Young Voices: The Challenges and Opportunities That Arise in Early Childhood Environmental Education Research

Elizabeth Yvonne Shaw Boileau, Université de Montréal, Canada

Abstract

The number of early childhood environmental education programs are on the rise in Canada and although young children have been quite marginalized from environmental education research, better understanding young children's relationships with the natural world is increasingly seen as important. Including young children themselves in research is important; however, it is essential for researchers to utilize developmentally appropriate research tools and data collection methods, just as environmental educators should create programs that are congruent with the emotional, physical, and cognitive abilities of young children. Including young children in environmental education research can be a challenge, but there are several data collection methods that have proven to be successful, for example, the Mosaic approach, which is discussed in this article.

Resumé

Le nombre de programmes d'éducation relative à l'environnement pour la petite enfance augmente au Canada, et bien que la recherche en éducation relative à l'environnement ait largement négligé les jeunes enfants, on accorde de plus en plus d'importance à la compréhension de leur relation avec le monde naturel. Il est important d'inclure les jeunes enfants dans la recherche. Il est cependant essentiel que les chercheurs appliquent des outils de recherche et des méthodes de collectes de données conçues pour les enfants ; tout comme les animateurs devraient créer des programmes en harmonie avec les capacités émotionnelles, physiques et cognitives des jeunes enfants. L'intégration de la petite enfance dans la recherche en éducation relative à l'environnement peut comporter des défis, mais plusieurs méthodes de collecte de données se sont avérées concluantes, l'approche Mosaïque par exemple, qui est traitée dans l'article.

Keywords: environmental education research, mosaic approach, early childhood, children's rights, children and nature

Introduction

Outdoor learning and environmental education have many proven benefits for children (Robertson, 2008; R. A. Wilson, 1994; R. Wilson, 2008) and, as shown by a growing body of research, early environmental experiences are vital in developing a relationship with the environment and developing environmental

concern (Barratt Hacking, Barratt, & Scott, 2007). The lack of such experiences can lead to a loss of connection from the natural world and what Louv (2008) has called "nature deficit disorder." Informal environmental programs, such as nature play groups or early years programming offered by environmental institutions, can help parents and caregivers provide opportunities to nurture children's environmental learning as well as stimulate many facets of children's normal physical, emotional, and cognitive development. Environmental education can also be an ideal setting to develop naturalistic intelligence, "the ability to recognize and classify plants, minerals, and animals, including rocks and grass and all variety of flora and fauna" (Checkley, 1997, para. 16). There is a need to better understand children's development in relation to the natural world and to include environmental education in the whole education of the child (Oltman, 2002).

Happily, there is a growing interest in nature-related programming for children. Ravensbergen (2012), who conducted a review of environmental programs in North America, reports that a large-scale movement towards the integration of environmental learning into school curriculums is taking place in a variety of forms. She outlines a number of programs in Canada that have a definitive environmental focus, like the Forest Preschool in Ottawa, Ontario (Carp Ridge Learning Centre, n.d.) and Sangster Elementary School Nature Kindergarten in British Columbia, which was started this year (Krusekopf, 2012). Several specialized alternative preschools have an inclination towards nature-related programming or providing children with natural materials as opposed to plastic toys. One preschool where I taught served children organic, homemade, delicious food every day. Healthy eating was a huge appeal for the parents of the enrolled families and, in a dense downtown neighbourhood of Montreal, where the natural world was limited, seemed a good link to the environment.

There are also several publications aimed at educators, such as *Natural Wonders: A Guide to Early Childhood for Environmental Educators*, published by the Early Childhood Environmental Education Consortium in 2002. In their publication, they note that the need for specialized early years nature/environmental programming has only recently been recognized (Oltman, 2002). The North American Association for Environmental Education also published its guidelines for excellence in early childhood environmental education, six years after a number of general environmental education guidelines were published. Recent books such as *Making the Most of Reclaimed and Natural Materials* (Thornton & Brunton, 2009), *Lens on Outdoor Learning* (Banning & Sullivan, 2011), and *Playing and Learning Outdoors: Making Provision for High Quality Experience in the Outdoor Environment* (White, 2008) are also providing more environmental education ideas for educators and caregivers who work with young children. They also point to the need to strengthen research in this area.

