at work at the EECs is discussed in Sections 7.3.b, & 7.3.c, and their use of stories at home is explored in Section 7.4 to respond to the question: **What stories do participants pass on to future generations? (At home and at work).** The data shows participants use both published children’s stories (Section 7.3.b) and stories specifically written for the learning situation at the EEC (Section 7.3.c). In most cases the stories used have an obvious environmental and/or social justice message (Table 4.24). Questions about passing special books onto future generations outside the work environment elicited 21 responses with Dr Seuss’s (2002) *The Lorax* as the most often listed book, followed by the Gumnut Babies stories by May Gibbs (1972) and other animal stories. Eight participants indicated that they were passing their favourite stories from their middle childhood to future generations (Table 4.26).

The majority participants’ of remembered and therefore influential childhood reading is adventure fiction, but the books used in EECs to influence children are not these, but are chosen for their deliberate environmental messages. The majority of participants’ use of these adventure books in the natural environment with their own families indicates that they want to pass on their enjoyment of these kinds of books to future generations and may unconsciously realise the influences these books had on their developing pro-environmental attitudes.
Chapter 8 Conclusion to the thesis
This study was undertaken to discover if any literature had influenced the pro-
environmental values and attitudes of environmental educators. It was motivated by
the reported decreasing frequency of childhood opportunities for free play
experiences in the natural environment and recognition in the literature that
alternative approaches to the development of pro-environmental attitudes are
required (Sections 2.1 & 2.4). Previous studies into recognised influences of
environmentalists’ pro-environmental attitudes have recorded Books & Authors as
one of the top ten influences (Chawla, 1999; S. J. Hsu, 2009; Palmer et al., 1998),
and, as reported in Section 2.10, childhood is the prime opportunity for personal
value formation (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). As such, the
examination and listing of early or childhood reading of the participants is deemed
most important in this study.

Table 8.1 Summary of responses to initial questions from Chapter 1.

<table>
<thead>
<tr>
<th>Initial question</th>
<th>Summary of responses</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Do these environmental educators have similar formative pro-environmental experiences to other environmental educators previously researched?</td>
<td>Yes, but more and different books are reported in this study.</td>
<td>5</td>
</tr>
<tr>
<td>2 If fiction does influence people, what kind or genre of fiction appears to work best in this situation?</td>
<td>Yes, authors: Tolkien, Blyton &amp; Rowling. Book type: Fantasy/SF.</td>
<td>6</td>
</tr>
<tr>
<td>3 What age group appears to be most influential?</td>
<td>Middle childhood, ages 8 – 11 &amp; adolescence/early adulthood.</td>
<td>7</td>
</tr>
<tr>
<td>4 Are environmental educators reading habits different from those of the general population?</td>
<td>Probably, participants are leaning towards outdoor, social issues and fantasy.</td>
<td>7</td>
</tr>
<tr>
<td>5 What stories do participants pass on to future generations? (at home and at work)</td>
<td>Environmental stories at work, and mainly adventures in the environment stories at home.</td>
<td>7</td>
</tr>
<tr>
<td>6 As all environmental educators are individuals, is there anything in common that can be taken from this study and generalised for other areas of concern?</td>
<td>Yes, the use of introduction of anthropomorphic stories to children before fantasy and social issues.</td>
<td>8</td>
</tr>
</tbody>
</table>
8.1 Memory of childhood books

Participants’ interviews reveal that they remember reading significant numbers of books when they were younger. The 246 references to 168 childhood books and authors from the 31 participants listed in Appendix 6 indicates that these texts were significant in some way to participants’ lives at that stage in life and potentially influential in their life choices (Oatley, 2011; Shelley, 1990).

Not all of the participants were great childhood readers. Some, such as HELEN, OLIVIA and FRED, described themselves as ‘avid readers’, while others, such as GEOFF, IAN and JOHN do not and did not see themselves as regular readers, especially for recreation. All 31 participants remembered childhood reading to differing degrees, with 17 participants remembering only childhood humanities/fictional books while 12 participants remembering both scientific and humanities childhood reading. Only two participants did not remember childhood fictional books, rather remembering science-based texts.

Contrary to expectations raised by previous research (Section 2.1), the participants recalled significantly fewer ‘scientific’ type books than fictional books. This previous research only mentioned science based books such as Rachel Carson’s (1962) Silent Spring. The difference between this study and those is the possibility that participants in previous studies did not think about the influence of fictional texts, or that they assumed the researchers were only asking about non-fiction texts.

However, as participants in this study do recall large numbers of fictional books, this study confirms other research which strongly suggests that people remember fictional texts better than factual ones as discussed in Sections 2.5 & 2.7 (Conolly & Haydar, 2008; Green, Garst et al., 2004; Oatley, 1999). This supports the research into readers’ emotional involvement in stories that suggest the stronger people’s emotional links are to the characters or plot, the better information from the story will be remembered (Blakemore & Frith, 2005; Heath & Heath, 2007; Sousa, 2006). Therefore, it appears that participants’ positive emotional attachment to elements of
the story prompted better recall than their memories of the factually based 'scientific' books that engendered less emotional response.

Recent environmental education research into the influence of fictional stories with children (Section 2.4) appears to be focussing on the educational and scientific validity of the stories, rather than on the types of stories children want to read. This difference between the books teachers prefer and the books children like to read has been examined in previous research (Section 6.4). Current environmental education research into the influence of texts appears to be examining a high correlation between scientific knowledge and actions for the readers, rather than a value modification through the experiencing the characters in the storyline. Yet Cutter-Mackenzie and Smith (2003) report that it is teachers’ encouraging pro-environmental values that make the difference in environmental education (Section 2.1). This thesis suggests that the link between texts and attitudes and actions is more complex than a straight cause and effect situation. It is more like planting a pro-environmental seed in children’s minds and letting it grow, using the child’s interest in the topic to foster further searching for information, to feed and nurture the interest planted by the emotional fictional text rather than transplanting the fully-formed knowledge through information.

