

Children Voice Biophilia; the Phenomenology of Being In Love with Nature

Darius Kalvaitis

Colby-Sawyer College
darius.kalvaitis@colby-sawyer.edu

Rebecca Monhardt

Loras College
Rebecca.Monhardt@loras.edu

Abstract: Drawing from a theoretical framework of Ecopsychology and Biophilia this phenomenological study explored the following research question; What is the meaning of the human-environment relationship for children? This qualitative investigation utilizes data from writing samples and follow up focus group interviews with 68 children providing a robust sample of 6-12 year olds perspectives. Qualitative data analysis software using QSR Nvivo ® 7 & 8 was used to systematically provide topic, analytic, matrix and categorical coding for the 265 pages of textual data. Results indicate that children have a love of nature; a positive deep-seated intellectual and emotional appreciation for nature based on “experiences through” and “affection for” nature. When children expressed their relationship with nature they often did so from a place of positive emotional friendship or unconditional love. This study provides a visual representative diagram based on quantifiable qualitative data illustrating the bonds between children and nature. The biophilic results show that children are “falling in love” with nature and this representation can provide a glimpse into the possibility of “standing in love” with nature as people grow into adulthood.

Keywords: Biophilia, Sustainability, Phenomenology, Nvivo, Focus Groups, Love

Darius Kalvaitis is an early childhood educator with a passion for connecting people with nature. He has been involved in multiple Environmental Education and STEM projects with pre-service teachers.

Rebecca Monhardt is an Associate Professor with expertise with outdoor science education, qualitative research and a focus on STEM education.

Introduction: Children's Lives in Nature

When children set foot outside they find themselves in a new world; one yet to be defined and understood by them. As they walk into the fields, woods and neighborhoods of their lives they are open to all potential futures. When they return from outside they return ready to share their stories and feelings of what they learned, of what they experienced and how it impacted them. This is an article which aims to describe the stories and feelings that children have for nature from their own words and ways of understanding. This study provides a holistic model of the "Child/Nature" relationship for children from 6-12 years in age.

The Nature Deficit Disorder movement pioneered by Richard Louv's "Last Child in the Woods" (2005) suggested that children's interactions with nature are increasingly becoming more limited. However, many children still have a relationship with nature which comes in many shapes and sizes. Young children's relationship with nature is a starting point for all future human interactions with the natural world and has a direct impact on the future of the sustainability movement.

Phenomenological Research

Using a qualitative phenomenological research approach (Moustakas, 1994; Polkinghorne, 1989) this study aimed to paint a picture of children's relationship with nature. Philosophically, there has been increased interest in reevaluating people's relationship with nature and its underlying assumptions (Brown & Toadvine, 2003). Phenomenological inquiry has been looking at clarification of our ethical and metaphysical assumptions about ourselves and the world around us. Phenomenology's starting point is a return to the world as it is experienced and it attempts to describe rather than explain, and to begin from a perspective free from hypothesis (Husserl, 1970; Schmitt, 1968).

I attempted to access the meaning or the essential features of the experience that children have with nature. The research questions included:

1. What is the meaning of the human-environment relationship for children?
2. How do children perceive and understand nature?
3. How do children describe their relationship with nature?

"Nature," as Williams (1980) has claimed, is one of the most complex words in our language. Nonetheless, its complexity is often obscured by the way that we use the term in a broad range of contexts. For the purpose of this study I defined nature as *the world of living things and the outdoors*.

An important feature of this study is that it used children's perspectives and voices to define their range of relationships with nature. The study highlighted children's thinking about their emic (Denzin & Lincoln, 1994) relationship with the environment by engaging with them rather than using them as passive sources of data and avoided using children as objects of study (Mayall, 1994). Can adults understand the world of children? In *The Little Prince* (1945) Saint-

Exupery claims that children need to explain their views to adults. My intent was just this, to do research *with* rather than *on* children (Christensen & James, 2008) by having them explain their thoughts and worldviews. Utilizing authentic student voice in seeking to understand how learners themselves perceive their relationship with nature (Hacking, Barratt, & Scott, 2007; Rickinson, 2001) is within the “emerging concentrations of evidence” (Rickinson, 2001) in sustainability education that this study is focused.

Literature Review: Where is the Love?

Scholarship on children and the way they perceive and relate to nature provides useful information for this study. The study of children has traditionally all too often focused primarily on cognition at the expense of our deepest levels of connection with the natural world (Chawla, 2002; Kahn & Kellert, 2002). It may be that the topic of love is not easy to study especially when it is between children and nature. However, recent research is providing a growing body of knowledge that affective attitudes towards nature are very important (Cheng & Monroe, 2012) and may directly influence future pro environmental behavior.

Biophilia for All

Wilson’s (1998) Biophilia hypothesis speaks of the affinity and connection humans have with the natural world. The term originates from the Greek words of *love* and *life*. Wilson claims that humans have a genetic predisposition to affiliate with life and life like processes. Several studies support Wilson’s Biophilia framework and its connection to human development (Carson, 1988; Kahn, 1999; Moore, 1986; Nabhan & Trimble, 1994). Many authors have suggested that the same inner need to associate with nature is present and even perhaps more significant for children (Hart, 1979; S. Kellert, 2002; Louv, 2005; Payne, 1998a; Sobel, 1996; White, 2001). When many educational researchers and social scientists consider a child’s relationship with nature they invariably do this from their own adult perspectives (Chawla, 1994). By doing so they may be missing something critically important such as the affective component that perhaps is strongest in children. Several researchers believe that there are significant differences between how children and adults make sense of the world (Sebba, 1991; E. Wilson, 1992). One of the main differences lies in children’s perceptions of nature as derived mainly from their sensory directed experiences while adult perceptions are more based on their pre-constructed ideas and thinking patterns. Wilson (1995) and Sebba (1993) suggested that “during the early stage of cognitive development *perception conducts through*. In contrast, human adult’s way of knowing is mostly based on *perception obeys thought*” (Hyun, 2005, p. 200).

