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### A Study and Application of Nature and Empathy Based Environmental Education

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# A study and application of nature and empathy based environmental education

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## **Abstract**

As climate change persists and new generations are inducted into positions responsible for adaptation, it is vital that children are educated about the environment in a way that will create long-lasting motivation to address these environmental issues. This paper analyzes the methods most effective in environmental education, answering the question: what components of elementary-level education inspire children to be stewards of the earth rather than invoke fear for the future? To answer this question a series of literature was reviewed through which three themes emerged as important components of environmental education: age, exposure to nature, and cultivation of empathy. Developmental changes result in differing levels of understanding and interest, and therefore environmental education curricula should change based on age group (Sobel, 2013; Walker, 2017). Exposure to nature has been shown to increase children's environmental attitudes and behaviors, making it a key factor of effective environmental education ((Sobel, 2013; Otto & Pensini, 2017; Collado & Coraliza, 2020). Finally, the cultivation of empathy gives children motivation to address environmental issues because they have something meaningful to fight for (Sobel, 2013; Lithoxoidou et al, 2017). This research is necessary because climate change is a pressing issue that all people will be confronted with at some point in their lives; Therefore, it is important to arm children with the tools they need to address these issues.

## **Introduction**

We have begun to see impacts of climate change throughout the world including wildfires, sea level rise, and drought, but these issues and more are only expected to worsen in the coming decades, meaning that future generations will bear the brunt of the burden. For the past fifty years or so environmental education has relied on teaching children- often as young as six years old- the hard facts about the climate crisis, like those mentioned above. They learn that between morning recess and lunch more than 10,000 acres of rainforest will be cut down to provide more space for cattle grazing (Sobel, 2013, p. 3). They watch videos of land being destroyed to accommodate pipelines, see depictions of the decline in biodiversity, all with the intention of teaching these children to care for the environment so that they will become adults who support environmental candidates, engineer innovative solutions, and change their own habits to reduce their carbon footprint. However, research has shown that the opposite occurs,

that this fear based environmental education causes children to dissociate rather than become motivated to create change. This paper seeks to answer the question: What components of elementary-level environmental education inspire children to be stewards of the earth rather than invoke fear for the future?

Three themes that have emerged as important components in environmental education that result in positive environmental attitudes and behaviors are age, exposure to nature, and cultivation of empathy. The following terms are used throughout the paper:

**Environmental Attitudes:** “a collection of beliefs, affect, and behavioral intentions a person holds regarding environmentally related activities or issues” (Collado and Corraliza, 2020).

**Environmental Behaviors:** “actions that contribute to the sustainability of nature” (Collado and Corraliza, 2020).

**Environmental Knowledge:** scientific facts relating to the environment and climate change including the proper responses to environmental degradation (Otto and Pensini, 2017).

**Ecophobia:** “fear of ecological problems and the natural world” (Sobel, 2013, p. 8).

## Methods

The purpose of this paper is to determine the components of elementary-level environmental education that encourage positive environmental attitudes and behaviors so as to prepare children for their future as policy makers, engineers, and citizens tasked with adapting to the climate crisis. Elementary level refers to children ages four through twelve. This age range encompasses the time in which significant brain growth occurs, which is optimal for education. The paper was developed through a synthesis of literature which was found primarily through

online databases, specifically Elsevier, ProQuest Central, and Academic Search Complete, chosen for their focus on the liberal arts and education. Various phrases relating to the topic were searched to find the literature including, “environmental education,” “nature-based education,” and “empathy and environmental education”. Data from several countries was explored including Spain, Greece, and the United States. The selection of the countries used in the paper was dependent on the research available. In the personal study section various interviews were conducted with experts in the field including author Erin Saldin and Children’s Literature Expert Dana McMurray. The content of both interviews primarily focused on the steps of writing and publishing a book and were therefore not used in the literature review.