This idea of growing or building on previous knowledge aligns with environmental educations’ trend towards constructivist learning (Section 2.1) and the identification of the pro-environmental influences identified in previous studies (Section 2.1). The identified pro-environmental influences are multiple rather than single or one-off events. If people’s own private inner worlds can be influenced through stories, and if environmental educators are particularly engaged through a certain kind of story, then attitudes may change as the reader follows the trail of information and learns more. The initial approach here is subliminal and reflects the advertising concept of product placement as discussed in Sections 2.17 & 2.19.
8.2 Any particular type/author/title/genre
This study has discovered that the participants’ most memorable childhood and specific early reading books were by the authors J R R Tolkien, Enid Blyton and J K Rowling (Section 4.3 & 6.3). The mentioning of the authors’ work by 15 of the 31 participants indicates that these authors’ work is significant to this cohort, as the chance nearly half of the people mentioning the same books and authors, considering the different ages and backgrounds of the participants and the spread of the participants over the country is not high. As reported in Section 6.2 previous studies into the popularity of books have used book recall of 2% to 10% of the interviewed cohort as being significant. This suggests that these particular author’s work with a response rate of Tolkien 26%, Blyton 26% and Rowling 23%, are influential in the development of pro-environmental values, attitudes and on-going actions of the participants.

These works fit into the category of Fantasy/SF. Research into this type of book highlights the value of the genre in encouraging understanding of societal norms (McMahon, 1989) and the use of imagination to take individuals beyond their known sphere of existence to encompass broader thinking (Barron, 1990; DeBono, 1976; J. Taylor, 1976). The use of Science Fiction in teaching science in schools has been recognised and investigated by scientists although some researchers deride its usefulness (Barnett et al., 2006) while other wish to encourage its use (N. Gough, 2003b; Stavrou & Skordoulis, 2008). Both sides of the debate agree that the science within the storyline must be accurate, but those advocating its use see SF as assisting individuals in understanding an inter-relationship between the broader environment and humans, and see SF as having potential for encouraging creative thinking skills. This genre of Fantasy/SF uses metaphor to suggest possibilities not necessarily available in general fiction (Nicholls, 1976).

By dealing with possibilities not ordinarily considered – alternative worlds, alternative visions – it widens our repertoire of possible responses to change. It helps us see the worlds as a system, as a whole. (Toffler, 1976, p. 118)
Other possibilities for SF within an educational mainstream program are seen by authors such as Suvin (1976) who also writes about imagination and creative thoughts encouraged by SF.

At a minimum we must demand from SF that it be wiser than the world it speaks to. In other words, this is an education literature, hopefully less deadening than most compulsory education in our split national and class societies, but irreversibly shaped by the pathos of preaching the good word of human curiosity, fear and hope. (p. 71)

While writing predominantly for the middle childhood (8 -11) age group, Tolkien, Blyton and Rowling’s stories encompass empathetic characters in adventures within recognisable environments. They also delve into the world of fantasy requiring their readers to accept various unrealities as necessary parts of the narrative, thereby exercising imaginations to comprehend the situations. Without Tolkien’s troublesome Gollum, the hero hobbits, wise wizards and ancient treelike Ents, readers would not be held in the story to read about environmental topics such as the amazing descriptive landscapes and the results of greed and overproduction in *Lord of the Rings*. Perhaps if Enid Blyton left the *Wishing Chair* as an ordinary armchair or *The Faraway Tree* without its fairy inhabitants, children would not have been as enthralled by the stories and gone searching in their own gardens, forests and natural environments for interesting creatures and enjoyed their own adventures. If Rowling’s *Harry Potter* was an ordinary boy without a magic wand, his story is just that of another lonely child going to boarding school, not venturing out into mystical forests looking for unicorns and other endangered mythical creatures.

The appearance of both fantasy and magic in the participants’ most remembered stories strongly suggests that the story and characters mattered more to them than the specifically correct scientific information in the stories, as reported in Section 2.7, where research shows that stories have the greatest impact if the reader has empathy with the main character. The use of imaginary characters and creatures with anthropomorphic attributes appears to encourage an empathy with them that leads to
an interest in their ‘natural’ environment, be it at the end of the garden, the end of the street, or in the local bushland or forest. The research indicates that children of this middle childhood age group understand the use of anthropomorphism for animals and other creatures in the books they read (Gebhard et al., 2004; Myers & Saunders, 2002). While imagination is an important part of childhood, by middle childhood many children don’t generally believe that forest trees speak as in these authors’ books, nor do children expect that a mysterious force will take them from one place to another – such as mysterious caves and waterways under mountains, the flying Wishing Chair, or the train from Platform 9¾. However, children do recognise the values displayed by the characters, their care and respect for the natural environment and the positive role models evident in the books (Hadzigeorgiou, Prevezanou, Kabouropoulou, & Konsolas, 2011; Hart & Nolan, 1999; J. Hsu, 2008).

The concept of respecting others, and their way of life and environment in these books indicates that childhood readers are using their Theory of Mind as discussed in Section 6.4 and accepting other creatures and objects as thinking individuals (Myers & Saunders, 2002). The use of anthropomorphism helps here, as it gives readers a recognisable link to other beings or creatures, so they can better feel empathy and care about them, for them and how they live in their environment. By attributing other creatures with human personality and traits, children employ this concept of Theory of Mind, attributing feelings and beliefs to the creatures and increasing their empathy and concern for them.

### 8.3 Ages of influence

Sobel’s (1996) age categories parallel reading experience categories and are used here (as in Section 2.10) to address the issue of suitable literature for certain age groups. This means the recommendations are separated into four main areas. The baby pre-school and pre-reading age group; the predominantly home based early readers, ages 4 to 7; the adventurous middle childhood school children, ages 8 to 11; and the dawning socially aware adolescents, ages 12 to 15.
These most recalled books fall in the suggested reading age of 8 to 11 years which is also the age of discovery according to Sobel (1996; 1999) Tomashow (1995) and Kellert (2002; 2005) (Sections 2.8, 4.4 & 7.1). Kellert also mentions that in middle childhood “children are especially enchanted by tales, legends, stories and myths involving scenes and characters drawn from the natural world” (2002, p. 135) and suggests that these fantasy tales help children to understand both themselves and their surroundings. The vicarious expeditions into nature in the stories are also reported to assist with constructive childhood psychological development, yet the importance of these types of stories for encouraging pro-environmental values does not appear to have been researched.

Reading to children helps them understand themselves and the society they live in (McAdam, 1990). It also encourages feelings of success as they begin to read themselves and it provides freedom and opportunities for promoting self-efficacy and self-esteem (Bandura et al., 2001; Meek, 1988). Many early childhood and pre-reader/picture books recognise and portray the importance of animals as the main characters. Study participants listed animal hero storybooks in this age group such as some Golden books, bedtime stories and fairy tales, Richard Scarry’s *Busy, Busy Town* (2005), and May Gibbs *Snugglepot and Cuddlepie* (1972).