Research in the broader field of environmental education has been conducted for decades. However, most research has focused on school-aged children and

young people. Young children have not been present in environmental education research until recently (Davis, 2009). This article will look at some of the main challenges of conducting research with young children and the opportunities that exist to adapt and create new research methodologies. In the context of this article, young children or early years refers to the period of infancy, during preschool, and in transition to school—approximately two to six years old.

Early Childhood Environmental Education: A New Field of Research

Early childhood environmental education is the meeting point of two research areas: early childhood education and environmental education. Although both of these fields have extensively been researched separately from one another, a review of international journals in both fields showed that fewer than five percent of articles were published on the intersection of these two research areas between 1996 and 2007, indicating a research hole (Davis, 2009). There has been some research in the early childhood environmental education field, led in the 1990s by researchers such as Ruth Wilson (R. A. Wilson, 1994).

One study by Robertson (2008) used interviews and questionnaires with children, aged 10-12 years, who had attended a Nature Preschool, and found these children had a greater connectedness-to-nature score that their peers. He found that the Nature Nursery program, along with other factors, made a measurable and persistent change in the attitude of these children. Although these types of research projects offer valuable information, it is very important to also consider including children's own stories, which are rarely heard (Fawcett, 2002).

There is a growing methodological interest in listening more closely to children in terms of research (Clark & Moss, 2001; Danby & Farrell, 2004; Skelton, 2008), as well as engaging children in meaningful participation in community development and environmental action (Barratt Hacking et al., 2007). However, there are several barriers to obtaining information about children and young people's knowledge, capabilities, and experience of environmental learning and environmental programs.

The Challenges of Research That Involves Young Children

I recently heard of a daycare in Montreal where the parents were asked whether they preferred their children, on rainy days, to go outside or remain indoors. The result was favourable to being outside in the rain, but by just a small margin. The children were not consulted, even though this matter related to their own lives and well-being. Children can be surprisingly interested in the outdoors even in "bad" weather (Boileau, 2011). Although they may be less aware of the health effects of being outside in the rain, especially improperly dressed, they should still be consulted on matters that relate to their daily lives and activities. This example shows that adults often do not acknowledge children as being experts in their own lives and being capable of decision-making. As Waller

(2007) writes, "all children need opportunities for outdoor experiences … in natural wild environments, and any consideration and understanding of these outdoor experiences needs to be informed by children's views" (p. 394). There are a number of barriers and challenges when conducting research with young children, which are explored in the following section.

Adult Perception of Children

The way we *see* children affects how we *listen* to children (Punch, 2002). Our society is adult-dominant (Skelton, 2008) and adults usually see childhood as a time of innocence and dependence (Barratt Hacking et al., 2007), which puts young children in a vulnerable state. Historically, young children have been seen through the lens of the developmental theory, which classifies them as beings on their way to adulthood who are incomplete in the first few years of life. Their voice is automatically of less importance if they are not seen as complete individuals, but rather as underdeveloped adults, and the traditional view of researching young children is through this developmental approach (Danby & Farrell, 2004).

Psychologist Jean Piaget greatly changed the way we see children, as he proposed that children have a "unique set of physical, cognitive, social and emotional attributes that differentiates them from any other age group. He described the *constructivist theory*—that children construct knowledge out of their exploratory actions on the environment" (Oltman, 2002, p. 4). Children in fact do have a solid understanding of the world, constructed out of their life experience and knowledge, and their worldview is of equal value to any other human being.

Even though adults hold power over children because of age (Skelton, 2008), our experience of childhood is different from what children are experiencing today, since childhood is a social construct. Researchers working with young children are therefore challenged to put aside their lived experience of childhood and respect that the children they are working with may have new and surprising perspectives on the research topic.

Children's Rights and Ethical Issues

Many issues surrounding children's rights and ethical issues may be challenging for researchers, since young children are a vulnerable group. Since the United Nations Committee on the Rights of the Child in 1959, many researchers have been giving special importance to children's rights, whether they are participants in research or included as co-researchers. Lundy, McEvoy, and Byrne (2011) state that even the "very youngest children, are holders of all rights enshrined in the UNCRC" (p. 715) and should be able to express their views freely and have those views be given due weight in accordance to their age and maturity.