In many spiritual and intellectual philosophical traditions humans have been historically separated themselves from nature (Clinebell, 1996). This human/nature dualism, where matter

and mind have been kept separate and where “we believe ourselves living inside bounded by our own skin, with everyone and everything else on the outside” (Barrows, 1995, p. 106); thus keeping our deepest emotions separated from our environment. In contrast, the conceptual framework of ecopsychology (Barrows, 1995; Roszak, Gomes, & Kunner, 1995) strives for a unified view of humans as living as part of an active organism where interactions between humans and nature are mutually dependent with no inherent separation.

Children’s Conception of Nature

Researchers have attempted to uncover certain aspects of the child-environment relationship for several decades (Alerby, 2000, 2001; Barraza, 1999; Bonnett & Williams, 1998; Campbell, Skovdal, & Campbell, 2013; Gebhard, Nervers, & Billmann-Mahecha, 2003; Hart, 1979; Hyun, 2005; Kahn & Kellert, 2002; Loughland, Reid, Walker, & Petocz, 2003; Moore, 1986; Payne, 1998a, 1998b; Rejesky, 1982; Shepardson, 2005; Shepardson, Wee, Priddy, & Harbor, 2007; Wals, 1994). More specifically, there have been a small number of focused exploratory studies that have attempted to gain insight into certain aspects of children’s thinking, perceptions, and conceptions of nature.

In the United Kingdom, Bonnett and Williams (1998) investigated 32 fifth- and sixth-grade students’ attitudes toward nature and environment. They found that children’s attitudes toward nature are generally positive. Bonnett and Williams findings suggested that children demonstrated high levels of emotion and concern towards the environment; especially towards animals and trees. In Australia, Loughland and colleagues (2003) conducted a phenomenographic study of 2,249 students in 70 schools. Students ages 9-17 were asked to write what they understood of the word “environment” in an open-ended question. The analysis of students’ responses demonstrated six qualitatively different conceptions of the environment that fit into the two categories of (a) object focus and (b) relation of focus. “This study showed that the limiting conceptions were associated with an idea that the environment is some sort of *object*, whilst the more integrated conceptions are associated with an idea that there is some sort of *relation* between people and the environment” (Loughland et al., p. 14). Younger students tended to have a more relational focus while older students had a more object focus towards the environment indicating that perhaps children grow out of the ecopsychological view of the world.

Researchers such as Sobel (1996, 2008) and Kellert (1985, 1987) have investigated young people’s and children’s attitudes from a developmental framework and have found that there may be specific sensitive periods which are optimum for nature exploration and bonding. These types of early nature experiences provide children opportunities for the development of values and attitudes that they will take with them as they grow into adulthood (Kahn & Kellert, 2002; S. Kellert, 2003; R. A. Wilson, 1996).

Method: Looking for Answers? Ask the Children.

This research was conducted in a two-phase process. The first phenomenographic phase which was published in *Environmental Education Research* (Kalvaitis & Monhardt, 2012) detailing the visual and quantitative results from analysis of 168 children's drawings and written narratives. This more extensive phenomenological second-phase is described in this article and explains the qualitative results based on written narratives and extensive focus group conversation with 68 children located in a single public elementary school in the Rocky Mountain West about their experiences, interactions and relationships with nature.

To select focus group participants I reviewed the drawings from 168 children (Kalvaitis & Monhardt, 2012) and made a list of children that I would like to interview. I then solicited teachers support in the selection of focus group participants. The selection of focus groups that would actually "work" was an important consideration (Kahn, 1999) and teacher input was quite valuable in maximizing productive data collection. Once the lists were finalized, I scheduled two gender-specific (Greenbaum, 1987; Greig & Taylor, 1999; Hill, Laybourn, & Boreland, 1996) focus group interviews per grade level.

The 68 children that participated contributed a wide range of experiences and accounts that reflected a multitude of topics and situations. The children's conversations were primarily self-directed, the participants rapidly moved to talking about the most meaningful aspects of their interactions with nature. The majority of these conversations centered on specific remembered experiences that the children had in outdoor settings which were memorable and touched a deep sense of connection with nature.

Focus Group Interviews with Children

The essence of a focus group interview is its explicit use of the group interaction which further stimulates reflection of the participants and has advantages over individual interviews. Children in individual interviews are more likely to be affected by the perceived power and status of the adult interviewer than they are in group interviews (Gabriano, Stott, & Erickson, 1992; Spencer & Flin, 1991). Even though the influences that affect focus group interviews with adults such as establishing rapport, maintaining confidentiality, and stating appropriate questions are also relevant to children, there are a number of other considerations to take into account when working with children. Communication with children needs to be modified to their level of cognitive and linguistic abilities and it is important to use techniques and settings with which the children are familiar (Gabriano, et al., 1992; Vaughn, Schumm, & Sinagub, 1996). Researchers sometimes recommend having single gender focus group interviews for children (Greig & Taylor; Hill et al., 1996). I found that boys and girls are sometimes unreceptive to each other and can have marked differences in their interests (Greenbaum, 1987).

I had planned to meet with 20 focus groups; however, by the 17th focus group, I had reached data saturation (Agar, 1996; Richards, 2005) and concluded the interviews. In total there were 17 gender specific focus group interviews conducted with 68 students spanning grade

levels: two in first grade, four in second grade, three in third grade, four in fourth grade, and four in fifth grade. Each was audio recorded and transcribed verbatim into text with in 549 minutes of audio and 265 pages of text. This focus group interview type could be characterized as semistructured, as based on pioneering work of Piaget (1969) and was designed to elicit open-ended conversation and follow the lead of children on a specific topic, rather than asking specifically focused questions, which may inhibit the flow of discussion between the children.

Analysis Using Qualitative Data Analysis Software

I used standard qualitative content analysis (Krippendorff, 2004; Weber, 1990) procedures for the written narratives and focus group interview transcript. By using emergent coding, I established categories as I read over the data. I supplemented the analysis of the interview data with the modified Van Kaam Method of phenomenological analysis as presented by Moustakas (1994). Using the individual textural-structural descriptions, the ultimate aim of this method is to “develop a composite description of the meanings and essences of experience, representing the group as a whole” (Moustakas, p.121).