Participants reported enjoying animal stories written for the 4 – 7 year age group such as *Winnie the Pooh* (Milne, 1973), *The Bunyip of Berkely Creek* (Wagner & Brooks, 1990), *Hairy Maclary* (Dodd, 2003) and some Dr Seuss books. The anthropomorphising of animals in the stories in these two younger age groups encourages children’s empathy and understanding at this age. Children between 4 and 7 years of age understand this humanising of animals and do not necessarily believe bunyips and bears speak English, wear clothes or live on human designed furniture. However, as they begin to like an animal/creature, they feel empathy for it, they care about it, they will become curious about its environment and want to visit and help it. By parents, carers and teachers promoting animal fantasy stories at this
age children begin to engage their imaginations and absorb social as well as factual information.

Once a child begins to empathise and care for a storybook animal, she/he can find out information about the animal, where it lives, what it eats which can lead to caring about the animal’s environment/home. Without empathy with the animal/creature, the child has no interest in caring for it. If there is empathy, the child may also want to visit and experience the animal’s environment. This encourages active searching by the child to look for information and creates a reason to face the natural environment. If a child has a fear of the natural environment, suffers from Nature Deficit Disorder or ecophobia, then animal fantasy storybooks offer a non-threatening vehicle for subtly introducing a positive environmental theme that the child may then accept.

In the adventurous 8 to 11 age group, participants recommended fantasy and adventure books that reflected both their ongoing interest in anthropomorphic animals/creatures and added adventures in a relatively familiar environment. The fantasy books mentioned in this age group were those of authors Tolkien, Blyton and Rowling, as previously discussed as the most influential books in this study incorporating anthropomorphic animals/creatures as well as fantastic and magical aspects in the natural environment. Other books participants particularly remembered from this age group were adventure stories, such as Thiele’s *Storm Boy*, Stevenson’s *Treasure Island*, and Turner’s *Seven Little Australians*. This 8 to 11 age group is an important stage for the participants as children because they became independent readers as well as independent people with the power to choose for themselves what to read and, for some, the freedom to go and explore their local area, which reflected the environments of some of the stories they were reading.

By mixing their passive acceptance of fantasy and fairy tales as babies with empathy created by charismatic animals in the 4 to 7 age group and the burgeoning sense of adventure in the natural environment in the 8 to 11 age group, these Fantasy/SF types of books should be promoted with this middle childhood age group. These
books present pro-environmental values as taken-for-granted attitudes within the stories that encourage the transported readers to accept the information without question and to retain it and act on it in their real lives.

The last reading age group to address is the social level, adolescents of 12 plus years of age. This age group become more socially active and interested in issues beyond themselves and their immediate environment. Participants recalled Fantasy/SF books in this age group including Tolkien’s *Lord of the Rings* trilogy, authors such as Terry Pratchett, HG Wells, Ursula LeGuin and John Wyndham along with classic literature and a number of philosophy and religious texts. The emergence of interest in social issues in books at this stage reflects the adolescent age group’s stage of physical and psychological development dealing with the transition period between childhood and adulthood. Social issues and topics of interest at this stage can lead to further reading, exploration, and involvement, including in the area of social justice with potential activation of political intent. As adolescents mature, they are more self-assured and specific in their interests, wanting to read, learn and experience more, taking greater interest in and better care of the environment and influencing others (Section 2.10).

The heightened interest in social justice issues and philosophy, in clarifying their values and reading about these topics for their own interest is indicated by the participants listing authors such as Eckhart Tolle and Jean Paul Sartre. The reading lists include biographies, such as those of Ghandi and Mandela. This interest in philosophy and social justice issues continues into their adult reading of authors such as Paulo Coelho and Jared Diamond, into books that are related to work and learning such as *The Last Child in the Woods* (Louv, 2008) and *The Brain that Changes Itself* (Doidge, 2010), and biographies of adventurers.

Reading texts of any description will not replace first-hand experience in the natural environment. If children are already interested in, and want to learn about their environment, they will look for the information themselves in factual texts. The idea of using fiction to encourage interest in children becoming pro-environmental is
aiming more for those students that fall through the educational cracks. It is an opportunity for environmental educators to address a failing in environmental education (Section 2.1) and as identified by Lowrie, “one failing of programs is they attract the already converted… the challenge is the unconverted” (1986, p. 17). By subtly influencing children through fiction and thus encouraging them to think more about what is happening in their world by using their imaginations in fantasy then perhaps more children and adolescents may be interested enough to find and read factual information texts, to do something for the environment. To go out into the environment and experience it, with experiences similar to Sagen’s childhood as reported in Section 6.4 where he read the fiction about Mars then went to a vacant block to pretend he was on the other planet.

8.4 Recognition of influence from fiction
Isolated individual participants recognised a potential environmental influence from childhood adventure stories, through reactive learning (Sections 6.2.a, 6.3.c & 6.3.d) which was more noticeable if animals were involved. However most participants in this study did not recognise and had not considered the importance of fiction in their young lives or that it could have influenced their values or their attitudes. OLIVIA voiced the attitude of many of the participants when she asked about this study in her interview:

OLIVIA: So your research is to see if fiction has an impact on the thinking of...
M: environmental educators.

OLIVIA: I don’t know whether I’d believe that. For my generation I would say that fiction had very little impact on environmental interests, because we didn’t have any books about those things in those times. But the books today are just wonderful. If you aren’t using the wonderful material that is around now, there’s something wrong. I don’t mean that to be an unkind statement, but you know, there’s just some wonderful literature around. Why wouldn’t you use that with children?

Although OLIVIA said she didn’t believe fiction impacted on her environmental interests, yet at her EEC she is a key member of the group designing programs using
fictional stories about bunyips for teaching the visiting young children. The bunyip program uses the ideas of searching for a bunyip in the bushland to help the infants classes of children use their senses in the bush and to learn about wildlife, looking at such things as which animals lay eggs for their young.

OLIVIA: This [bunyip] program has been worked out really carefully all the way through. It’s fairly simple to set up and it’s just got that really great ‘Wow!’ factor. We say to the students before they come that we are the [tree] rangers and we think we’ve seen a Bunyip in the trees. But we don’t know what a Bunyip is. Can you come and help us? …The students look for Bunyip clues out in the schoolyard. So, when they come here to the [EEC] they burst off the bus looking for Bunyips. We all just have a ball.

M: So where did the Bunyip ideas come from?

OLIVIA: I don’t know. I think we were just talking about mysterious things, and we were talking about how we could do something really mysterious. I wondered what Bunyips do. People don’t really know what they are. Bunyips are a mystery. I wonder if we’ve got any Bunyips in our [trees]? We just get caught up in the theme, you know, do really fun stuff out in the bush...

