

Cultivating Biophilia: Utilizing Direct Experience to Promote Environmental Sustainability

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Abstract: This article utilizes theoretical inquiry to explicate the value of cultivating biophilia within higher education settings. The author provides several suggestions to promote participation in the sustainability movement while also cultivating *biophilia*. The definition of biophilia is explored within the context of sustainability education and a link is made to the theme of this JSE issue. Thus, this article provides both theoretical exploration of utilizing biophilia in an educational context and it offers suggestions for implementation of a form of curriculum and pedagogy that promotes the understanding and practice of sustainability that is applicable in many settings.

Keywords: Biophilia; Experiential Education; Place-based Education; Biophobia

In the end we will conserve only what we love. We will love only what we understand. We will understand only what we are taught. -Baba Dioum (In Saylan & Blumstein, 2011, p. 182)

I do not believe in love between men and women, between human beings, if we are not able to love the world. (Paulo Freire in Kahn, 2008, p.8)

Let the beauty you love be what you do. –Rumi

Introduction

The theme for this JSE issue, *Sustainability, what's love got to do with it?*, compels us as educators to think about the inherent connections between love and sustainability. Reflecting upon my work as a practitioner and theorist in the field of sustainability education, I realize that a large part of the sustainability movement is rooted in a dedication to preserve the web of life that makes life on earth possible. But, more specifically, participation in the sustainability movement comes down to the love of life and life-like processes embodied by the term *biophilia*. Those who are most active in the sustainability movement tend to exhibit a love of the natural and social communities that make up the place in which they live (Hensley, 2011; Hawken, 2007). As an educator, I seek out ways to help students recognize how their experiences in nature have shaped their perception of, and relationship with, the natural world (Corcoran, 1999). When exploring the concepts of perception of, and relationship with, the natural world it is valuable to draw from the concepts of “biophilia” (nature-friendliness or love of nature) and “biophobia” (fear of nature). In the university-level introductory sustainability courses that I have taught over the past four and a half years I have found that introducing the concepts of biophilia and biophobia to students early in the semester provides a valuable theoretical framework to enable them to deepen their understanding of their relationship with the natural world and furthermore to develop an understanding of the link between biophilia and sustainability. In this article I will explore the concept of biophilia while unpacking its educational significance. Also, I will draw from my classroom teaching experience to provide a framework to promote biophilia and sense of place in the college-level classroom. The link between one’s relationship with the natural world and one’s participation in the sustainability movement is easy to overlook, but in the midst of the modern day ecological crisis it is crucial that today’s students are able to think critically about what it means to cultivate a mutually beneficial relationship between humans and the earth.

What is biophilia?

Popularized by E.O. Wilson (1984), “biophilia” is a term that depicts what he describes as “the innate human urge to affiliate with other forms of life” (p. 85). The term biophilia is derived from the Greek word *bios*, “life” and the suffix *philia* which is the Greek word for “love.” The idea of biophilia has a sizable amount of scholarship associated with it that has accumulated over the past 30 years. Psychologist Erich Fromm utilized the term in the early

1970s and E.O. Wilson (1984) wrote a book about biophilia that provides an in-depth look at the term and its implications from an environmental perspective. Also, the educator and environmental philosopher David Orr (1994a) provides an analysis of the term in *Earth in mind* (pp. 131-153). Understanding the role of the love of life, or biophilia, in the sustainability movement aligns with this issue of the JSE and helps to further elucidate the link between education and sustainability. In this article my work joins the existing conversation on biophilia with a focus on connecting education and biophilia. Erich Fromm (1992/1973) stated that biophilia is the “passionate love of life and of all that is alive” (p. 406). Recognizing the significance of cultivating a passionate love of life and all that is alive seems to be the lynchpin of understanding biophilia. When Fromm’s conception of biophilia is applied to the natural world, biophilia can expand one’s ability to appreciate and comprehend the inherent interconnectivity between ecological integrity and human health (Westra, Soskolne, & Spady, 2012). As we see in the earlier Baba Dioum quote, when an individual holds a passionate love for life and all that is alive she can become motivated to participate in the stewardship of life. In his description of biophilia, Cajete (1999) observes that the “biophilic sensibility appears to be a primal and innate dimension of our humanity” (p. 190). In other words, biophilia is viewed as being hardwired into each of us and it is a way to get more connected to our humanity. Wilson (1995) adds that biophilia is “a part of ultimate human nature” (p. 31). Cultivating and nurturing biophilia helps us to maintain our physical, mental and psychological wellbeing (Cajete, 1999). The link between biophilia and concern for the natural world is strong (Jones, 2013). We tend to care for, protect, and affiliate with what we know well (Orr, 1994a), and to fear what we do not know well.

