

Embracing Our Place: Sustainability and a Bioregional Watershed Education Approach

Nathan Hensley, Bowling Green State University, nhensle@bgsu.edu

Abstract:

Formal educational models are overemphasizing standardization and therefore underestimating the benefits of place. Place-based education is under researched within the field of educational studies and this article attempts to tackle this divide. This article unpacks the definition of place-based education while exploring its relevance to virtually any educational situation. Additionally, a framework for application of place-based education is offered. The proposed framework is supported by a description of its benefits. The idea of a watershed is used to further contextualize the discussion. Recognizing the importance of maintaining the health and integrity of our watersheds is a vital part of a strong sustainability-oriented education program. The reverence and respect for a watershed must be embedded within an ethic which embraces the value of all life on this planet and place-based education is one way to cultivate this reverence and respect.

Key Words:

Place-based education; sustainability education; bioregional education; experiential education; ecological literacy

Dr. Nathan Hensley is an educational theorist with a research focus on the intersection between sustainability, curriculum studies, and transformative place-based education. He is the author of Curriculum Studies Gone Wild: Bioregional Education and the Scholarship of Sustainability. He currently lives in Ohio with his wife and two young daughters and is an Assistant Professor of Sustainability Education at Bowling Green State University.

1. Introduction

I live in the Great Black Swamp of northwestern Ohio and am enchanted by the stories pertaining to the natural history of this place. Though Native Americans hunted the land, it was generally an uninhabitable landscape which created a major obstacle for those who tried to travel through it. The Great Black Swamp is the last part of Ohio that was developed for human inhabitation and, despite the fact that it was drained in the late 1800s, the swamp still shows itself after large rain events through flooding and by the amount of moisture held by the soil. Whenever educators in northwestern Ohio use the Great Black Swamp as part of their curriculum, they are incorporating place-based education. In this article, I will explore place-based education by defining it, describing its benefits and unpacking its relevance within a localized watershed context.

Place-based education is a holistic educational approach that views the local environment and community as features central to the curriculum (Adams et al., 2017; Hensley, 2011; Hensley 2013). It is driven by the unique qualities of the local landscape and culture. Accordingly, in a place-based education approach the environment and one's watershed becomes an "integrating context" (Chawla & Escalante, 2007) for both curriculum and pedagogy. In watershed-oriented place-based education, one's surrounding bioregion is an experiential laboratory and library as well as a place for recreation. Thus, a bioregion is a place in which students can explore, study, and play.

To put it in context, a bioregion is a slice from our biosphere that is composed of several ecosystems, which typically fall within the same boundaries as a watershed (McGinnis, 1999). Robert Thayer (2003) explains that a "bioregion is literally and etymologically a 'life-place'—a unique region definable by natural (rather than political) boundaries" (p. 3). This naturally-occurring boundary is brought forth by the unique flora and fauna that comprise a particular watershed. Thayer adds that there is distinctive "geographic, climatic, hydrological, and ecological character" in these bioregions that are "capable of supporting unique human and non-human living communities" (2003, p. 3). The essence of place-based education is to study and to celebrate the idiosyncrasies of the exceptional places that we inhabit. Even though some people live in the wet and cool Pacific Northwest, others live in the Great Smoky Mountains, and still others live in the arid and hot Southwest, each person still lives in a place that is part of a watershed. I am particularly interested in how watersheds delineate bioregions.

A watershed is an area of land that drains into a common body of water. Rivers, lakes, and streams serve as "vital expression[s]" of a watershed (Project WILD, 1993, p. 146). I have been fascinated by the concept of watersheds since I moved to southeast Georgia, and the Ogeechee River basin, 14 years ago. This interest developed from the times that I swam in, paddled in, and hiked along the river. The mysteries of the river, its black water, the cypress trees and their knobby knees, and the riparian corridor which provided refuge for a diversity of wildlife intrigued me. I was enthralled by how the deep, slow-moving water leached tannins from decaying vegetation and how this contributed to the water's tea-like appearance. When I moved to northwestern Ohio I carried this interest in rivers and watersheds to the Maumee River Watershed. Similar to my experiences with the Ogeechee River, watersheds offer great learning opportunities for students to experience place-based education.

Bioregional nature immersion experiences enable students to develop environmental knowledge, awareness, and appreciation. To inculcate sustainability in an educational context for today's youth, it makes sense that we start in our own backyards. Ultimately, bioregionalism is a form of education that cultivates an ethic of stewardship. The places in which we live become

educational clearinghouses. Environmental features such as watersheds become a significant area for integrated study. In this article, I unpack place-based education, while exploring the benefits and possibilities for applying a watershed bioregional approach to education. I explore the significance for advancing sustainability in the educational context and propose strategies for infusing a watershed oriented eco-curriculum into a variety of settings.