M: So do the kids ever find the Bunyip?

OLIVIA: No, But when we get Back here to the EEC there’s a note from the Bunyip saying, ‘I’ve Been watching you. You saw my eggs’. It’s a sensory trail so we do some sounds, then we find the eggs, and we wonder, ‘Do Bunyips lay eggs? Ooh. What sort of animals lay eggs?’ Turtles, lizards, platypus and birds lay eggs. ‘I wonder if Bunyips lay eggs? They might do.’ We have these ‘dummy’ eggs sitting there in a nest in the grass. ‘They might be Bunyip eggs. We’d better leave them there because, you know, it’s their nest and they’ll be coming back. You never know. …Then we give the students a big chart with the route that we took and they take that back to school so they can trace back over the map and revisit their search in the EEC back at school. They can see where they heard the sounds and they smelt the smells and they felt the feely things. …and they just love it.

OLIVIA is like most of the other participants, in that she regularly uses stories at work because they are an effective means of communicating with the children, but not recognising the impact of fictional stories on her own learning.

The environmental fiction used in the EECs have what adult environmental educators expect, wonderful pictures and good environmental information, but the
The questions remaining to be addressed are: Does the book continue to influence the children after they leave the EEC, and will any of these books become lifetime favourites? The answers to these questions depend, as reported in Section 2.2, on the emotional attachment the children develop with the characters in the stories. As the research states (Galda et al., 2000), there is a difference between what adults respect in a book and what children appreciate (Section 6.4).

The Fantasy/SF books participants did appreciate and read in early and middle childhood appear to have provided a basis for their further reading and active searching out of pro-environmental information, either within the science based texts, or the social issues texts. Section 2.14 revealed the ability of minds to sort information as it is presented and retain useful information by using theories such as the Elaboration Likelihood Method (ELM) (Petty et al., 2005). However theories such as this cannot account for the retention of trivia and unlooked for information, or the accidental or incidental accumulation of this information into knowledge (Section 2.13 & 2.14). The participants’ realization of reactive learning reinforces the proposal of this thesis that pro-environmental information is incidentally gleaned by individuals from descriptions and characters in the fantasy texts via the ELM peripheral route. Then, once the material from the fantasy has piqued their interest, individuals read more both within the genre and outside, actively pursuing further environmental information sources, consciously reinforcing the initial information.

As GINA said about her early reading, and reported earlier (Section 6.3.d):

GINA: I always loved reading stories when I was little and I one of my favourites was The Magic Faraway Tree by Enid Blyton (2007), so maybe I was a bit of a greenie at heart although I didn’t really realise it until I got older!

and as DANA pondered towards the end of her interview on the literature she had mentioned (Section 6.3.c):

DANA: On reflection, it [The Hobbit and Lord of the Rings] probably is much more interrelated [to value formation] than I had imagined.

Research reported in Section 2.18 shows that measuring this incidental accumulation of information has proved difficult to achieve, as the information gathered by
participants has been unintentional. Comments on previous research in this area have been;

Many of the constructs … are difficult to measure in as much as they occur outside an individual's awareness, making it difficult to evaluate self-reports of these resistance processes. (Moyer-Guse, 2008, p. 10)

and

It is, … relatively difficult to measure affective learning as opposed to cognitive learning.. affective characteristics are often 'hidden', that is, not easily expressed, subjective, imprecise, developed slowly, personal, private and difficult to observe. (Buissink-Smith et al., 2011, p. 103)

This difficulty in measurement aside, this study suggests recognition of acquisition of information from fantasy fiction is important because an accidental/incidental interest in environment can be unintentionally created. This in turn leads to individuals actively seeking more reading matter they enjoy with a similar theme, which then has the potential to provide more pro-environmental themes, attitudes and information to the reader. (Section 2.6) As reported by Green, Brock and Kaufman:

[T]ransportation may also help foster enjoyment through learning – a transformation of the individual’s knowledge base that can help create resources for the future. Individuals can reflect on good stories; favourite movies, books or television shows may become a cherished part of a person’s experience. In some cases, individuals may enjoy a media experience because they feel it has given them new knowledge or enriched their lives in some way, such as providing greater insight into an historical event or a philosophical problem. (Green, Brock et al., 2004, p. 318)

As the retention of the environmental information from the fantasy is unintentional, there is a strong possibility that antipathetic and apathetic people would not reject the fictionally delivered information out-of-hand as revealed in Section 2.14. Rather it would remain unrecognised in his/her memory until it is dismissed or reinforced by other means, such as electronic media through news programs or the internet (Bandura, 1969; Clayton & Myers, 2009; Rowland & Turner-Neal, 2011).
**8.5 Is their childhood reading different?**

This study has uncovered no conclusive data on different types of childhood reading between participants and the public from the data in the interviews (Sections 4.5, & 7.2). However indicators of potential differences exist. Lists composed of people’s favourite or most memorable reading (Canfield & Hendricks, 2006; Castagna, 1982; Newbold, 2000; Sabine & Sabine, 1983) show that the types of books listed are different to those mentioned by the participants of this study. Library statistics about children’s reading were not specific enough to be comparable.

As mentioned in Section 7.2, in 2011 the Australian Broadcasting Commission asked for contributions for Australia’s favourite books. In the ABC Top 100 Australian books (Commission, 2011b) Tolkien and Rowling are both mentioned. The prominence of both Tolkien and Rowling in this list as well as the participants’ responses in this study show these are common books amongst Australian ABC audiences.

These differences in the study participants’ adult reading habits revealed in Table 4.22, show that their reading interests appear to be different to those of the public in areas of particular interest to the participants. The difference in Social Issue texts between the two groups - library 1% and participants 8.6%, Psychology & New Age – library 5.3% and participants 10.4%, and SF & Paranormal – library 10.6% and participants 17.9%, confirms the correlations made in other parts of this study revealing participants interest in texts related to social justice and SF/Fantasy. However, considering the variety of methods of accessing reading material from other sources beyond library borrowing as reported in Section 7.2, no conclusive answer is possible at this time.

**8.6 Other Discoveries from this study**

**8.6.a Potential further studies**

This study raised other issues that could be further investigated to better understand environmental education. While it was not appropriate in this study to follow up on
many of these issues, the Grounded Theory approach used in this study, as discussed in Chapter 3, revealed future research opportunities.