The importance of promoting biophilia becomes even more evident when recognizing its possibility as a survival mechanism for the human species (Orr, 1994a). Without the kind of human-earth relationship that emerges from biophilia, humanity as we know it is at risk. With the looming ecological crisis that we now face it becomes even more important to recognize the urgency tied to connecting to our natural world. In appreciation of this urgency the environmentalist and nature writer Sigurd Olson coined the term “racial memory,” which referred to the idea that “humans have a biological attachment to nature that arises from our long evolutionary heritage” (Backes, 2001, p. xxxii). In other words, there is an evolutionary longing within all of us to connect and/or reconnect to nature in ways that pre-modern humans did and this longing may be the very thing that will motivate us to live in a more sustainable manner. This notion of racial memory resonates with the Biophilia Hypothesis which maintains that “humans possess a biologically based attraction to certain aspects of the natural environment and that their well-being depends, to a great extent, on the relationships with the surrounding natural world” (Jones, 2013, p. 151). On the opposite end of the spectrum, it is valuable to explore what happens when we lose the love of nature and develop a fear of it. When educators, educational theorists, policy makers, and other stake holders understand the negative impact that a fear of nature has upon our relationship with it there is more urgency associated with building an educational response to this lack of connection between humans and nature (Louv, 2008).

In contrast to biophilia, we face an epidemic of *biophobia*, which is a learned fear of the natural world (Orr, 1994a; Sobel, 1996). I remember once, while working as an instructor for a wilderness therapy program, I was sitting with my students in a circle around the evening fire for the closing activity of the day. When a small sound came from the woods, several of the students jumped up and ran to the side of the circle away from the sound. I investigated and found that an American Toad had made the noise. I showed the students and we had a good laugh that they were all scared of something that was so small. This served as an excellent example of how it is easy to overreact to and be fearful of the unknown. Similarly, it is common for people to be scared of nature and anything that has to do with nature and to suffer from biophobia. According to Orr (1994a) biophobia ranges from “discomfort in ‘natural’ places to active scorn for whatever is not manmade, managed, or air-conditioned” (p. 131). Biophobia emerges from an overreliance on technology and the “comforts” that can be provided from our lives which are primarily spent inside. Orr adds that biophobia is “the culturally acquired urge to affiliate with technology, human artifacts, and solely with human interests regarding the natural world” (p. 131). Biophobia is becoming an epidemic among people who are inundated with modern day conveniences and technology ranging from video games, to television to sending texts and messaging (Orr, 1994a; Louv, 2008; Hensley, 2012). Cajete (1999) asserts that biophobia is most commonly “expressed in the attempt to control and subdue nature” (p. 190). The interest in trying to control and subdue nature is counterproductive when there is a need to forge stronger relationships with our natural surroundings. Biophobia is commonly cultivated in higher education institutions (Jones, 2013; Cajete, 1999) and thus more college graduates emerge from their university experience as “more effective vandals of the earth” (Orr, 1994a, p. 5) instead of informed and more dedicated stewards of the biosphere and their bioregion. Ultimately biophobia “contributes to the dysfunction of modern relationships to the natural world” (Cajete, 1999, p. 190). Orr (1994a) adds that biophobia is the “foundation for a politics of domination and exploitation” (p. 136). Furthermore, groups of humans who are “biophobic or incompetent toward nature” tend to pass into extinction through starvation and disease (p. 133). Thus, it is essential that we forge an educational response to the biophobic tendencies that are embedded in higher education and throughout education at all levels. To counter the damaging tendencies of biophobia it is valuable to examine the ways that fostering biophilia in educational settings can promote sustainability and participation in the sustainability movement.