I used the Nvivo computer software program from QSR for the organization, data handing, coding, memoing and searching during this process (Leech & Onwuegbuzie, 2011; Richards, 2005). My goal during the initial stages of analysis was to gather together all the information about a topic or concept so that I could review it and then refine my thinking about the category. I began by reading the written narratives and focus group interview transcripts over and over, coded segments inductively into meaningful free nodes (themes) which ranged in size from words, phrases, sentences, or entire paragraphs (Richards, 2005). In the early stages of data analysis all of the nodes that emerged during coding were kept as free nodes. If a new theme appeared I would add it as another free node. Text searching allowed me to rapidly locate specific or related words throughout the transcripts and find relevant information on the context of a specific theme. As the list of free nodes (themes) grew I began to get a picture of how to organize them into larger hierarchical categories and thus began to reorganize them into tree nodes (larger themes). Figure 2 displays the main free and tree nodes (themes) from the analysis. My goal was to learn from the data, so I kept revising it until I began to see some clear patterns and explanations (Bergin, 2011).

Following analytic coding, with the help of the memos, I began to view the categories or themes created as a collection and was able to identify logical clusters of categories and began making tree nodes for larger topics and concepts. For example, *biking, hiking, sports, tree climbing* and *horse riding* were placed under the tree node of *activities*. I followed this type of organizational structure until all but 10 free nodes were organized into tree nodes. To aid the readers understanding the **main themes** (tree nodes) in the results section are emphasized by **bold text**.

Results: Nature is a Friend that I Love

Qualitative Themes

The children really emphasized how connected to the natural world and the living things around them they actually were as this 5th grade girl explained,

“Nature and me get along really well. Every time that I am out hiking I just love being with nature. It is like my first best friend. It was my first best friend ever, that I ever had. It is just really good.”

This theme was almost universal throughout the grades, and was repeated at almost every focus group interview. A “*friendship with nature*” was the way many children explained their relationship with nature. They were practically speaking about nature as if it was person in the same way they play with a friend; they were playing with nature as a living organism. It was apparent that this connection was forged through their direct interaction, usually in the form of unstructured play, within the natural world. A large majority of children spoke about how **play** is an important part of what they do in nature, “*Nature is fun because you get to play in it.*”

Children expressed that their **like or love** of nature comes from the many things that nature provides them, a **life support system** being one of the predominant features. A third-grade girl expressed this same theme by saying,

“My relationship with nature is very important to me because if we did not have trees we would suffocate, or something like that. Because they make air for us. And I think it is just a beautiful thing. I guess we would not be here if we did not have any nature.”

Children made the mental connection that nature is their **home** just as much as their houses and communities are as this child does when he said, “*I mean nature is home just as much as my house or room.*” Children throughout the grade levels frequently shared that the **beauty** of nature is something very important to them, “*I just love nature. Well, because it is just so beautiful. It is just gorgeous; probably it is my favorite place in the world to play.*” The awe that children spoke about was noteworthy even if they were referring to simple day to day sights such as flowers or butterflies.

Nature providing **freedom** is a theme throughout the grade levels, but it became more apparent for children in the upper elementary grades. Fourth and fifth grade children spoke about the sense of freedom that they had when they are alone in nature. Those children felt the pressures of life and expressed that they could leave those stresses behind with a step into the natural world.

- “*I like being alone in nature. You can look at things. Nobody is constantly talking to you and not letting you do anything. You’re just free to see what you can find and to just enjoy.*”

- *“Like you are free outside. The bonds have broke. Like when you’re inside there are chains, and when you’re outside there are none.”*
- *“And then, the other thing about being locked up. It is kind of, indoors is a zoo. And when you get to the door, the zoo doors break and you’re out in the wild. Like in Madagascar [the animated children film], like in a dream you can do whatever you want.”*

It was during times that children were alone that they shared their ability to experience this **freedom**. Children could find refuge in nature from their siblings, as this third grade girl expresses, *“Okay, well, I feel nature is a place where I can hide from my brother when...and I can just **play** and be free. I can just go up into my **tree house** and fly airplanes.”* This sense of **freedom** that children expressed was connected to their ability to **relax** and rejuvenate in nature as well. A fifth grade girl expressed, *“It [nature] is calming and soothing and fun and makes your mind clear.”*

It was apparent that children used nature as a **learning** environment. There was a sense of curiosity and desire for **exploration** of the natural world for many children, such as this second-grade boy who said, *“I like the water because I liked looking at the water and studying about nature. I also like the water because I like exploring and finding things out about nature.”* **Animals** were a big part of what children were interested about **learning**. They shared their enthusiasm for learning outdoors, as this fifth grade girl, *“I love how nature is like the biggest classroom in the world.”*

The stories that the children shared about their experience came through many themes such as **family, animals, place** and **activities**. Yet, it was primarily through their **play** that the children had these experiences. Older children also included **work**, both as chores or academics, as the channel for their nature experiences.

Children of all ages expressed that their appreciation and connection to nature has been influenced by their siblings and parents. **Family** was a means for experiencing nature for many children, and this trend was more prominent in the younger grades. This connection was significant because children felt that nature brings families together as this girl expressed when she said,

“I think it is nice because you get to spend time with your family when you are out in nature. You can really enjoy your family along with your brothers and your sisters. It really helps.”

Many children expressed that their relationship with nature is through both wild and domestic **animals**. These children really thought that animals were *“cool”* and that they should be protected. Children spoke often of their pets and the special places that these living creatures hold in their hearts. Children spoke about pets, especially dogs and horses, playing a significant

role in many of their lives. This third-grade girl said, *“I love dogs a lot, I’m crazy about them. If there are any dogs in the books, in the book orders that we have here at school. I always, I usually get a dog book.”*

There were many children who were intimately connected to a special **place**. These places were often local ones that they had spent much time in and identified deeply with them such as this second grade boy, *“This river has been here since before I was born. That is why it is so important to me.”* Many children identified their favorite places as ones where they had positive experiences either alone or with their families. Other children were conscious and bothered that they did not have access to nice places to play outdoors. For example a third grade girl when asked by her peers why she plays mostly indoors said, *“Well you know, I would love to play outside but, I live in a busy new neighborhood. And there is just dirt all around my house and I have no grass.”* Other children, hearing her comments, responded about their immediate home environments, and it was apparent that they had a good understanding of what they liked in a place for nature experiences and playing.