2. Unpacking place-based education

Place is central to the narratives that make up our lives. In place-based education these narratives are infused into the learning process. Place-based education promotes the study of relationships and cultivates a connectedness with one's surroundings. When we develop a holistic understanding of our place, we feel as if we play an integral role in our specific ecosystem.

Mueller-Worster & Ebersole (2005) define a sense of place as the "ecological and social knowledge necessary for the development of one's ecological and social identity associated with a place" (p. 2). A sense of place is the recognition of our ecological address, our place in this biosphere. Thayer (2003) notes that the question "where are we?" is a "simple question with a deceptively complex answer" (p. 2). By learning from our place, we gain a deeper and more authentic understanding of the fundamental relationships that sustain us and the life forms with which we share our bioregion. We cultivate a sense of interconnectedness by interacting with our surrounding ecological and social communities.

Place-based education is a powerful tool that can advance the restoration of the human-earth relationship. Educational philosophers David Gruenewald and Gregory Smith (2008) state that place-based education is "a movement to redefine schooling, and a theory about how we should ultimately view education" (p. 7). This movement is founded in an open dialogue that occurs between the learner, her surrounding community, and the subject matter. However, due to the multidisciplinary trajectory of a place-based model, a single definition is hard to articulate. Thus, in this section, I set out to unpack the significant themes that compose this educational orientation.

Place-based education weaves together the collective narratives that exist within the community and the environment and provides space for each student to construct and build upon his own story. It is an approach that enables teachers and students to situate mandated learning standards within a relevant, active, and experiential context. David Sobel (2008) says that this approach to education emphasizes "hands-on, real-world learning experiences" which increase "academic achievement [and] help students develop stronger ties to their community" (In Gruenewald & Smith, p. 7). This learning process strengthens student appreciation for the natural world and instills a greater sense of civic engagement. When civically engaged, a student is likely to gain an affinity to be a better steward of the natural life surrounding her.

I argue that when one develops an affinity for stewardship, then she will likely take responsibility for protecting her bioregion. Any work that one does to protect a bioregion is a form of community service. A deeper interest in community service arises out of active and authentic encounters with one's natural or social community. These encounters can take the shape of field trips to public green spaces, river cleanups, museum visits, and visits with local artists, writers, and other professionals. Through place-based education, students are equipped to

become better social and ecological citizens invested in restoring and preserving the vitality of community relations and environmental quality.

In place-based education, the walls between the outside world and the classroom become more permeable. Hence, local organizations, businesses, citizens, and natural resources become more infused into the school curriculum (Gruenewald & Smith, 2008). It is important to note that place-based education depends on the unique texture of the local "eco-social" landscape (which varies from region to region), thus it is virtually impossible to deliver a "one-size fits all" place-based model. Instead, this approach to learning demands a pragmatic and "creative interaction between learners and the possibilities and requirements of specific places" (Gruenewald & Smith, 2008, p. 4). Place-based education honors the unique eco-social heritage of each bioregion. It recognizes the significance of each learning context and draws from the nuances and particularities that shape each bioregion's identity.

3. Benefits of place-based education

The most significant lessons I have had throughout my life have been greatly interwoven with place. As a professional outdoor educator, I recall several instances when students learned to enjoy exploring their own surroundings. For example, when I worked as an outdoor instructor at a botanical garden I saw students discover nature's beauty. Once, when I was leading fourth graders on a field trip, one of the students saw the longleaf pine forest and proclaimed, "Wow! This is better than a video game!" His statement provided both an affirmation and a realization. It affirmed that I had selected the right career while helping me to understand the extent of the human-nature disconnect promulgated in conventional education approaches. I have noticed that after students encounter their natural "backyards" (meaning any surrounding natural area), they commonly develop a deeper investment in and a more significant commitment to their own learning. In the case of the video-gaming fourth grader, the natural world provided a catalyst for him to want to learn more. I can assume that he wanted to encounter nature more frequently and to learn from it. Formal inquiries into this matter reveal similar results.

Although implementing place-based education in a "standards driven" curriculum may involve more work to implement than a traditional desk-based curriculum, its possibilities transcend the difficulties. A number of studies demonstrate the positive benefits and possibilities of place-based education (Chawla & Escalante, 2007; Athman & Monroe, 2004; Duffin, 2004; Louv, 2008; Woodhouse & Knapp, 2000). Place-based education has an active and experiential orientation, which lends itself to higher academic performance, enhanced student motivation and achievement, stronger critical thinking skills, and increased levels of responsible behavior and environmental stewardship (Chawla & Escalante, 2007). Place-based education also teaches students critical thinking skills which can help students to do better on their homework, group work, labs, and also to score better on standardized tests.