The value of cultivating biophilia in an educational setting

What knowledge will allow the students to live on? -Marla Morris

Education is the point at which we decide whether we love the world enough to assume responsibility for it and by the same token save it from that ruin which, except for renewal, except for the coming of the new and the young, would be inevitable. -Hannah Arendt

If we are to continue on the path of reconstructing and protecting the earth systems upon which we depend, it will be necessary to design an educational response to the ecological crisis.

-J. William Hug (1998)

Several years ago, while working as an environmental educator for a botanical garden in southern Georgia, I experienced the transformative capacity of nature immersion in promoting biophilia. I was leading a group of fourth graders on a hike through a longleaf pine ecosystem, and partway through the hike one kid stopped hiking, looked around and then exclaimed “Wow, this is better than a video game!” I was impressed by the ability of nature to make such a profound impact. The transformative potential tied to nature immersion and advancing a love of the natural world is significant. I contend that promoting biophilia is at the very foundation of building an educational response to the ecological crisis. Because biophilia emerges from building one’s relationship to his/her place it fosters an authentic advocacy for conserving and preserving the ecological systems upon which we depend. In recognition of the urgency associated with countering the ecological crisis and fighting for the rights of all life, Paulo Freire stated that, “It is urgent that we assume the duty of fighting for the fundamental ethical principles, like respect for the life of human beings, the life of other animals, the life of birds, the life of rivers and forests” (In Kahn, 2008, p.8). Cultivating biophilia, through environmental education, is a foundational approach to enlisting the awareness, knowledge, and values required to advance the fight for the fundamental principles that Freire describes above. By promoting a shift in worldview from a mechanistic perspective to a more enlightened ecological perspective, (Capra, 1992) education that promotes biophilia is well situated to equip the next generation with the values, and skills necessary to transform their relationship with nature from seeing humans as *a part of* and not *apart from* the natural world (Smith & Williams, 1999; O’Sullivan, 2004). Hensley (2011 & 2012) refers to this transformation of epistemological tradition (from an educational model based on an outdated “carbon copy” of mechanistic interactions with the earth to an enlightened recognition of the inherent interconnectivity and interdependence among the entire web of life) as transcending the carbon copy curriculum. To Hensley, transcending the carbon copy curriculum necessitates critical reflection on the current state of education and a reconceptualization of curriculum and pedagogy grounded in direct experience, ecological thinking, and localization (see Hensley, 2012 for more of a discussion on transcending the carbon copy curriculum). Thus, it is crucial to theorize about ways that we can find an escape from educational confusion (Dewey, 1931).

Rachel Carson admonishes the mechanistic worldview that has been fundamental to the destruction of our biosphere, stating that the “‘control of nature’ is a phrase conceived in arrogance, born of the Neanderthal age of biology and the convenience of man” (In Harris, 2000, p. 144). Carson urges us to think more broadly and to recognize the importance of fostering a mutually beneficial human and earth relationship while understanding that a mechanistic worldview is no longer tenable. Aldo Leopold adds that this fundamental breakdown in worldview must be addressed by stating that we “abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect” (In Witt & Swann, p. 244). Moving beyond an educational tradition steeped in reductionary mechanistic principles enables students to uncouple from a viewpoint that is “conceived in arrogance” and experientially embrace the viewpoint that recognizes that land is a community to which we belong. The environmental calamities that we face are a call to action for teachers, educational administrators, curriculum theorists, educational scholars and all other stakeholders.