The first of these is teacher overexposure to surveys. This suggestion was prompted by the apparent survey-exhaustion, which was suggested by the lack of responses to the initial emails by the environmental education teachers. It was later confirmed by some participants recruited to the study through the snowball method who had no memory of the initial email but were willing volunteers for the interviews once they were approached by other participants. Some participants indicated that they or their administration staff automatically discarded research emails due to a lack of time at work to participate in research. The lack of teacher time or inclination to participate in education research has ramifications for ongoing studies and investigations into best practice for education.

A second potential area of research could be an investigation into the differences in teacher philosophies and the effectiveness of this in environmental education and beyond. There appears to be a difference in educational curriculum priorities between the science and humanities trained participants in this study resulting in differences in presentation of classes for different age and subject groups. The differences in these teacher’s philosophies of teaching will influence their teaching and student learning. These philosophies may also highlight alternative pedagogies for teaching other areas of the school curriculum.

A third area of research could be into the seeming ethnic bias of environmental education teachers as all participants in this study appeared to be of predominantly white Anglo-Saxon genetic background. This raises questions about indigenous culture and if environmental education is a priority within other areas of our multi-cultural society. Different hereditary cultures or ethnic backgrounds have the potential for presenting alternative viewpoints and processes for encouraging pro-environmentalism, such as some Eastern religious beliefs in reincarnation of souls into other animal bodies.
A fourth area of potential ongoing research beyond the scope of this thesis would be in examining the influence of electronic media on the value formation of the participants. In a few interviews participants discussed their early favourite television programs. There is potential for a link between the participants’ growing interest in the environment and the television programs they watched as children. GEOFF in Section 5.1.d spoke about his fascination Harry Butler’s books which were word-for-word the same as the television program, while other participants spoke about other adventure series that appealed to them as children, and others their love of wild life documentaries. As pro-environmental influences are often multi-dimensional and overlapping, there is potential here for a study on the influence of multi-media on formative pro-environmental values and actions.

The fifth and final potential area of future research could be an examination of the influence of childhood reading on the life choices in other professions. This study revealed that Fantasy/SF were the main types of childhood books recalled and therefore the books influencing environmental educators, rather than scientific or pro-environmental stories as could have been expected. These books were not read for their environmental message, but for the escapism they offer, the opportunity for participants to engage in creative imaginings of slightly different worlds. As reader empathy with characters is important in recreational reading, it would be interesting to discover if childhood reading preferences have influenced any other choices for careers and adult life. These may potentially include Biggles (Johns, 1938) books for pilots, James Herriot’s (1979) stories for veterinarians, thrillers for psychologists, crime and detective stories for people in law enforcement or Thomas the Tank Engine (Awdry, 1988) for railway workers. Allied research has begun with researchers looking for positive role models of engineers and scientists or themes of science or engineering in children’s books (Holbrook, Panozza, & Prieto, 2009). While recognising that “the potential of fiction was considerable” (p. 723), the report of the results of the study was that no books in the middle childhood age range mention engineering and very few science.
As this thesis has shown, fiction appears important in subtly influencing individual’s life choices through educating children of different ages about values and attitudes that they absorb from charismatic fictional characters. As pro-environmental influences appear to have developed from anthropomorphism of creatures and plants and empathy with characters in Fantasy/SF, into social justice and pro-environmental attitudes and actions, perhaps research into other aspect of career motivation and choice are also hidden in plain sight in other types of children’s stories.

8.6.b Overlapping influences
Participants in this study reflected the results of previous studies by revealing complex overlapping influences as their pro-environmental impetus with a childhood base for the majority of the influences (Sections 2.1, 4.1.b & 5). The significant influence of free play experiences in the natural environment is important for nearly all participants, whether they grew up in city, suburban or rural environments. Their value of the natural environment is revealed in their passion for caring for the environment that they pass on to future generations by actively encouraging them to physically explore and learn to respect and care for nature. Participants displayed their care of other species and the environment in general and in their specific local areas by providing students with appropriate teaching and learning experiences in the Environmental Education Centres (EECs) as detailed in Chapter 7. In many cases teachers go beyond the traditional nature study of the environment to encourage students to examine their own values by including discussion opportunities about fair sharing of natural resources amongst all on the planet, and caring for other species, thus involving Education for Sustainable Development principles (As discussed in Section 5.2).

This appreciation of the natural environment and participants’ interest in social justice issues in society and the environment emerged as themes from the interviews and their memories of their early reading. As research maintains that personal values develop in early childhood (Section 2.18), this indicates that their early reading and their home situations blended to reinforce their pro-environmental values and
tendencies. While values and attitudes may vary as individual’s age and have new experiences requiring reassessment of their previously held beliefs, the participants in this study appear to have become more environmentally aware as they aged, discovering more reasons to encourage others to become pro-environmental.

8.6.c Two types of EEC teachers
The study revealed that predominantly two types of teachers become environmental educators in the state Department of Education EECs. The humanities (H) based teachers are primary school trained and high school humanities teachers, and the science based (S) teachers are high school science and geography teachers. The revelation of these two types of teacher training is important because it highlights the breadth of teacher training and experience within the cohort of Environmental Educators in EECs (Section 4.1.a). While the cohort have their passion for environmental education in common, their approaches to creating learning experiences differ widely depending on their teaching experience, their outlook on life and the teaching and learning priorities of the EECs where they work. Understandably the science based teachers prefer the EECs which focus more on the hard science and biology aspects of the curriculum, while the humanities teachers appear to work in the EECs that emphasise the more socially responsible topics of environmental education in the school curricula.

Chawla’s study into the influences on environmental educators divided participants into those who were concerned for the environment, in and of itself, (CE), and those who were concerned for social justice (SJ) and has also been used here to examine the participants’ various motivations for their pro-environmental attitudes and actions. In many cases the science/geography (S) teachers were in the (CE) group, and the primary/humanities (H) teachers in the (SJ) group. Again, the (CE) participants were mainly in the more science weighted EECs, while the (SJ) participants were generally in the lesser science related curriculum areas.

Most EECs present a spectrum of programs for students that involve stories in some form, either published stories or anecdotal stories, to evoke emotional responses
from students, which are varied according to student age, and the aspects of the curriculum required to be studied at the EEC at that time (Sections 4.6 & 7.3). The teachers recognise the importance of using stories for generating an emotional link between the students and the aspect of the environment they are studying at the EECs as an integral part of the teaching strategy they employ. However, the stories the participants are generally using are mainly educational stories that are trying to get an environmental point across to the students.