Educational researchers Michele Ebersole and Anneliese Mueller-Worster (2007) study place-based education in schools. They offer hope to teachers, concluding their study by stating that teachers can "effectively target the state standards and localize their lesson and unit plans at the same time" (p. 24). Since schools are surrounded by an abundance of place-based opportunities for education, teachers can find ways to integrate them into their classroom. Sobel observes that place-based education "prepare[s] students for the problems of today" (In Mueller-Worster & Ebersole, 2005, pp. 3-4).

I argue that the scope of place-based education reaches beyond the problems of today and extends into preparing students for the problems of tomorrow. Similarly, educational philosopher

John Dewey recognizes the importance of equipping our children for situations that cannot be predicted. He states that “[t]he world is moving at a tremendous rate, no one knows where. We must prepare our children not for the world of the past, not for our world, but for their world. The world of the future” (In Future of Learning, n.d.). How do we prepare our children for their world, the world of the future? Place-based education reaches beyond the problems that we face today by equipping students with the knowledge, skills, and abilities to tackle problems, even those we are unable to anticipate due to the rapidly changing framework of our world. We must equip students with the skills to gauge environmental health while expanding their capacity to respond to problems and to pose appropriate solutions. One way to help students gauge environmental health is through a localized watershed education approach.

4. Relevance within a localized watershed education model

Utilizing a place-based watershed education approach is an effective starting point for expanding environmental awareness. In an educational context, it is important to explain that, within a watershed, even pollutants several hundred miles away from a river can impact the river’s water quality and aquatic habitat. Keeping with the river theme, we can say that “we all live downstream.” Everything that we do affects others in our watershed and virtually all living beings in downstream watersheds. One tub of oil dumped into a watershed is carried downstream to other communities, potentially destroying ecological integrity throughout its entire route. This section will explain how the watershed in which one plays, works, and lives can be harnessed as a valuable teaching tool.

Hydrologist Brock Dolman (2009) posits that the greatest threat to the integrity of our aquatic ecosystems is runoff. Runoff is the water from rain, snowmelt or other sources that flows over the land and into our rivers, lakes, and streams. Runoff in the form of surface water carries natural and manmade contaminants into nearby waterways. It transports non-point source pollution, which is water pollution from diffuse sources, such as polluted runoff from a cow pasture. As we urbanize our watersheds we replace a majority of natural vegetation with concrete and other impervious surfaces (Browner & Glickman, 1998). This reduces the opportunity for rainwater infiltration and promotes more runoff.

Infiltration occurs when rain and snow percolate into the subsurface soil and rock. Water that infiltrates the soil is dramatically slowed as it makes its way to the waterway that defines a particular watershed. Generally speaking, the more infiltration that occurs in a watershed, the healthier the waterways will be (Hottenroth, Harper, & Turner, 1999). When water infiltrates, it is transferred into groundwater instead of traveling as surface water. Groundwater moves slowly and is naturally filtered by several layers of rock and other geological features (Hensley, 2014). On the other hand, surface water moves quickly and generally does not encounter natural filtration before entering surrounding rivers, lakes, and streams. From the standpoint of promoting water quality, Dolman (2009) argues that we should respond to runoff by “slowing it, spreading it, and sinking it” (n.p.).

We can *slow* runoff by creating more green space and vegetation and reducing the overall amount of paved space in urban areas. We *spread* runoff by getting it out of the pipes and canals that route it into one specific place. Pipes and canals serve as consolidation points for virtually all urban runoff. These water collection systems concentrate pollutants into one place and reduce its chances to become groundwater. The idea of *spreading it* is to diffuse runoff in a way that

helps it to be more broadcasted, which encourages infiltration. Finally, we can work on *sinking* storm water runoff by creating more pervious places. When we *sink* our storm water we help reduce the pollution affiliated with surface water runoff. The crux of an appropriate and sustainable water management plan is to facilitate groundwater infiltration. Examples of how to *sink* it include using pervious concrete, soil, and creating more green space. Green space facilitates water absorption and the optimal infiltration of storm water (Hensley, 2014).

From an educational context, promoting watershed awareness is replete with opportunity. It is a tangible way to encourage sustainable living. Teaching the mechanics of a watershed provides opportunity for knowledge transfer (Hensley, 2014). Even the most fundamental understanding of watershed ecology can serve as a heuristic template for learning about and forging solutions to other environmental problems.