Describing the activities the children engaged in through play was a significant portion of the interview data. Children were excited and eager to share descriptions of their adventurous activities in nature. Hiking, tree climbing and horseback riding were the activities mentioned most. Interestingly, tree climbing was one of the primary activities that they wrote and spoke about. *“I love climbing trees because I love the green leaves and the view from above.”* Many boys were also involved in sports, *“I really like nature; it is the second most valued thing that I like. The only thing that I like more is playing sports”*. Many of these sports enthusiasts felt that one of their connections with nature was through playing sports outdoors. The coding map below shows the nodes compared by coding references that helped guide the results.

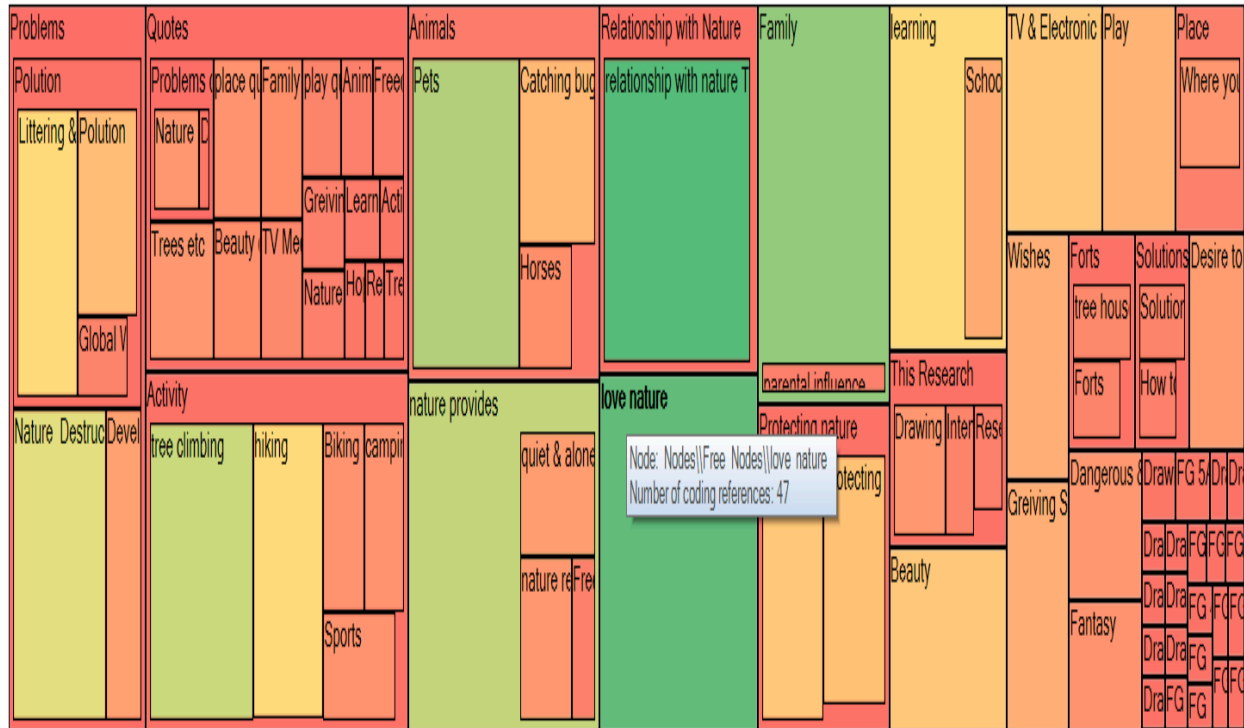


Figure 1. Coding frequencies of written narrative and focus group interviews; larger boxes represent higher coding frequencies of the qualitative data. The Love Nature node received 47 coding references.

Model of the Relationship

Identifying specific themes was not difficult, but putting all the pieces of the puzzle was challenging as it required integrating all of the specific results into one model that paints a picture. Voila, I developed a model that displays children’s “representations of concepts about a particular domain, showing the relationships among them” (Miles & Huberman, 1994, p. 134). The process of developing a model to encapsulate my findings was one that I continually revised as I had new insights to clarify my thinking. The model presented in Figure 2 is my final inductive graphic representation of children’s relationships with nature.

Even though much of the data reported previously may have significant grade level trends that might be attributed to developmental levels or socio-cultural influences, I have not included them in the above model. Therefore, this model does not generalize by grade level and is an attempt to encapsulate the entire human-nature interaction for the participating 68 children.