This focus on scientific information rather than emotional attachment to the characters is a potentially missed opportunity for building empathy for the environment in some of the students, as the science based information has the potential to be filtered by mental barriers by those students who are apathetic or antipathetic. In order to convince these unconvinced students, methods to overcome or bypass these barriers are necessary for them to hear and understand a pro-environmental message. Fiction is one of these barrier-avoiding tools.

### 8.7 Implications and recommendations

Within this thesis, I have been arguing that there is a need to consider a subconscious or covert pro-environmental influence rather than an overt message which has the potential for an individual to deliberately erect mental barriers, and decide to discard the information. An effective message needs to be more like advertising or product placement as is currently practiced in television and movies. Use needs to be made of the implicit not just the explicit avenues to get the pro-environmental message through. Then, if the message is taken for granted and not challenged or thought about at the time, the pro-environmental seeds are sown and interest in the environment can grow. But the seeds have to be present in the mind in the first place.

Books deliberately designed and written with an obvious environmental message have a place in educating children about their world. However, this study reveals in Section 6.4 that the influence of fantasy and fiction should also be recognised as a powerful and memorable pro-environmental experience for children, and especially
for individuals who discount caring for the environment as a priority. Therefore, the recommendation is to create and ignite the spark of interest that encourages further environmental discovery by children.

The importance of Fantasy/SF in the results in Chapter 6 suggests that in promoting stories for children criteria that encourage empathy and imagination should be considered. As publishers print vast numbers of children’s books every year, it would be inappropriate to name any specific new books as particularly relevant in encouraging pro-environmental attitudes in children and which will lead to pro-environmental values and behaviours in their later life. This is an ongoing and ever-changing task for teachers and environmental educators to ensure appropriate stories are found for each situation. Environmental educators should remember that the vehicle of the story, in the form of attractive characters and the plot, delivers the pro-environmental message and if that vehicle does not get through to the audience due to barriers or a lack of interest, then neither does the vital message. The previous studies into the use of children’s environmental literature with students, (Hadzigeorgiou et al., 2011; Hug, 2011; Reid et al., 2010; Williams et al., 2012) do not appear to be investigating the types of stories that this research shows environmental educators remember from their own childhoods. As fictional stories, especially Fantasy/SF including social issues appear to have resonated more with the participants’ childhood reading as shown in Chapter 6, then further use of these or similar stories in environmental education should be seriously considered.

Mental barriers have been identified as the largest inhibitor to pro-environmental attitudes (Kollmuss & Agyeman, 2002; Mackenzie-Mohr & Smith, 1999) so presenting the information through such stories that bypass the barriers should minimise this problem. It could be more productive to subtly insert the information in fictional stories that children enjoy reading, and not elaborate on the pro-environmental information, but rather let it flow through to the brain undetected via the peripheral route of Petty et al’s (1986) ELM. Here it can quietly influence values and attitudes without conscious recognition.
The results in this thesis suggest that environmental education research should broaden its focus from only the educational material in the stories being used to include the entertaining aspects of the stories that will encourage a broader audience. Participants reported the impact of the fun students had while at the Environmental Education Centres, as SALLY said about comments from students visiting her EEC:

SALLY: [a visiting student said] ‘oh, I can’t believe I had fun and it was cool, and there was no X-box’. . . I guess it’s the old thing of the fables isn’t it? Stories have always been used, like aboriginal stories, there’s so many cultures that use stories to help you understand the world, and give you a lesson in life. So bringing it to life, getting it off the page is even more fun, and kids love it. And I guess that’s the thing, you do something and then you see, ... you see it in their eyes, and their bodies, and they’re so excited and they love it and they say things at the end of the day like ‘this is better than when I went to Dreamworld’. And once you start to see that starting to work, you realise you’re onto something. You keep doing it.

Educationalists recognise the influence of fun in learning and if readers enjoy what they are reading (Holbrook et al., 2009; Shelley, 1990) by making friends and empathising with characters in books (Oatley, 2011), then their enjoyment should lead to better recall of the information in the story. The stories need to be targeted for specific ages for the most enjoyment (Ballantyne et al., 2001) and if these emotional experiences are reinforced by alternative information sources, then the knowledge has a greater likelihood of being retained (Ballantyne & Packer, 2005; J. Hsu, 2008). One of the outcomes of this study is the identification of Fantasy/SF as a type of literature that might help elicit pro-environmental responses from that percentage of people who do not respond to nature due to fears such as ecophobia, or lack of opportunity for experiences in the natural environment.

As recognised in previous studies reported in Section 2.1 and discussed in detail in Chapter 5, reading is not the only incentive for pro-environmentalism, but can be part of an integrated strategy to promote pro-environmental attitudes forming. However, teachers have less control over family and leisure access to the natural environment than they do over the resources they use, and fiction may be an under-
utilised resource which may be an easily manipulated strategy to encourage positive change.

Teachers and other environmental educators should not only look to instil overt environmental information, they should also be concentrating on value and attitude formation that readers acquire rather than only specific scientific environmental information. Teachers asking themselves ‘What are my special memories from these childhood favourite books?’ can do this by considering the empathetic and often anthropomorphic creatures, the themes, and possibly the social message depending on suggested reading age for the book. Passion and interest in a subject are great motivators for teachers. If individual teachers remember and liked a special story when they were young, and if they are comfortable with that story, then they will pass their interest or passion on to students and children.

The age of influence does matter here, as in other aspects of life; and the earlier the better for childhood exposure to pro-environmental influences. Most pre-school and pre-reader books have animal characters. This is therefore the place to start, with anthropomorphised animal books. This gives children an opportunity to care for animals, and to feel empathy for them. There is great potential here for the use of both domestic animals and charismatic mega fauna in the stories. Real creatures such as cats, dogs, dinosaurs, penguins, or horses, appeal to differing young age groups, along with imaginary creatures such as unicorns, fairies and bunyips. Once a child’s imagination is kindled, she/he is transported into the story world and opens to unquestioningly accepting both social and factual information. The story must be appropriate for the child’s age group and it is very important to note that the better the story, the more likely children will accept the information and values embedded in it (Section 2.6). If the story is weak, transportation will not happen leaving the message undelivered and the information ignored, rejected or discarded.

Once the children care for the animals/creatures in the stories, then they may be curious about the animal’s environment. This curiosity is an impetus to encourage them to go into the natural world to see the animal/creature’s natural habitat or
environment. If this is a local environment, then children will discover more local animals that they can become interested in, such as frogs & tadpoles, worms, bugs, lizards and possums. In this way, the child can get to know, feel and experience free play in a natural environment that will produce positive emotions and responses to the natural environment. The discovery of these other creatures may also spark an interest in discovering more information about the creatures, expanding the child’s knowledge base and creating a potential for new stories with more specific environmental or scientific information and broader habitat environments.