One higher education based example of responding to the challenges of biophobia is seen in Jones’ (2013) research pertaining to the “Biophilic University” which he defines as “A University which restores an emotional affinity with the natural environment” (p. 151). Jones promotes a re-conceptualization of higher education to “break free of what is conceptualized as the dominant performative, instrumental sustainability agendas and discourses within universities” (p. 148) and proposes a new root metaphor for higher education tied to advancing sustainability in ways that are not directly tied to the mechanistic and reductionist worldview seen throughout much of higher education today. Jones’ work offers a strong foundation for building an institutional response to the malaise associated with biophobia. When higher education formulates an intentional response to biophobia and recognizes the possibilities for human flourishing, ecological literacy, and participatory democracy that are associated with the sustainability movement, there is great opportunity to transform the way that education is approached. Investigating possibilities for promoting biophilia in educational settings offers a tangible way to move forward in countering the negative influence of biophobia.

Ideas for cultivating biophilia in the college setting

Over the past four and a half years I have had a multitude of opportunities to examine ways to cultivate biophilia while teaching introductory sustainability courses at the university level. The approaches that I have utilized include lectures, readings, discussions, field trips, service-learning, project-based learning, and place-based education. In this section I will draw from my experiences teaching college-level introduction to sustainability courses to offer ideas for cultivating biophilia within higher education.

First, I strongly recommend that educators utilize the surrounding ecological and social community as a platform for educational inquiry pertaining to the topic at hand. This is commonly referred to as place-based education (see Smith, 2014; Smith, 2013; Greenwood, 2013; Hensley, 2011; Orr, 2004). To localize educational efforts contextualizes the content

while engaging the “environment as an integrating context” (Elder, 2003, pp. 54-55). Utilizing The Environment as an Integrating Context for learning (EIC) is a teaching approach that instantiates place-based education and “focuses on using a school’s surroundings and community as a framework within which students can construct their own learning” (Elder, 2003, p. 55). Place-based education is continuing to be embraced by more educators and scholars nationally and internationally (Smith, 2014). The following definition of place-based education, articulated by a group of educational scholars and practitioners in 2007, helps to better unpack the topic:

Place and community-based education is a holistic approach to education, conservation, and community development that uses the local community as an integrating context for learning at all ages. It fosters vibrant partnerships between schools and communities both to boost student achievement and to improve community health and vitality— environmental, social, and economic. (Johnson et al. in Smith, 2014, p. 264)

Place-based education embraces the ecological nuances and the unique social characteristics embodied by the bioregion in which an educational experience takes place. Thus, place-based education has the potential to transform students in their stewardship practices by helping them move from a role of being passive recipients of knowledge to that of active and engaged learners with the capacity to make a positive impact upon their world. Place-based education has the capacity to provoke a deeper and more intentional relationship between students and their surrounding natural and social environments. Thus, place-based education is one way to foster biophilia in both formal and informal education settings.

In the sustainability course that I currently teach at Florida Gulf Coast University (FGCU) called “The University Colloquium: A Sustainable Future,” there is a strong emphasis on enabling students to develop a sense of place. On the syllabus for the Colloquium course, the goal associated with a sense of place is written as follows: “To provide a “sense of place” and an understanding of the unique ecological features of the environment of which you are a part.” The student learning outcome, associated with this goal, is that “Students are expected to describe the unique ecological features of the area and analyze Southwest Florida’s unique environmental and ecological challenges.” With Colloquium’s focus on sense of place, students are encouraged to develop their ecological literacy while exploring a variety of ecosystems on field trips throughout southwestern Florida. These field trips include an agricultural, marine, freshwater, urban, and a campus-based field experience. For example, one freshwater field trip includes a “wet walk” where students experience “full immersion” learning while trudging through a swamp that commonly has waist-deep water. On the FGCU campus field trip students learn about the sustainable features of the built environment and the characteristics of the natural environment. Students learn about how the urban and natural environments interface while also discussing the importance of a watershed and wetlands. This is learning that literally takes place in the students’ “backyard.” Thus, with place-based education, in this context, there is

applicability in virtually any campus setting because the campus itself can become a laboratory for learning about sustainability. When students have experiential encounters with the natural systems of which they are a part, they are more likely to care of these places (Orr, 1994a).