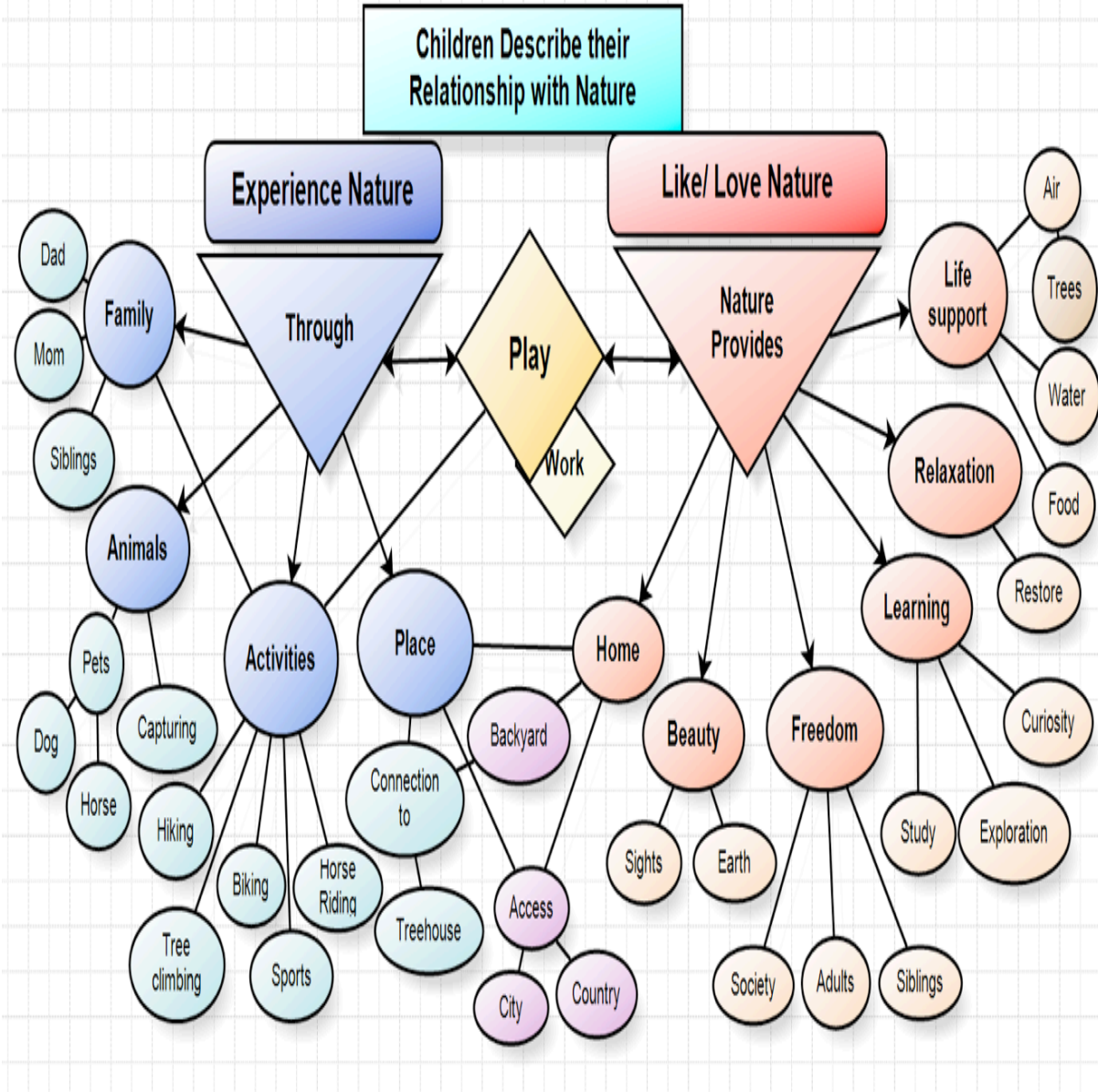


Figure 2. Model of how children’s describe their relationship with nature. Main themes (tree nodes) are in bold and connections with sub themes are shown.

The right side of the model displays children’s *like/love* of nature because it provides them: **play/work**, **life support**, a **home**, **beauty**, **freedom**, **learning**, and **relaxation**, all of which are the predominant themes. The left side of the model displays children’s *experience* of nature through: **play/work**, **family**, **animals**, **place** and **activities**, which are again the principal themes that emerged from the data.

The results indicated that children overwhelmingly had a positive view of their relationship with nature. This same trend is apparent, as displayed by the frequency counts of the words *like* and *love* in the quantitative data from the 2012 study (Kalvaitis & Monhardt).

As this was one of the strongest trends in the data, the model incorporates *Children like/love nature* as a main component of children’s relationships with nature. Other trends indicated that **family, animals, nature provides** and **trees** were also very significant topics for children to write about and discuss. Table 1 quantitatively displays the top coding frequencies and hierarchy indicating the top 22 nodes in the analysis.

<u>Nodes</u>	Number of coding references	Number of items coded (groups)
\Free Nodes\\ Love nature	47	19
\Tree Nodes\\ Family	40	12
\Tree Nodes\\ Animals \Pets	35	14
\Tree Nodes\\ Nature provides	33	13
\Tree Nodes\\ Activity \tree climbing	32	15
\Tree Nodes\\ Problems \Nature Destruction Extinction	28	7
\Tree Nodes\\ Activity \hiking	22	14
\Tree Nodes\\ Learning	22	12
\Tree Nodes\\Problems\Pollution\Littering & Clean up	22	10
\Free Nodes\\ Beauty	18	9
\Free Nodes\\TV & Electronic Media	18	5
\Tree Nodes\\Protecting nature\restoring preserving	18	11
\Tree Nodes\\Protecting nature\protecting animals	17	9
\Tree Nodes\\Problems\Pollution\Pollution	16	7
\Tree Nodes\\ Animals \Catching bugs & animals	15	8
\Free Nodes\\ Play	14	8

\Free Nodes\\Grieving Sadness	13	8
\Free Nodes\\Wishes	13	10
\Tree Nodes\\learning\School experiences	12	7
\Tree Nodes\\Problems\Development pop growth	11	4
\Free Nodes\\Desire to be in nature	10	5
\Tree Nodes\\ Nature provides \quiet & alone in nature	10	6

Table 1. Top coding frequencies. These included in the model shown in bold.

The data clearly indicated that children *like/love* nature as they spoke about this concept more frequently than about any other concept. This led me to the question, “Why”? Why was there such universal *like/love* for nature from the 68 participating children? By looking at the results of the analysis I found that children believed their relationship with nature was a positive one for many reasons. Overwhelmingly they liked/loved nature because it provided them something very tangible; something they needed at that point in their lives.

Children’s appreciation of and attachment to nature was mediated through their experiences in nature. The children spoke about their positive lived experiences in nature and it was these affirmative encounters with nature which allowed them to experience such a sense love with nature. In the model in Figure 2, I have not placed one of the above-mentioned headings, left or right, above the other because the data indicated that one was just as significant as the other. In other words, *experience* has a direct influence on *like/love* and therefore *like/love* has a direct influence on *experience*; they walk hand-in-hand at the same level often while playing.

Discussion: Children Portray Biophilia Lessons

I interviewed these children to learn even more about their lives and connections to nature and was able to create a model that begins to clarify the mysterious intricacy of children’s thinking and feeling toward nature. The results indicate that children have a positive deep-seated appreciation for nature and this fondness for nature is directly tied to their lived experiences in nature. Children simply love nature. The predominant themes from the study clearly indicate that nature provides children with opportunities for play/work, home, beauty, freedom, learning, and relaxation as well as a critical life support system. Interestingly, the children did not take these things for granted and were aware of the real benefits nature provides them. These are things that

we as adults do not often focus on or simply overlook because of their simplicity. Yet, they were at the core of children's descriptions. While children experience nature, they make meaning of the things they see, touch, smell and taste.