Participants in this study particularly mentioned *Snugglepot and Cuddlepie* (Gibbs, 1972) as an early stage influential story for them. A child’s imagination is encouraged by the anthropomorphism of the animals/creatures in the stories as they present social norms for small children. Most Australian children recognise gum trees, and after actually seeing the flowers, it is easy for them to imagine little people in the blossoms and the animals they encounter.

The stages and ages of development as revealed in Section 2.8, those of early childhood – up to 7 years of age, middle childhood from 8 – 11 years, and older childhood/adolescence, 12 years of age and over; reveal that environmental education should start in children’s own backyards and neighbourhoods and expand out into the world. While experiences in the natural bushland are ideal here to correspond with the stories, the reality of a natural environment in urban areas may be a home or school vegetable garden. If this is the case then the discovery of worms, snails and other soil-based creatures can provoke discussion and stories about the place of each of these in an ecosystem and the natural environment.

As Sobel (1996) and Hug (2011) state, children should not be looking at major social and environmental problems too early in life and they suggest the issues teachers raise with young students should be local. To be somewhat controversial, perhaps books like Jeannie Baker’s (1989) *Where the Forest Meets the Sea* and Brown’s (2001) *Turtle Song* should be left as early readers for those in tropical Queensland where the story is local and immediately relevant. Other teachers should consider if
their students can recognise the country and urban landscapes in *The Lorax* (Seuss, 2002) before beginning with this book. These books may be more appropriately used once the child’s imagination has developed and he/she can imagine the landscapes and seascapes involved. As most children can recognise a gum tree and have a concept of a gum nut from May Gibbs (Gibbs, 1972), this would appear to be an appropriate age and starting point for caring for creatures and the environment. Childhood imagination will let him/her see the gumnut babies or fairies at the bottom of the garden, such as in Blyton’s (2007) *Magic Faraway Tree* or *Wishing Chair* (Blyton, 2008). Children need to start with something they recognise and then go on from there - from the known to the unknown.

Once a child has reached middle childhood (8 to 11 years), and begins exploring their immediate area (Sobel, 1996), books about adventures in the natural environment hold their attention. The child is beginning to explore beyond her/his own backyard and immediate neighbourhood, and have her/his own adventures. Some of the stories suggesting strategies to deal with these adventures mentioned by the study participants were *The Hobbit* (Tolkien, 1976), *The Famous Five* series (Blyton, 1952), and *The Harry Potter* (Rowling, 1999a) series. In each of these stories young adventurers are dealing with animals or magical creatures and characters in a natural environment, coping with difficulties and discovering value systems and coping mechanisms in managing to overcome them. This age group are also becoming individual readers, so the adventure and challenges in the story become their own, just like their outdoor experiences. This age group is appreciating the freedom and opportunities the natural environment provides, discovering new creatures and where they live, and enjoying the experience. This enjoyment, along with the interest and care for creatures that they have been developing since preschool, helps build the next step towards pro-environmental actions. The child has now created her/his own positive memories and emotions about the natural environment.
Another aspect of this study that could be implemented concerns the use of time at Environmental Education Centres (EECs). Perhaps EECs can put more ‘free time’ for students in the natural environment into their field experiences. Most participants fondly remember the value of free time in the natural environment. Recognising that this is difficult with the deadlines for completing the tasks for science based excursions, there could be benefits beyond the book-work and curriculum of utilizing the natural environment of the EECs for this purpose. Some EECs already provide this ‘free time’, usually within the humanities or personal-skills based excursions, and often for the younger visitors to the centre.
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Appendix 1. Interview Questions:

Person: Date:
1. What prompted you to decide to work here at the environmental education centre?
2. Where did you learn you skills to work here?
3. What activities and learning experiences do you provide here at the education centre?
4. What stories do you tell or read to the visitors?
5. Why do you use them? Or Where did the idea for these stories come from?
6. How do the visitors react to the stories?
7. What stories do you think influenced you – encouraged you to become pre-environmental?
8. Can you expand on that?
9. What stories do you remember reading when you were at primary school?
10. High school?
11. University?
12. Since then has anything particularly stood out? Any book that you tell people they have to read?
13. What are you reading at the moment? What is on your bedside table? What do you read in holidays? (author or genre or whatever you can think of)
14. Do you have any siblings? If so, are they also pro-environmental? Why do you think you are the same or different?
15. If you have children, are there any special books you can think of that you read to them, or that are their favourites? Any you read as a little person that you are reading/ have read to them?
16. Television. Did you have any favourite TV programs when you were younger? If so, what?
17. Where did you grow up? City/suburban/country? Where did you play? What access did you have to the natural environment?
18. Where do you see the future of Environmental education?
19. Do you see Environmental education and Education for Sustainability as similar or different? Why?
20. Further questions as appropriate depending on the direction of the interview.
Appendix 2. Consent Information

Principal’s Consent Form for the Research Project:

The Influence of fiction on environmental educators
Document Version 4 dated 22/11/2010
Margaret Freestone

I agree to participate in the above research project and give my consent freely.

I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.

I understand I can withdraw from the project at any time and do not have to give any reason for withdrawing.

By adding my contact details I also agree to the possibility of
• participating in an interview and having it recorded;

I understand that my personal information will remain confidential to the researchers. I have had the opportunity to have questions answered to my satisfaction.

Print Name: __________________________________________________________

Signature:_______________________________ Date:  _______________________

Phone Number: __________________________________

Email address: _____________________________________
As part of a PhD study Margaret Freestone is planning to survey by email and then interview a number of environmental educators in Environmental Education Centres in the state. She is being supervised by Dr J M O’Ttoole from the School of Education at the University of Newcastle.

**Why is the research being done?**
The purpose of the research is to better understand influences of fiction on environmental educators. Current research into pro-environmentally active people indicates that youthful exposure to the natural environment is the main motivator for pro-environmentalism. This exposure could become less available to many children as urbanisation continues in our society, potentially leading to less pro-environmental behaviour. As many young people consume large amounts of television, books and internet, perhaps this is an alternative method of encouraging pro-environmental behaviour.

**Who can participate in the research?**
We are inviting teachers in Australian Environmental Education Centres to participate in this study. This cohort has been selected as an appropriate group as its members are actively engaged in promoting pro-environmental issues through their work in environmental education and promoting pro-environmental behaviour.

**What choice do they have?**
Participation in this research is entirely their choice. Only those people who give their informed consent will be included in the project. Whether or not they decide to participate, their decision will not disadvantage them or the department.