## **Discussion**

### **The role of age in children’s environmental education**

Effective environmental education for children takes age into consideration. As children grow their interests and capacities to understand complex concepts change, both of which influence their abilities to learn about environmental problems. To determine what was most important to second grade children (seven and eight years old), researcher Steve Moore selected twenty-five pictures depicting various scenes such as people playing baseball, happy families, farms, and earth from space. He then asked forty children to choose three pictures that seemed important and interviewed them about their choices. The students were from four separate classrooms with different curricula, and what Moore found was that the children from two of the classes tended to choose pictures of animals or nature while those from the other two classrooms selected images of toys or games. In the first two classrooms, the children were participating in

“Earth Week” which involved learning about environmental degradation, pointing to why they chose environmental related pictures to be most important. Regarding this study Moore says:

“The interview patterns suggest that kids who had spent a week or more working on environmental issues were fully taken in by them. The Earth Week group made choices that were heavily weighted with concerns about the earth, the animals, and homeless children. The non-Earth Week classes made choices about playing, about families, about having fun” (Sobel, 2013, p. 11).

While it may seem like this environmental awareness is a good thing, the key aspect of this study is that the children in the Earth Week group were not excited about their choices, rather they felt obligated to regard environmental issues as important. Traditional environmental curricula assume that if children see the truth about environmental degradation, they will be more motivated to alter their behaviors and attitudes, “but those images can have an insidious, nightmarish effect on young children whose sense of time, place, and self are still forming” (Sobel, 2013, p.13).

To appropriately educate children about the environment, child psychology must be taken into account. Sobel advocates for differing environmental education based on children’s “maps” during three stages of development. In this context a child’s map refers to the relationship they have with the natural world during specific developmental stages. It is important to note that all children develop at a different rate and therefore there is a level of variability in the following ranges. From age four to seven children are most concerned with their home, which is therefore at the very center of their map. The natural world children understand and connect with during this stage of development is their yard or a few blocks in their neighborhoods. From ages eight to eleven children’s maps grow rapidly as they become more independent and curious. Home is pushed to the corner of the map while the central focus is the “explorable landscape”. Between ages twelve and fifteen maps expand even more as social lives become more important. The

central focus of their maps are therefore social gathering places (Sobel, 2013). Understanding a child's map is vital to educating them about the environment because it shows the reach of their interests and understanding. Sobel recommends that environmental education curricula mirror these maps so as to prevent dissociation and ecophobia. For example, education from ages four to seven should focus on the cultivation of empathy, a theme that will be further explored in the third section of this paper. Exploring the landscape should be the priority for ages eight to eleven, and only at ages twelve through fifteen should social action be part of the curriculum (2013).

In a literature review of studies and policies relating to environmental education, Catherine Walker argues “for greater attention to be paid to children’s agency in designing sustainability education, in particular, by considering research on the relational and intergenerational dimensions of household decision-making, and the flows of environmental knowledge between the spaces of children’s lives” (2017). This viewpoint somewhat opposes those of Sobel mentioned above because it suggests that children need more agency in their families when it comes to environmental behaviors and therefore more education about specific behaviors and their detriments to the environment. Walker argues that sustainability education should be a means to bring children into the global efforts against climate change because children are presented as “agents of change,” yet they are not granted the agency to be these changemakers (Walker, 2017). It is important to note that Walker does not define the age of the children whom she refers to but mentions that the United Nations recommends environmental education be taught at all levels so as to foster “environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development” (Walker, 2017). The problem with this model of education is that it depends on the children’s families to promote



positive environmental behaviors and attitudes so as to compliment the environmental education they receive in school, but caretakers do not always hold these same environmental attitudes. The research also draws upon the idea that individual “practice-oriented policy making” is most effective in mitigating environmental degradation, a claim that needs more research. While it is true that a child’s surroundings (family in this case) have a major impact on their environmental attitudes, addressing the issue of environmental education from the top down (parents giving children more agency), as Walker is suggesting does not have concrete data supporting its effectiveness while Sobel’s proposal of educating children about the environment based on their development does have supporting research and is a more feasible option when considering the creation of curricula.

### **The role exposure to nature plays in environmental education**

Traditional environmental education curricula have failed to incorporate nature and instead depend on what Sobel calls “doom and gloom” to motivate children to have positive environmental behaviors (2013, p. 4). The traditional methods of environmental education suggest that if children are exposed to the environmental degradation in the world, they will be inspired to enact change as adults. However, research increasingly demonstrates that the opposite is true. In a 1992 review of children’s nature books, Janet Maslin writes, “we do children a disservice by shielding them unduly from a knowledge of the planet’s problems. But we should think twice before making tots worry about toxins” (19). She continues describing the role of children’s books, saying:

“The familiar old tales of ducks and bunnies may not have conveyed as many facts, but they were filled with whimsical possibilities that have no place in today’s didactic children’s literature. Bedtime stories of the past served the magical purpose of stirring children’s imaginations, conjuring up a world of endless possibilities and then leaving

young readers pleasantly sleepy. Today's versions, sounding the alarm over our shrinking hopes and resources, may leave them exhausted" (Maslin, 1992, p. 19).