The participating children did not see themselves as separate from nature. Children described their relationship with nature as a "*friendship*" and that they were "*related*" to nature just as much as they were to their families. The children understood that they live in an ecological context just as much as a social one. The children echoed Barrows (1995) vision of human/nature connectedness that sustainability education should "shift the paradigm of a bounded, isolated self towards a vision of a self that is permeable, interconnected not only with other human selves but with all living beings and processes" (p. 103).

The findings from this study concur with Loughland and colleagues' (2002); in that children saw their relationship with the environment through a relational focus rather than an object focus which espouses an ecopsychological framework. The children described a very relational understanding of nature and one fifth-grade child said "*I don't spend every second outside, but when I am outside I almost feel like, like I'm alone with nature, like I become nature.*" These children did not need any fundamental reorganization of their thinking to be ecological stewards; they were already in love with nature. The positive tone and affirming portrayals in the data indicate that the relationship between children and nature is a beneficial one often providing moments of awe and wonder.

The above-mentioned conclusions lead to questions of "why": Why do these children display such a strong attraction and positive relationship with nature? Why are the responses shared in the written narratives and focus group interviews so overwhelmingly positive? Could it be that they see themselves as a direct part of nature, having not entered into the human/nature duality mindset, and therefore, are reflecting on themselves as well? From their responses it is appears to be that the answer to this question is that nature provides them with something which they think they need or crave at this point in their lives. The results indicate that children were not able to clearly distinguish if these benefits were physical, emotional, cognitive or spiritual; to them it was all the same. To them, this was not important because young children see the world in a more holistic fashion where physical, mental and social conditions are woven together to form a single reality, a reality in which nature is seen as nurturing and supporting their many tangible needs and desires. The messages the children shared are ones of unconditional love. The children assert that nature shares with everyone "*it meets*". From the findings, it is clear that nature had met many of the children and provided them with a sense of such unconditioned love.

Biophilia

The nine Biophilia dependencies, which examine "our inherent inclination to affiliate with natural processes and diversity, shed light on the extraordinary diversity of ways we

continue to rely on and benefit physically, emotionally, intellectually, and morally from the richness of our associations with the natural world” (Kellert, 2004, p. 14). Many characteristics of these dependencies were included in the children’s descriptions and explanation. Figure 3 depicts the connections located between the thematic results portrayed in children’s descriptions of their relationship with nature and the nine Biophilia dependencies as proposed by Kellert and Wilson (1993) and Kellert (2004). Children had a strong sense of emotional connection with nature and it seemed as if the children were innately wired for this attachment, which instilled in them an ethic of care for nature.

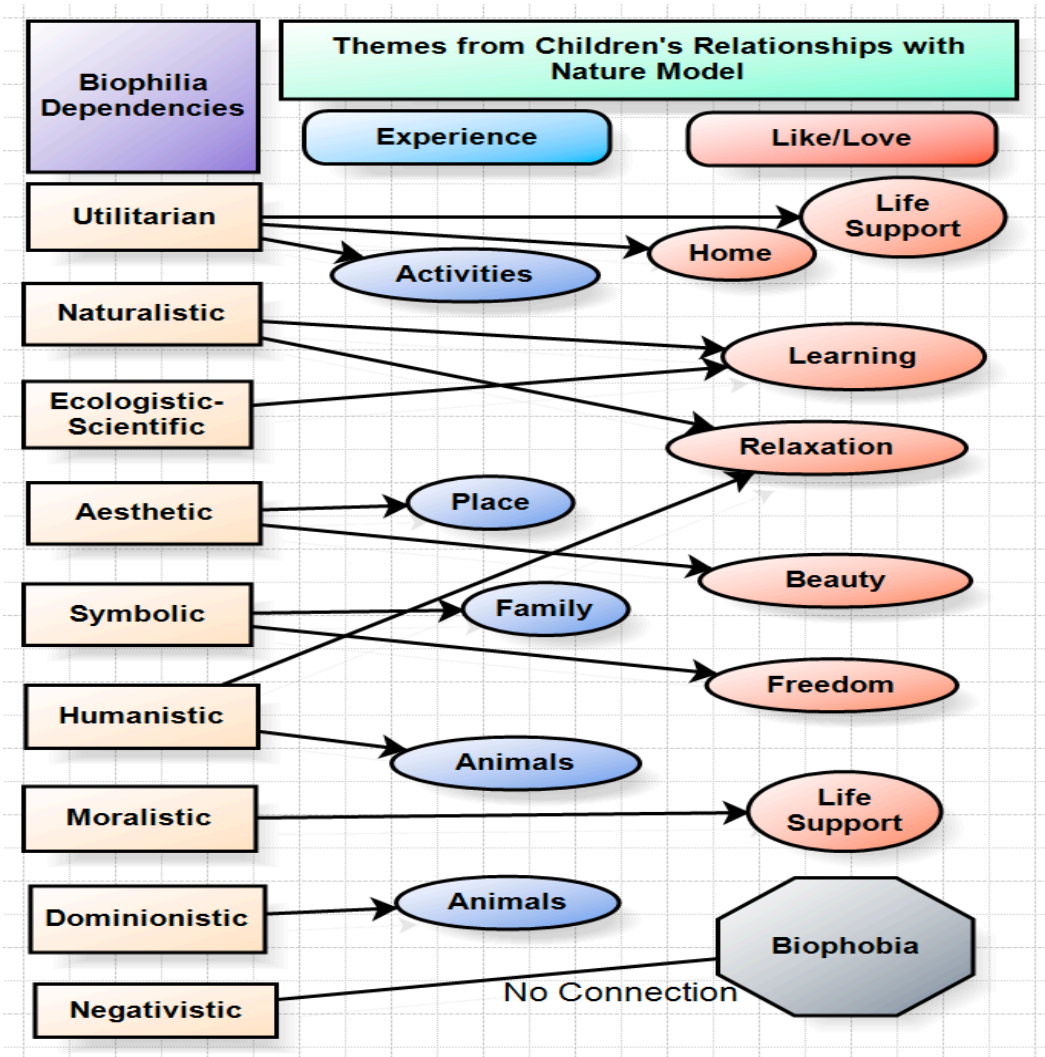


Figure 3. Biophilia dependencies and their connections to thematic result.