If they do decide to participate, they may withdraw from the project at any time without giving a reason and have the option of withdrawing any data which identifies them.

**What would they be asked to do?**
If they agree to participate, they will be asked to answer questions in a semi-structured interview format. The initial interview should last approximately one hour and will be recorded.

If there are further themes to be developed, then the interviewer or interviewee may ask for a further interview to continue the discussion. After the interviews, participants will be able to read the transcriptions to ensure an accurate record of their intentions exists.

**How much time will it take?**
The interview should take about an hour. The option for, and duration of, any further interviews will be negotiated if necessary.

**What are the risks and benefits of participating?**
The benefits of participating are to education theory and practice. Environmental educators are looking for alternative means to get the pro-environmental message across to the general public. If fiction is identified as an influence in current environmental educators’ life choices, it could reveal an avenue for further examination and utilisation in education and beyond.

**How will their privacy be protected?**
Any information collected by the researchers which might identify them will be stored securely and only accessed by the researchers unless they consent otherwise, except as required by law. Data collected will be stored according to University protocols. Hard copies of the transcripts will be secured in a locked cupboard in the supervisor’s storeroom. The vocal interviews will be erased once the transcripts have been completed and the transcripts will have identifying numbers rather than names attached to them. The identifying numbers and the actual names will be kept in a separate place to the transcribed interviews.

Computer records will be kept in a password protected file on a university computer, with a back-up on a hard drive, also password protected. Data will be retained for at least 5 years at the University of Newcastle.

How will the information collected be used?
The data collected will be used for Margaret Freestone’s PhD Thesis and potentially for papers in industry specific journals. Individual participants will not be identified in any reports arising from the project. They will be able to review the recording and or transcripts to edit or erase their contribution. Participants in the interview stage of the study will be provided with a summary of the results of the research

What do they need to do to participate?
Read the Information Statement and be sure they understand its contents before they consent to participate. If there is anything they do not understand, or they have questions, contact the researcher.

If they would like to participate in the interview stage, they are asked to please fill in the contact details. If they chose to participate in the interview stage, they will be contacted as soon as possible to arrange a convenient time for the interview.

Further information
If you would like further information please contact Dr J M (Mitch) O’Toole on 024921 7822 or email mitch.otoole@newcastle.edu.au or Margaret Freestone on 0427 247 881 or margaret.freestone@uon.edu.au

Thank you for considering this invitation.

[Signature]

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Margaret Freestone
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[Signature]

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Appendix 3. Education for Sustainability and Environmental Education.

As can be seen from the literature, there is confusion amongst some people as to the definition of Environmental Education and Education for Sustainable Development (EfSD). In Section 1.2, the concept was raised that this research may be seen as an Education for Sustainable Development (EfSD) exercise, as fiction may be seen as fulfilling the criteria for EfSD. EfSD incorporates the triple bottom line of considering the cultural, economic and environmental concerns of sustainability (Publications, 2010).

The Australian National Action Plan (Arts, 2009, p. 9) lists the seven principles for Education for Sustainability to address methods of transformational thinking for a sustainable future. These principles are listed here, along with how this project may be seen to fulfil the criteria.

The first principle listed in the National Action Plan is **Transformation and change**

Education for sustainability is not simply about providing information but involves equipping people with the skills, capacity and motivation to plan and manage change towards sustainability within an organisation, industry or community.

This relates to this project as it can be seen as providing people, specifically teachers, with complementary skills encouraging the use of stories to encourage capacity building and motivation for transformation and change within their own lives and into their working sphere. Teachers will be able to plan to use the identified influential pro-environmental texts and text types or genres as part of their teaching pedagogy.

The second principle is **Education for all and lifelong learning**

Education for sustainability is driven by a broad understanding of education and learning that includes people of all ages and backgrounds and at all stages of life and takes place within all possible learning spaces, formal and informal, in schools, workplaces, homes and communities.

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Individuals of all ages and cultural backgrounds and in all leaning situations, whether they are formal or informal, can have interest in stories. Research discussed in the Section 2.3 suggests that influential stories stay with people for life, influencing both their attitudes and behaviour. While most people begin reading fiction while at school, there is no limit to the age people also may take up reading stories or fiction.

The third principle is **Systems thinking**

Education for sustainability aims to equip people to understand connections between environmental, economic, social and political systems.

Research discussed in Sections 2.1 and 2.3 indicates that Plot and the interplay of characters in stories help people understand interpersonal and cultural connections and networks, which they are then able to transfer out of the texts to real world situations to help them understand connections between environmental, economic, social and political systems.

The fourth principle is **Envisioning a better future**

Education for sustainability engages people in developing a shared vision for a sustainable future.

Stories illustrate different possibilities by using creating locations, characters and situations to which the reader is not normally exposed. They also have the power to engage readers in developing a shared vision as they discuss with associates and future generations the stories they have heard or read. This co-operative reflection may lead to shared visions or impressions from the texts.

The fifth principle is **Critical thinking and reflection**

Education for sustainability values the capacity of individuals and groups to reflect on personal experiences and world views and to challenge accepted ways of interpreting and engaging with the world.

In reading, research suggests that individuals use personal experiences to comprehend issues and revelations in stories (Section 2.4). This may help an
individual understand his/her own personal experiences and may encourage mental challenging of the culturally accepted ways of interpreting and engaging with the world. Critical thinking encourages examining different aspects of a situation, such as is often presented in fiction.

The sixth principle is **Participation**

Education for sustainability recognises participation as critical for engaging groups and individuals in sustainability.

When stories influence or transport an individual (Section 2.4), they often repeat it to others, discuss it and expand on its relevance to their situation (Section 2.12). Stories have the ability to alter personal attitudes and may empower the reader to make decisions based on the more recent information they have acquired.

The final principle is **Partnerships for change**

Education for sustainability focuses on the use of genuine partnerships to build networks and relationships, and improve communication between different sectors of society.

Stories can help build social networks and relationships, and improve communication between different sectors of society as they discuss and recognise knowledge gained from stories.
## Appendix 4. Recalled Children’s books

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<th>Recalled children’s books</th>
<th>Category</th>
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<td>Andrew Lansdown <em>With my Knife</em></td>
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<td>Animal character books</td>
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<td>Appleton, Victor II <em>Tom Swift</em></td>
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<td>Awdry, W <em>Thomas the Tank Engine</em></td>
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<td>Babysitters Club books</td>
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<td>Bach, Richard <em>Jonathon Livingston Seagull</em></td>
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