In theory, the research process in any field must first and foremost protect the human rights of all research participants, regardless of the nature of the

research topic and how it may benefit society. Bell (2008) argues that "it is critical for research ethics guidelines to reflect human rights principles that also incorporate special considerations reflected within children's rights instruments such as the UNCRC" (p. 8). According to Bell, the four main types of rights embedded within the UNCRC (welfare, protection, provision, and choice and participation) need to be implemented within the research process.

Lundy et al. (2011) explore the issues around the implementation of children's rights to participate, and have identified four key concepts to guide researchers:

> (a) *space* – children must be given the opportunity to express a view in a space that is safe and inclusive, (b) *voice* – children must be facilitated to express their views, (c) *audience* – the view must be listened to, and (d) *influence* – the view must be acted upon as appropriate. (p. 717)

Research ethics are also extremely important in research that involves young children. Skelton (2008) argues that many university ethical frameworks are adultist in nature, and that researchers are caught in a dilemma when it comes to research with children. Children are recognized as social actors who are competent at making decisions, yet this is compromised by ethical committees' insistence on written consent from parents or guardians.

Obtaining Consent

In order to undertake research with young children, it is usually advised to obtain both informed consent of the adult or guardian and of the participants. This brings on a whole package of barriers and challenges to research, and may be one reason why there is very little research in environmental education that involves young children (Davis, 2009).

First, there are reasonably strong protection strategies in place, therefore police checks may be required and there is a need for parental and centre permissions. Skelton (2008) argues that children can be locked in the authority of parents and unable to make a decision for themselves about their involvement in research that pertains to their lived experience. If the child wants to participate but the parent declines, the parent's decision will take priority. Parents and other authorities may therefore limit access to children's voices in research.

It was previously considered only necessary to ask consent from parents and guardians, as if the child participants were property and devoid of the right to say "no" to being researched (Morrow & Richards, 1996). However, it is necessary today to secure the consent of child participants themselves. Obtaining consent to participate in research from young children can pose a challenge to researchers, since it may be difficult to gauge how much the children understand about the research project and how their input will be used. No matter how odd it may seem to speak to three- or four-year-old children

about research methods and data they will be asked to provide, it is necessary and can be done in a way suitable to the cognitive abilities and level of language of the children participants. For example, a research project resulting in the writing of a thesis can be described as a story in a book that includes the ideas of the children (Boileau, 2011). Children appreciate being asked for their consent, as demonstrated in a study conducted by Danby and Farrell (2004).

Communicating with Young Children

One of the challenges of research with young children is that traditional research methods based on written and verbal communication used with adults are not effective when applied to three-, four-, or five-year-old children. Handing a young child a questionnaire to fill out, or sitting down for two hours and recording an interview about his or her values and experiences, will not likely yield useful research data. Children have limited, different use of vocabulary and understanding of words, relatively less experience of the world, and may have a shorter attention span (Punch, 2002).

Children do communicate, but in a different way. Since the adults are the ones conducting the research, it can be difficult to understand what children are trying to communicate. As Cook and Hess (2007) put it, "a child's vision may be sharper than an adult's, yet the adult may miss what is being demonstrated because it does not fit their version of reality" (p. 44). This makes it more difficult to interpret children's actions, emotions, and reactions (Oltman, 2002). Punch (2002) proposes that children use different language that adults do not understand, and that the language dilemma is actually mutual. It is therefore imperative that researchers find the best way to communicate with children, given that children are experts in their own life experiences and are competent in communicating a message to the best of their ability.

If we are to truly listen to young children, we need to see the world from their perspective, which is very difficult. We need to see children as having different ways of understanding the world, which are equally as valid as ours. The adult researchers need to listen, watch, and allow space for the child, and to change or relinquish some of their own predetermined research agenda and methods (Cook & Hess, 2007) .

Spaces and relationships are very important to young children, and therefore these need to be considered during the research process. Researchers that are included as a member of children's groups may have an advantage in terms of understanding children's views, and in the safety children feel in sharing their stories. Physical and social factors can be a challenge, but entering in the children's social world and being at their level is key in understanding their realities (Waller & Bitou, 2011).