Sobel compares this education model to the experience of physical and sexual abuse as children which results in dissociation and distancing techniques as a way to deal with the trauma (Sobel, 2013). While this comparison may be extreme, the coping mechanisms are indeed similar. In their study, Collado and Corraliza found that "children who followed [a] curriculum through traditional instruction [no exposure to nature] did not show any relevant increase in their environmental attitudes and environmental behaviors" demonstrating that children were more inclined to dissociate or distance themselves from environmental problems than positively alter their behaviors (2020). Sobel therefore describes the results of traditional environmental education as ecophobia.

In a study, it was found that exposure to nature is a key factor in environmental education because "the intrinsic motivation by way of feeling connected to nature, in combination with the acquisition of environmental knowledge... authentically produce ecological behavior" (Sobel, 2013, p. 88). To come to this conclusion researchers surveyed 358 students in grades four through six at five different schools in Berlin to analyze their experiences with environmental education. The survey asked whether their educational experiences had been nature-based or set in a classroom and later determined their inclinations to positive environmental behaviors and attitudes. The researchers found that "the effect of connectedness to nature on ecological behaviour was considerably stronger...than the effect of environmental knowledge on ecological behaviour...Connectedness to nature explained 69% while environmental knowledge determined only 2% of the variance in ecological behaviour" (Otto and Pensini, 2017).

In a similar study, Collado and Corraliza found that nature based environmental education curricula are more successful in enhancing children's environmental attitudes than

traditional curricula. For this study researchers implemented a three-month long nature-based environmental education curriculum in ten primary schools throughout Spain. Another ten primary schools implemented an environmental education curriculum that was solely taught in the classroom. At the beginning and end of the study the children were surveyed to determine their environmental attitudes and environmental behaviors. The study found that “A NBEE [nature-based environmental education] program that combined the provision of information with bringing nature to students’ classrooms and nature-based EE [environmental education] activities had a greater positive effect on children’s EA [environmental attitudes] than traditional instruction” (Collado & Corraliza, 2020). While the increase in environmental attitudes was significant, environmental behaviors did not change significantly in either group, which the researchers suggest may be due to the length of the programs.

### **The importance of cultivating empathy in environmental education**

Cultivating empathy is a vital aspect of environmental education because it gives children a reason and motivation to be more environmentally conscious. Sobel argues that between ages four and seven, empathy should be the priority because this developmental stage is characterized by a lack a differentiation between “self” and “other”. Therefore, children are able to empathize with all other beings, and “rather than force this separateness, we want to cultivate that sense of connectedness so that it can become the emotional foundation for the more abstract ecological concept that everything is connected to everything else” (Sobel, 2013, p. 18). Children have a natural affinity for animals, and cultivating these relationships is vital for fostering empathy.

Author Paul Shepard writes:

“Animals have a magnetic affinity for the child, for each in its way seems to embody some impulse, reaction, or movement that is ‘like me.’ In the playful, controlled

enactment of them comes a gradual mastery of the personal inner zoology of fears, joys and relationships. In stories told, their forms spring to life in the mind, re-presented in consciousness, training the capacity to imagine” (Sobel, 2013, p. 17).

Lithoxidou et al. argue that this cultivation of empathy is not only necessary to encourage positive relationships between children and nature, but also to cope with the environmental crisis and change the values “adopted by modern man” (2017). Specifically, “eco-centric values associated with creating a caring relationship with nature, and the development of empathy, can become vehicles of transformation towards a society based on ecological principles” (Lithoxidou, 2017). To demonstrate this claim the researchers implemented an environmental education curriculum focused on the cultivation of empathy in a classroom of seventeen children, all of whom were five years old. Another control classroom was taught traditional environmental education. Interviews were conducted with all the children at the beginning and end of the study to analyze changes in environmental attitudes and behaviors. There was significant change between the first and second interview in the experimental group. All of the children were reported to care more for other forms of life, recognize intrinsic value in non-human life, and be more empathetic in their relationships with nature. A key factor in the study was spending time in nature because it “promotes prosocial behavior towards nature and peers, increases empathy to nature, and intensifies the sense of common bond of life with other living beings around us and develops our interest in the needs and the benefit of other creatures” (Lithoxidou, 2017). Cultivating empathy in children at a young age rather than scaring them with “doom and gloom” environmental education results in greater motivation for long-lasting positive environmental attitudes and behaviors that are key to addressing environmental crises.