The one key recommendation that the findings of this study provided is that sustainability education should be aligned with children’s core understanding of the world. Nature should be studied within the context of children’s lives because it is about *them* and *their* present and future

connection to the earth. Sustainability education should be about seeing nature as connected to people rather than as a topic separate from human emotions and outcomes. The “new sociology of childhood” (James & Prout, 1997), which proposed that children are dynamic participants in the social constructions of childhood, claims that children themselves are redefining childhood. This emerging field claims that even young children, by simply being themselves and reflecting on their experiences, have the potential to change society.

Limitations

The emphasis in my research was not about finding causality or generalizing results and therefore, predicting future outcomes. Rather, the emphasis was on documenting and describing a particular group of children’s experiences. Therefore, the findings should only be contextualized to the study participants and should be seen as a “snapshot in time” for these particular children. This research, because it is an exploratory, descriptive study, was not based on randomly selected participants and never attempted to generalize to other students in other locations. Rather, it was my intent to raise the readers’ awareness of similar features that may be found in other children. This research was of a particular group of children located in a single public elementary school in the Rocky Mountain West; therefore, the results and findings are only a snapshot of their experience. Researchers (Anderson-Brolin, 2002; Satterwaitte, Hart, Levy, Ross, & Smith, 1996) found that socioeconomic factors influence children’s perceptions of their environment in multiple ways.

Conclusions

The sustainability movement has been busy sharing facts about the ecological and social situation; but facts are not enough to convince most to act on the part of the environment. An affective component could be utilized to nourish peoples motivation to act for the environment. The views of children are often powerful motivators for adult action as we care about our children and their futures dearly. Children grow into the adults of tomorrow. By taking seriously the positive deep seated relationship we may be able to shape social movements in a fresh direction. In a direction based on caring and working in support of what children love, on caring and supporting a human connection with nature.

These results show how children are “falling in love” with nature and this representation can provide a glimpse into the possibility of “standing in love” with nature as people grown into adulthood. To save the environment we ought to first understand what and how nature provides for children and that this could be a reciprocal relationship in which nature benefits as well. This is the starting point for learning to cultivate a loving biophilic relationship with nature and a jumping off point as we grown into adulthood and beyond. We will only save what we (us as children) love(d).

References

- Agar, M. H. (1996). *The professional stranger: An informal introduction to ethnography*. San Diego, CA: Academic Press.
- Alerby, E. (2000). A way of visualizing children's and young people's thoughts about the environment: a study of drawings. *Environmental Education Research*, 6(3), 205-223.
- Alerby, E. (2001). Roaming in the landscape of thought: a study of the thinking of children about the environment. *Didacta Varia*, 6(2), 29-43.
- Anderson-Brolin, M. (2002). *Children's right to a good physical environment: central concepts and problem definitions*. Paper presented at the Save the Children, Sweden.
- Barraza, L. (1999). Children's drawings about the environment. *Environmental education research*, 5(1).
- Barrows, A. (1995). The ecopsychology of child development. In T. Roszak, M. Gomes & A. Kanner (Eds.), *Ecopsychology: restoring the earth healing the mind*. San Francisco: Sierra Club Books.
- Bergin, M. (2011). NVivo 8 and consistency in data analysis: reflecting on the use of a qualitative data analysis program. *Nurse researcher*, 18(3), 6-12.
- Bonnett, M., & Williams, J. (1998). Environmental education and primary children's attitudes toward nature and the environment. *Cambridge Journal of Education*, 28(2), 159-175.
- Brown, C., & Toadvine, T. (2003). Eco-Phenomenology: An Introduction. In C. Brown & T. Toadvine (Eds.), *Eco-Phenomenology: Back to the Earth Itself*. Albany, NY: State University Of New York Press.
- Campbell, E., Skovdal, M., & Campbell, C. (2013). Ethiopian students' relationship with their environment: implications for environmental and climate adaptation programmes. *Children's Geographies*, 11(4), 436-460.
- Carson, R. (1988). *The sense of wonder*. New York: Harper Collins.
- Chawla, L. (1994). *In the first country of places: nature, poetry, and childhood memory*. Albany New York: State University of New York press.
- Chawla, L. (2002). Spots of time: manifold ways of being in nature in childhood. In P. H. Kahn & S. R. Keller (Eds.), *Children and nature: psychological, sociocultural, and evolutionary investigations*. Cambridge, Massachusetts: The MIT press.
- Cheng, J. C.-H., & Monroe, M. C. (2012). Connection to Nature Children, Äôs Affective Attitude Toward Nature. *Environment and Behavior*, 44(1), 31-49.

- Christensen, P., & James, A. (2008). *Research with children: Perspectives and practices*: Routledge.
- Clinebell, H. (1996). *Eco-therapy: healing ourselves healing the earth*. New York: The Haworth Press.
- Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of qualitative research*. Thousand Oaks, CA: Sage Publications.
- Gabriano, J., Stott, F., & Erickson, I. (1992). *What children can tell us*. San Francisco: Jossey-Bass.
- Gebhard, U., Nervers, P., & Billmann-Mahecha, E. (2003). Moralizing trees: anthropomorphism and identity in children's relationship to nature. In S. Clayton & S. Opoyow (Eds.), *Identity and the natural environment: the psychological significance of nature*. Cambridge, M.A.: Massachusetts Institute of Technology.
- Greenbaum, T. (1987). *The practical handbook and guide to focus group research*. Lexington, MA: Lexington Books.
- Greig, A., & Taylor, J. (1999). *Doing research with children*. London: SAGE publication.
- Hacking, E., Barratt, R., & Scott, W. (2007). Engaging children: research issues around participation and environmental learning. *Environmental Education Research*, 13(4), 529-544.
- Hart, R. (1979). *Children's experience of place*. New York: Irvington publishers Inc.
- Hill, M., Laybourn, A., & Boreland, M. (1996). Engaging with primary aged children about their emotions and well-being: methodological considerations. *Children and society*, 10, 129-144.
- Husserl, E. (1970). *Logical investigations*. New York: Humanities Press.
- Hyun, E. (2005). How is young children's intellectual culture of perceiving nature different from adults'? *Environmental Education Research*, 11(2), 199-214.
- James, A., & Prout, A. (1997). *Constructing and reconstructing childhood; contemporary issues in the sociological study of childhood*. London: Falmer Press.
- Kahn, P. (1999). *The human relationship with nature: Development and culture*. Cambridge, MA: MIT Press.
- Kahn, P., & Kellert, S. (2002). *Children and nature : psychological, sociocultural, and evolutionary investigations*. Cambridge, Mass.: MIT Press.