The issues of the validity of young children's accounts come up as a barrier as well, since researchers may wonder if the statements of children are true or exaggerated, and if children in fact distinguish between the real world and the

world of make-believe. Children may have not yet developed logical thought, but their statements should nevertheless be considered valid on the sole basis that it is from their own perspective of the world. Children, like any other research participants, may lie or hide the truth for various reasons, for example, out of fear of the reaction of the adult researcher (Punch, 2002). Repeated engagement with the same children surrounding the same research topic can slow down the "adult journey to deciding upon meaning" (Cook & Hess, 2007, p. 42). It can give a researcher time to think about what children are saying more than once, and seek new interpretations.

Environmental Education Research with Young Children

The challenges outlined apply to most research that involves the participation of young children. In early childhood environmental education research, researchers may encounter these potential issues. It is important to research the areas of early years environmental programming, nature play, the role of adults in environmental learning, how children interact with natural materials, and how environmental values are formed at a young age—and all of these should include the input of the children themselves. According to Smith, Duncan, and Marshall (2005), "it is uncommon for children's knowledge and understanding of their own learning to be used to improve teaching and learning" (p. 474). Should we not find ways to ensure that children are consulted in regards to the environmental programs educators are developing for them? There are a growing number of new or adapted research methods that provide solutions and can help gain access to young children's views of the natural environment.

Mosaic Approach

Young children have increasingly become involved in research projects through the use of methods such as cameras, drawing, tours, map making, and ranking exercises (Lundy et al., 2011). Combining these can create a composite picture of the research topic, which is what Clark and Moss call a mosaic approach. It is a "multi-method" framework for gathering young children's voices and experiences of their everyday lives (Clark, 2005; Clark & Moss, 2001). The approach includes two important elements: gathering children's and adults' perspectives and facilitating exchange (Clark, 2007). The mosaic approach has been used in a number of studies, mainly in the United Kingdom, to explore children's views of their nurseries or preschools (Clark, 2007). This approach supports the notion that "using a range of methods, both traditional and innovative, can help strike a balance and address some of the ethical and methodological issues of research with children" (Punch, 2002, p. 337). It is proposed here that the mosaic approach is an effective framework for early years environmental education research. Observations, audio recordings, and photography are several tools that were found to be effective in understanding

children's experiences of environmental early years programming developed for an environmental organization (Boileau, 2011).

Observations. Observation is not a new research tool. Observations of children have been central to research in early years settings and are "increasingly important, the younger the age of the children involved" (Clark, 2005). Observations of children during free play in the school ground, for example, can provide an opportunity to research the significance of school grounds for environmental learning (Barratt Hacking et al., 2007). During child-led research activities, or during free playtime, the participants may be fairly silent—this is when observation is key. Jotting down notes at the time of the activity, recording research comments just following the program, analyzing digital audio recordings of the children, or writing up observations are all ways to provide data on children's behaviours.

In my experience, even a short environmental education program is so rich in information regarding the children's perspectives and interests in nature that it is crucial to take notes which can be studied at a later time, so as not to forget valuable details. For example, I observed the following about a boy during one of my programs:

> Joey was nervous about holding the insect nymphs at the beginning of the workshop. Following the snack break, however, he was the first back to the programming room with his mother, and went straight to look at the live animals again. His mother helped him remember the names of the creatures and interesting facts I had mentioned earlier. When I offered it again, he decided he'd like to hold the dragonfly nymph in his palm. (Boileau, 2011, p. 37)

This example shows the importance of observation. The young boy did not verbally communicate his uncertainty of the odd creature, his developing interest, or the fact that he probably felt safer since his mother was there to encourage him. With written observation, I could determine that introducing live animals in programs are a great tool in developing awareness of the environment. They also tend to keep young children's interest since they are alive and moving.