Another example of localized education can be found in place-based watershed education which can be used to help students develop watershed literacy and build each students' hydrological sense of place. One place-based watershed education approach that I have utilized in my courses includes exploring storm water management systems that are in place around the university campus. This task is best initiated by building a conceptual foundation through an assigned reading, reading discussion, and/or lecture that allows students to better understand the concept of a watershed and its significance from a sustainability perspective. When students recognize that the earth's surface is entirely made up of a series of interconnected watersheds, they are able to better understand the responsibility associated with being a member of a particular watershed (Hensley, 2014). To allow students to move from watershed awareness to watershed advocacy it is critical to enable students to explore the watershed in which they are situated. One way to do this is to explore the storm water management system in place on the campus. In particular, it is helpful to have students identify storm drains within a particular area on campus, encourage students to reflect upon how the storm water is perceived from a design perspective, and then to evaluate what message the layout of storm drains may convey to the general public and the university community. Questions can be posed such as, "Is storm water seen as a resource or as a liability/burden?" "Does the storm water have a chance to infiltrate pervious surfaces (such as a field of wildflowers) and recharge the aquifer or does the storm water simply run off of asphalt straight into the nearest storm drain?" Then ask students to explore potential improvements of this drainage system. "Is there a way to capture and store the storm water and then harvest it later as a means to reduce irrigation while promoting the wellbeing of the landscape (when there are periods of no rain)?" "How much water can one square foot of a non-pervious surface produce when there is one inch of rain?"

Next, I encourage higher educators to think about ways to incorporate service-learning into virtually every course. Service-learning has been designated by the Association of American Colleges and Universities as a high impact practice (see <https://www.aacu.org/leap/hips>) and can promote a much more authentic learning experience while advancing an interest in civic engagement among students. Direct interaction within one's bioregion, in a service-learning-oriented capacity, is likely to promote biophilia amongst students (Cramer, 2008; Smith, 2004). When students get to practice the elements of ecological stewardship and service (such as monitoring water quality in various water bodies, planting native trees, marking storm drains to educate the public about where the storm water flows, etc.), instead of just reading about and discussing them, students are engaging in direct experience that enables them to better grasp the possibilities, complexities, and value of this work. After engaging in nature-based service-learning students not only develop new skills, but they also expand upon their awareness of the positive impact that an individual can have on the natural world.

An example of a watershed-oriented service-learning project that I incorporated into the Introduction to Sustainability courses at Auburn University was storm-drain marking. Storm drain marking involves labeling storm drains with messages (either painted or made of tiles or plaques) urging citizens to not dump pollutants into the storm drains. Typically the messages are simple and include a graphic and text which remind passers-by that storm drains are connected to local bodies of water and that dumping will pollute those waters. Involving students in a storm drain labeling project is an excellent way to provide direct and sustainability-oriented service to the campus and/or the surrounding community. Storm drain labeling promotes awareness of nonpoint source pollution and polluted runoff (Hoffmann, 2004). Storm drain labeling is an opportunity to build more relationships between your class and partnering organizations and it allows students to become civically engaged while practicing sustainability. The training involved for storm drain labeling is very basic and once the labeling process is demonstrated and practiced students can be broken up into teams to cover more area. While engaging in storm drain labeling students often encounter curious bystanders who are interested in learning about the project. Thus, while marking storm drains, there is the opportunity for students to provide informal education and build relationships with community members. Additionally, storm drain marking can help build one's connection to the watershed by developing a more contextualized and nuanced understanding of the challenges that face the wellbeing of the watershed.