- Kalvaitis, D., & Monhardt, R. M. (2012). The architecture of children's relationships with nature: a phenomenographic investigation seen through drawings and written narratives of elementary students. *Environmental Education Research, 18*(2), 209-227.
- Kellert, S. (1985). Attitudes Toward Animals: Age-Related Development Among Children. *Journal of Environmental Education, 16*(3), 29-39.
- Kellert, S. (2002). Experiencing nature: affective, cognitive, and evaluative development and children. In P. Kahn & S. Keller (Eds.), *Children and nature: psychological, social cultural, and evolutionary investigations*. Boston: Massachusetts Institute of Technology.
- Kellert, S. (2003). *Kinship to Mastery: Biophilia in Human Evolution and Development*. Shearwater Books.
- Kellert, S., & Berry, J. (1987). Attitudes, knowledge, and behaviors toward wildlife as affected by gender. *Wildlife Society Bulletin, 15*(3), 363-371.
- Krippendorff, D. K. (2004). *Content Analysis: An Introduction to Its Methodology*: Sage Pubns.
- Leech, N. L., & Onwuegbuzie, A. J. (2011). Beyond constant comparison qualitative data analysis: Using NVivo. *School Psychology Quarterly, 26*(1), 70.
- Loughland, T., Reid, A., Walker, K., & Petocz, P. (2003). Factors influencing young people's conceptions of environment. *Environmental Education Research, 9*(1).
- Louv, R. (2005). *The last child in the woods: Saving our children from nature deficit disorder*. Chapel Hill, NC: Algonquin Books.
- Mayall, B. (1994). *Children's childhoods observed and experienced*. Philadelphia, PA: Falmer Press.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage.
- Moore, R. C. (1986). *Childhood's domain: play and place in child development*. Dover New Hampshire: Croom Helm.
- Moustakas, C. (1994). *Phenomenological research methods*. London: Sage.
- Nabhan, G. P., & Trimble, S. (1994). *The geography of childhood : why children need wild places*. Boston, Mass.: Beacon Press.
- Payne, P. (1998a). Children's' conceptions of nature. *Australian Journal of Environmental Education, 14*, 19-26.

- Payne, P. (1998b). The Politics of Nature: Childrens' Conceptions, Constructions and Values. In W. F. o. L. Filho (Ed.), *Environmental Education for Sustainability: Good environment, Good life*. New York: Peter Lang.
- Piaget, J., & Inhelder, B. (1969). *The psychology of the child*: Basic.
- Polkinghorne, D. (1989). Phenomenological Research Methods In R. Valle & S. Halling (Eds.), *Existential phenomenological perspectives in psychology* (pp. 41-60). New York: Plenum.
- Rejesky, D. (1982). Children look at nature; Environmental perception and education. *Journal of Environmental education*, 13 #4, 27-40.
- Richards, L. (2005). *Handling qualitative data: a practical guide*. London: Sage Publications
- Rickinson, M. (2001). Learners and learning in environmental education: a critical review of the evidence. *Environmental Education Research*, 7(3).
- Roszak, T., Gomes, M., & Kunner, A. (1995). *Ecopsychology: Restoring the Earth, Healing the Mind*. San Francisco: Sierra Club Books.
- Satterwaitte, D., Hart, R., Levy, C., Ross, D., & Smith, J. (1996). *The environment for children: understanding and acting on the environmental hazards that threaten children and their parents*. London: Earthscan.
- Schmitt, R. (1968). Husserl's transcendental- phenomenological reduction. In J. Kockelmans (Ed.), *Phenomenology* Garden City, NJ: Doubleday.
- Sebba, R. (1991). The landscapes of childhood : the reflection of childhoods environment in adult memories and children's attitudes. *Environment and behavior*(23), 395-422.
- Shepardson, D. (2005). Student ideas : what is an environment? . *Journal of Environmental Education* 6 (4), 49-58.
- Shepardson, D., Wee, B., Priddy, M., & Harbor, J. (2007). Students mental models of the environment. *Journal of Research in Science Teaching*, 44(2), 327.
- Sobel, D. (1996). *Beyond Ecophobia: Reclaiming the Heart in Nature Education* Great Barrington, MA: The Orion Society.
- Sobel, D. (2008). *Childhood and nature: Design principles for educators*: Stenhouse Publishers.
- Spencer, J., & Flin, R. (1991). *The evidence of children*. Oxford, UK: Blackstone Press.
- Vaughn, S., Schumm, J. S., & Sinagub, J. (1996). *Focus group interviews in education and psychology*. Thousand Oaks, CA: Sage.

- Wals, A. (1994). Nobody planted it, it just grew!: young adolescents' perceptions and experiences of nature in the context of urban environmental education. *Children's Environments, 11*(3), 1-27.
- Weber, R. (1990). *Basic content analysis* (2nd ed.). Newbury Park, CA: Sage.
- White, R. (2001). Moving from Biophobia to Biophilia: developmentally appropriate environmental education for children.
- Williams, R. (1980). *Problems in Materialism and Culture*. London: Verso.
- Wilson, E. (1992). *The diversity of life*. Cambridge, MA: Harvard University Press.
- Wilson, E. O. (1998). *Consilience*. New York: Knopf.
- Wilson, R. A. (1996). Starting Early: Environmental Education during the Early Childhood Years. ERIC Digest.