Including the voice of caregivers and parents is also important in order to enrich a researcher's understanding of the children's perspectives. "Other people, both adults and children, who have shared the meanings and experiences of the research participants, have much to add to constructing children's perspectives" (Smith et al., 2005, p. 485). Asking the adult caregivers to help make observations during an early years program by filling out a survey afterwards can also help focus other adults on what the children were doing. For example, when I asked adults in the survey to list the topics children were most interested in, some of their answers were: "touching and feeling rocks/trees/organisms," "watching animal behaviour," "playing in the different bins," "using and finding things with the magnifying glass," "playing in mud," etc. These answers support the notion that children are most interested in *doing*, *experiencing, playing,* and *moving*

around. Data from the parent observers was useful, and I believe the adults benefited from watching their children more closely with a research lens.

Audio recordings. Although audio recorded interviews may not be very effective with young children, audio recordings of playtime and activities can contribute a lot of valuable information: for example, how children interact with one another, with adults, with the environment, and with the learning materials. Accompanied by observation notes, this can provide a wider picture of a child's experience.

When the educator leading an early years program is also the researcher, the use of a digital audio recorder is very desirable, as it allows the educator/researcher to focus on delivering the program itself and observing the children during their activities, knowing that the audio-recording will be available afterwards. If the audio recorder is hidden or in a less obvious location, it is important to show and discuss it with participants prior to its use, in order for all parties involved to have a chance to provide consent or ask questions.

Analyzing the audio recordings can be very time-consuming, as researchers who have transcribed recorded interviews with adults know. With young children, the challenge is to understand some of their words and meanings, and to interpret periods of silence when the children may have been actively involved with something without talking about it. For this reason, I would not recommend that a person who is not present at the time of the recording to attempt to interpret and analyze the audio. It should rather be used as a researcher's tool to remember what he or she observed.

Child-led photography. Autophotography, where the camera is placed in the hands of the participants, is not widely used with young children (DeMairie, 2010), but studies that have to date incorporated this data collection method are successful in gaining a better understanding of children's views, notably of their pre-school's settings (Clark, 2005). Cook and Hess (2007) propose the following reasons for using child-led photography to better understand children's perspectives on a particular research topic:

- Taking photographs is quick, easy, and something children are likely to enjoy.
- It is easier than writing and generally seen as more fun by children.
- Modern cameras produce acceptable results without the children needing to be experts.
- The tangible nature of the photographic task helps focus attention and discussion on the topic.
- By giving children the control of the camera and choice of photographs, the photos are more likely to reflect what the children consider to be important.
- The photographs taken can act as a tangible representation of the children's interests. They enable researchers to return to a topic for future discussion with the children.

During family nature hikes I led for three- to five-year-olds, I handed disposable cameras to the young child participants in order to find out what they were drawn to explore during the hike. I found one young boy, aged three, to be very engaged with the camera—he used his whole roll of film within the first 30 minutes of the hike. Many of his pictures portrayed plants and natural objects that I pointed out to the group as we walked. The second boy, also three, took many pictures of the participants and myself, which was interesting. Both boys were proud to have the responsibility of picture-taking. With reference to one boy, I noted that "in one instance, he ran over to me during the nature hike, out of breath and excited: he had managed to take a picture of an insect flying over the wetland! He said he watched it flying by, looked through the camera and saw it, and took a picture! It was a very proud moment for him" (Boileau, 2011, p. 30).

For projects where the researcher meets with participants several times, photography can be an excellent tool since "shared construction of knowledge around conversations with the children based on their photographs ... can enable children's meaning to prevail" (Waller & Bitou, 2011, p. 16). Research in England and Denmark (Cook & Hess, 2007) with children of various ages used photography to find out what pupils considered important to enjoying their school life and feeling included in their environment. Discussion around the photographs revealed information regarding the researcher's interests, but also more in-depth feeling than the researchers would have expected from a traditional interview process. Children demonstrated strength in expressing themselves on their own terms, yet when adults tried to direct the interest of the children, it was less likely to be sustained.

Children as Co-researchers

Cook (2007) states that "research design is one of the many ways in which adults direct children" (p. 43), and that by selecting the tools and data collection methods we may already be limiting the ability of children to express themselves. In the general area of childhood research, there has been a trend towards involving children in research, not just as research participants but as co-researchers, although the instances where children under the age of eight were directly involved in research design remain rare (Lundy et al., 2011). One of the barriers to including young children as co-researchers is the assumption that they are unable to express their views or lack the ability to participate in the research process in a meaningful way; however, a child's capacity to form a view is based on their experience and the information they have, and therefore can be substantially built up with capacity building exercises related to the research topic (Lundy et al., 2011).