## Conclusion

Considering the urgency of the climate crisis, it is vital that children are educated about the environment in a way that encourages them to alter their attitudes and behaviors to be more sustainable. Three factors that are shown to influence children's environmental attitudes and behaviors are the age at which they learn about specific aspects of the environment, exposure to nature in their education, and the cultivation of empathy in environmental education. The most important factor is exposure to nature because when children have a connection to the natural world, they have been shown to have greater motivation for altering their behaviors to be more sustainable (Sobel, 2013; Otto & Pensini, 2017; Collado & Coraliza, 2020). Age is an important factor because introducing complex concepts too early can result in life-long dissociation from environmental issues (Sobel, 2013). Empathy is key in environmental education, especially for ages four through seven, because similarly to forming a connection with nature, it gives children a reason to care for the environment (Sobel, 2013; Lithoxidou et al, 2017). More research is necessary in all aspects of environmental education, but especially the role age plays because while Sobel found that curricula should not implement social action until age twelve, Walker determined that children should be given more agency in their households so as to enact positive environmental behaviors (Sobel, 2013; Walker, 2017). This research is important because it provides guidance for how to educate children about the environment in a way that benefits their futures as leaders of the climate movement. When looking at responses to climate change from various world leaders it becomes obvious that an alternative leadership methodology is necessary. For example, one of the most successful leaders in terms of climate policy is Jacinda Arden, prime minister of New Zealand who, when asked about her leadership style said, "I refuse to believe that you cannot be both compassionate and strong" (Dowd, 218). By

encouraging children to form a relationship with nature and teaching them that empathy is a powerful tool, we are setting them up for success in addressing the climate crisis.

## **Application**

After studying the theories surrounding environmental education, I was wondering how to apply these theories, so I decided to apply the research through a personal project. One method of educating children, especially younger children, is through picture books. As Janet Maslin said in her children's literature review "bedtime stories [can serve] the magical purpose of stirring children's imaginations, conjuring up a world of endless possibilities and then leaving young readers pleasantly sleepy" (Maslin, 1992). Based on my research and this quote, I decided to collaborate with a colleague to write and illustrate a children's book. The two main goals of the book are to encourage children to form a relationship with their environment and to cultivate empathy between children and the natural world.

While the book itself cannot be a nature-based learning experience, we want the book to encourage children to interact with nature which is possible through both the story and illustrations. The story follows a sea turtle named Emerald who is displaced from her home coral reef and must move to a new community. At the beginning of the book Emerald feels defeated and depressed because of her situation, however by the end of the story she is able to revitalize her hope through connecting with her new community and environment. Throughout the book the images will be alluring and whimsical so as to display the beauty of nature with the intention of inspiring children to explore the nature in their vicinity. Encouraging children to spend time in nature through reading this book will result in them forming a relationship with their environment, motivating them to be stewards of the earth long into adulthood.

Another goal of the book is to cultivate a sense of empathy between children and the natural world. The characters in the book are animals (sea creatures) because of the natural affinity children have for animals. The children will relate to the characters because of their lack of differentiation between “self” and “other” between ages four and seven, and because the animals will have human-like qualities. If children are encouraged to relate to animals in a book, they will be more inclined to relate to wild animals and the natural world, resulting in an empathetic relationship between themselves and nature. The cultivation of empathy is something that sticks with people through childhood and informs their actions as adults, which is why it is important when writing a children’s book.

The book is intended for children ages four through eight. We chose this range because it is when children do not differentiate between themselves and others, which is ideal for cultivating empathy, and it is when they begin to be more curious about the environment in their immediate vicinity. The book is intended to be read to children by a caretaker, therefore the images will be detailed and whimsical, hopefully capturing their attention and inspiring curiosity.

Environmental education is extremely important as the climate crisis becomes more pressing, but it is also important to teach children about environmental degradation without scaring them. The picture book will address climate change in a gentle and accessible way by inspiring children to explore and cultivate a relationship with nature. The story and pictures will be whimsical and inspiring so as to contribute to the creation of a generation of people deeply connected to their environment.

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