Lastly, I recommend that students are given the latitude to explore a pertinent topic of their choice in a project-based learning modality, such as a final paper, poster, or PowerPoint presentation. When students are able to engage in project-based learning they are much more likely to sustain interest, find relevance in the associated topic, and retain the knowledge gained from the learning experience (Morgan, 1983). For example, I had my students select an environmental challenge-oriented topic from an approved list (such as dead zones, urban design and walkability, and the carbon footprint of conventional energy sources, etc.), and research that topic throughout the semester with a focus on sustainable solutions. The students were required to find and incorporate peer-reviewed reference material, and they were also encouraged to conduct interviews with local experts associated with their topic. At the end of the semester the students presented their information in the form of research posters with an emphasis on providing background information on the assigned topic, obstacles to emphasizing the triple bottom line (economic, ecological, and social), and proposed solutions to the environmental challenge. The poster presentation session is an effective way to engage the students in scholarly work that is interactive while building students' public speaking skills. This promotes biophilia because students develop a stronger understanding of the natural systems that make life on earth possible and they also learn how to apply this understanding to seemingly intractable sustainability challenges. Accordingly, students develop a stronger recognition of the direct connection between ecological health and human well-being.

These suggestions provide a framework that educators and theorists can adapt to the particular bioregion in which an educational experience takes place. Thus, place-based education with a focus on building biophilia can be drawn upon in virtually any geographical

setting. The opportunities to cultivate a more mutually beneficial human-earth relationship, in formal and non-formal educational settings, are as vast as the diversity of landscapes found throughout the planet. Wendell Berry (1991) eloquently addresses the diversity of landscapes and the importance of caring for them:

The question that must be addressed is not how to care for the planet but how to care for each of the planet's millions of human and natural neighborhoods, each of its small pieces and parcels of land, each one of which is in some precious way different from all the others. (p. 153)

It is our obligation as educators to embrace a form of education that better equips the next generation, and the current generation, to take care of each of the planet's natural and human neighborhoods. Cultivating biophilia within (and beyond) our classrooms is an effective way to do this. We, as educators and theorists, have the opportunity now to commit to a form of education that embraces place and embraces meaningful connections to place. According to E.O. Wilson (1984), affiliating with the natural world, and cultivating biophilia, is what it means to be human. Thus, to further humanize sustainability education, in the context of biophilia, is to advance the sustainability movement.

Conclusion

...biophilia, like the capacity to love, needs the help and active participation of parents, grandparents, teachers, and other caring adults. -David Orr (1994b, p. 200)

As previously discussed, biophilia typically is not cultivated in traditional educational settings. The detachment between humans and the outdoors, promulgated through biophobia, is one that needs to intentionally be addressed. The art of biophilia, in David Orr's (1994b) words, "requires us to use the world with disciplined, concentrated and patient competence" (p. 202). When we interact with the natural world in such a way it is more likely that we will better understand our role on this planet by gaining an enhanced sense of place (Hensley, 2013). University courses have the opportunity to advance the forms of learning that can bolster one's sense of place and love of the natural world. The possibilities for cultivating biophilia in the university classroom are abundant and include place-based education, service-learning, and project-based learning. When experiential education is joined with the intention of teaching about and for sustainability, there is potential for transformative learning. Education that views the traditional classroom walls as permeable and embraces the pedagogical possibilities of place-based learning is the kind of education that can advance biophilia. When educators recognize the nuanced beauty of their bioregion and embrace the connections between course material and place-specific teaching, there is a great deal of rich content that can be uncovered. Also, it is important to recognize the critical role that education plays in addressing the ecological crisis. Biophilia-oriented learning is becoming much more crucial as we face the ecological crisis

associated with variables such as exponential population gain and the rampant industrial-consumer paradigm advanced through contemporary forms of education steeped in standards, efficiency, and accountability (Taubman, 2009).

Educational theorists and practitioners face an important time when the capacity to transform curriculum and pedagogy is more important than ever. At a 2009 Commencement Address at the University of Portland, Paul Hawken urged the graduates to recognize that “civilization needs a new operating system, [and] you are the programmers, and we need it within a few decades.” This urgency to develop a new operating system should ideally be tied to advancing a more meaningful human-earth relationship. Accordingly, when an effort is made to promote biophilia in the educational context, the possibilities for advancing the sustainability movement are acknowledged and a new “operating system” can be realized.

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