Involving children as co-researchers proposes a new way to better include the children's input throughout the research process. However, young children can lead the research in unexpected directions and, as such, research outcomes need to be quite flexible.

Conclusion

This article has addressed issues surrounding research with young children, as well as the opportunities that exist. Although it may pose a challenge to obtain the necessary permissions from parents, educators, centres, and children; to explain the research methods to children and obtain their consent; and to interpret their ideas and experiences, these participants have the right to be involved in research that concerns them. Young children whose experiences are chronicled in environmental education research contribute a unique voice in this field. There is evidence of an increase in research articles in the field of environmental education for young children—albeit from a very low base—since the beginning of the decade, so some comfort can be taken in this growing trend (Davis, 2009). In fact, as I wrote this article, the North American Association for Environmental Education announced the launch of the *International Journal of Early Childhood Environmental Education* research and a call for articles for the first issue.

I have demonstrated that traditional research methods and new methods can be combined in various ways to create a mosaic of information gathered from children and other participants. Observations, audio-recordings, and photography can be excellent tools. Ultimately it is important to truly listen to children, respect them, and allow them the same participatory rights as any other research participants. It is possible that a three-year-old does not feel like having his or her ideas recorded or behaviour observed by researchers, just as it is possible that four year-old children become very involved in a study and even propose ways for researchers to better understand what they think.

Smith et al. (2005) argue that it is more important to consider children's experience than their age. If we are to conduct research on the effectiveness of environmental education programs for young children, or the importance of nature play in the whole development of the child, for example, the children themselves have the necessary experience and are fully capable of sharing it with researchers.

In future research projects, I suggest looking at the environmental learning that may or may not be happening effectively within early years centres or home daycares, and how to promote outdoor time, nature play, and the use of natural materials in these environments where children spend much of their time. Early years programming offered by environmental organizations and informal institutions such as museums or parks should also be studied through the lens of the children to provide the best possible programming and activities. Barratt Hacking et al. (2007) suggest that future directions of research include extending the research to marginalized groups like children in conflict and war, illiterate children, and street children. Waters and Maynard (2010) note that there is a gap in research that aims to understand how an environment can stimulate children, and what they choose to talk to their teachers about.

In a world dominated by adults, at a time when environmental education is necessary to ensure adequate management of our natural resources and pro-

mote the health and well-being of citizens, the young voices of today's children need to be listened to and acted upon.

Notes on Contributor

Elizabeth Boileau has extensive experience working both as an early childhood educator and as a nature interpreter, delivering environmental education programs to people of all ages in Quebec and Ontario. She completed her Master's degree in environmental education and communication at Royal Roads University (Victoria, BC) in 2011. Her thesis focused on young children's perceptions of the natural world and the development of a new early years program to be offered by an environmental science research institute. Elizabeth is currently pursuing a certificate in early childhood education at Université de Montréal, and works as a scientific interpreter at the Montreal Insectarium. **Contact:** playintheforest@outlook.com

References

Banning, W., & Sullivan, G. (2011). *Lens on outdoor learning* (1st ed.). St Paul, MN: Redleaf Press.

Barratt Hacking, E., Barratt, R., & Scott, W. (2007). Engaging children: Research issues around participation and environmental learning. *Environmental Education Research, 13*(4), 529-544.

Bell, Nancy. (2008). Ethics in child research: rights, reason and responsibilities. *Children's Geographies, 6*(1), 7-20. doi: 10.1080/14733280701791827

Boileau, E. (2011). *"It's alive!" An exploration of young children's perceptions of the natural world.* (Masters thesis). Retrieved from Royal Roads University, http://dspace.royalroads.ca/docs/handle/10170/521

Carp Ridge Learning Centre (n.d.). *Carp ridge forest preschool and forest kindergarten*. Retrieved from http://www.carpridgelearningcentre.ca/preschool.html

Checkley, K. (1997). The first seven... and the eighth: A conversation with Howard Gardner. *Educational Leadership, 55*(1), 8-13. Retrieved from http://www.ascd.org/publications/educational-leadership/sept97/vol55/num01/The-First-Seven.-.-.-and-the-Eighth@-A-Conversation-with-Howard-Gardner.aspx

Clark, A. (2005). Listening to and involving young children: A review of research and practice. *Early Child Development and Care, 175*(6), 489-505. doi:10.1080/03004430500131288

Clark, A. (2007). Views from inside the shed: Young children's perspectives of the outdoor environment. *Education 3-13, 35*(4), 349-363. doi:10.1080/03004270701602483

Clark, A., & Moss, P. (2001). *Listening to young children: The mosaic approach*. London, UK: National Children's Bureau.

Cook, T., & Hess, E. (2007). What the camera sees and from whose perspective: Fun methodologies for engaging children in enlightening adults. *Childhood, 14*(1), 27-45. doi:10.1177/0907568207068562

Danby, S., & Farrell, A. (2004). Accounting for young children's competence in educational research: New perspectives on research ethics. *Australian Educational Researcher, 31*(3), 35-50.

Davis, J. (2009). Revealing the research 'hole' of early childhood education for sustainability: A preliminary survey of the literature. *Environmental Education Research, 15*(2), 227-241.

DeMairie, D. (2010). Successful versus unsuccessful schools through the eyes of children: The use of interviews, autophotography, and picture selection. *Early Childhood Research & Practice, 12*(2), 1-17. Retrieved from http://ecrp.uiuc.edu/v12n2/demarie.html

Fawcett, L. (2002). Children's wild animal stories: Questioning inter-species bonds. *Canadian Journal of Environmental Education, 7*(2), 125-139.

Krusekopf, F. (2012). *Nature kindergarten: Learning outside the box*. Retrieved from http://naturekindergarten.sd62.bc.ca/

Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder.* Chapel Hill, NC: Algonquin Books.

Lundy, L., McEvoy, L., & Byrne, B. (2011). Working with young children as co-researchers: An approach informed by the United Nations convention on the rights of the child. *Early Education and Development, 22*(5), 714-736.

Morrow, V., & Richards, M. (1996). The ethics of social research with children and young people: An overview. *Children and Society, 10,* 90-105.

Oltman, M. (Ed.). (2002). *Natural wonders: A guide to early childhood for environmental educators*. St Paul, MN: Minnesota Early Childhood Environmental Education Consortium.

Punch, S. (2002). Research with children: The same or different from research with adults? *Childhood, 7*(3), 321-341.

Ravensbergen, S. (2012). *Outstanding environmental education programs in North America.* (Unpublished paper). University of British Columbia, Vancouver, BC.

Robertson, J. S. (2008). *Forming preschoolers' environmental attitudes: Lasting effects of early childhood environmental education*. (Unpublished paper). Royal Roads University, Victoria, BC.

Skelton, T. (2008). Research with children and young people: Exploring the tensions between ethics, competence and participation. *Children's Geographies, 6*(1), 21-36.

Smith, A., Duncan, J., & Marshall, K. (2005). Children's perspectives on their learning: Exploring methods. *Early Child Development and Care, 175*(6), 473-487. doi:10.1080/03004430500131270

Thornton, L., & Brunton, P. (2009). *Making the most of reclaimed and natural materials.* London: Featherstone.

Waller, T. (2007). 'The trampoline tree and the swamp monster with 18 heads': Outdoor play in the foundation stage and foundation phase. *Education 3-13, 35*(4), 393-407.

Waller, T., & Bitou, A. (2011). Research with children: Three challenges for participatory research in early childhood. *European Early Childhood Education Research Journal, 19*(1), 5-20.

Waters, J., & Maynard, T. (2010). What's so interesting outside? A study of child-initiated interaction with teachers in the natural outdoor environment. *European Early Childhood Education Research Journal, 10*(4), 473-483.

White, J. (2008). *Playing and learning outdoors: Making provision for high quality experiences in the outdoor environment*. Portland, ME: Book News, Inc.

Wilson, R. A. (Ed.). (1994). *Environmental education at the early childhood level*. Troy, OH: North American Association for Environmental Education.

Wilson, R. (2008). *Why children play under the bushes*. Retrieved from http://www.earlychildhoodnews.com/earlychildhood/article_view.aspx?ArticleID = 412