In the case of promoting watershed health and water quality for the local rivers, it is valuable to first get the students out to the river. Here the student can study, play in, and explore the waterway. Non-formal encounters with the river are just as valuable as formal encounters, and often provide a starting point for students to learn to enjoy their local river. Accordingly, I argue that unstructured play time on the river is a great place to start. These non-formal interactions with nature help us to restore our innate curiosity and our love of the outdoor world (Louv, 2008). Next, it is valuable to help students understand the larger context of what threatens the rivers of their bioregion. For example, the parts of a river that are extremely high in sedimentation can sometimes be differentiated through naked-eye observation. Next, students can do some chemical testing to check for other potential problems such as alkalinity or high phosphorous levels or biological testing to look for macroinvertebrates that live in a particular river. Macroinvertebrates provide a helpful snapshot of the health of a river ecosystem because they are indicators of water quality. The level of sophistication can be tailored to fit the age of the student, their science comprehension, and their ability to grasp complex topics.

After the student gains an understanding of what threatens a particular river they are better equipped to formulate an appropriate response. This response should build upon what is already being done in an area. In the context of protecting a river, the first step is to contact local agencies that are committed to river protection and to voice an interest in participating in the study, exploration, and preservation of the river.

I argue that education is well situated to confront the unsustainable industrial-based, anthropocentric paradigm that has been handed from generation to generation. We must work to shift the worldview that shapes the way in which we relate to our planet. As Sarabhai (2009) suggests, the most powerful way to catalyze this transformation of paradigm is through education. She states,

...when the human race needs to come back from our all powerful and human-centric illusion the industrial age gave us, and when we need to reconnect with nature and in humility learn how perfectly balanced and dynamically sustainable the natural world is, education...has to be the main driver of change. (Sarabhai, 2009, pp. 124-125)

I agree with Sarabhai and add that it is through cultivating a deeper sense of place that we can garner the collective will necessary to circumvent and mitigate ecological devastation. When we become closer with our bioregions we are better situated to live sustainably while encouraging others to do the same.

5. Conclusion

Place-based education is a concept that is relevant virtually anywhere in the world (Adams et al., 2017; Hensley, 2011). Staying with the watershed theme, every location in the world is part of a watershed. This gives every school rich text for deeper inquiry opportunities and a platform for providing an integrated contextual understanding. Curriculum can evolve in a way that focuses on revitalizing waterways and watersheds. Within the United States, citizens are becoming more interested in utilizing education as a method to encourage stewardship and to make local waterways more swimmable and fishable.

Place-based education offers a transformative approach to reforming education. In the context of watersheds, place becomes even more significant. When students are able to be involved in the actual restoration of their surrounding waterways, their learning becomes more contextualized and meaningful. As a result, students take more ownership in their own learning and are empowered to become life-long learners. When a student is able to see firsthand that their learning is situated in their bioregion, it becomes much more relevant. Relevancy is a gateway to nurturing the innate curiosity of a student. Research indicates that students who learned through place-based education may increase their test performance and critical thinking capacity (Louv, 2008). Ultimately, these benefits will lead to more individual and collective agency which can affect change in a sustainable trajectory.

We have arrived at an epochal turning point in which we need to put all of our efforts into attaining sustainability. Education in all disciplines and at all grade levels, informal and formal, is one large way that we can facilitate a move towards sustainability. When we are able to draw from our unique bioregions and explore the landscapes that comprise our watershed we are better positioned to practice environmental stewardship.



Maumee River (NW Ohio)

References:

- Adams, J., Greenwood, D. A., Thomashow, M., & Russ, A. (2017). Sense of place. In A. Russ & M. E. Krasny (Eds.), *Urban environmental education review* (pp. 68–75). Comstock Publishing Associates.
- Athman, J., & Monroe, M. (2004). The effects of environment-based education on student's achievement motivation. *Journal of Interpretation Research*, 9(1), 9-25.
- Browner, C., & Glickman, D. (1998). *Clean water action plan: Restoring and protecting America's waters*. Collingdale, PA: Diane Pub Co.
- Chawla, L., & Escalante, M. (2007). Student gains from place-based education. [Online] Available: <http://www.foresthistory.org/education/Curriculum/StudentGains-Chawla.pdf> (November 15, 2007)
- Dolman, B. (2009). *Basins of relations: Reverential, rehydration & revolution, Part 4* [video]. Retrieved from <http://www.youtube.com/watch?v=bj0KAutz3Y&feature=related>
- Duffin, M., & PEER Associates (2007). *Why use place-based education?: Four answers that emerge from the findings of PEEC, the Place-based Education Evaluation Collaborative, (Presentation version)*. Retrieved from http://www.peecworks.org/PEEC/PEEC_Reports/S01248363-01248382
- Future of Learning. (n.d.). Harvard Graduate School of Education. Retrieved, from <http://www.gse.harvard.edu/ppe/k12/programs/fol.html>.
- Gruenewald, D. A., & Smith, G. A. (2008). *Place-based education in the global age: local diversity*. New York: Lawrence Erlbaum Associates.
- Hensley, N. (2011). *Curriculum studies gone wild: Bioregional education and the scholarship of sustainability*. New York: Peter Lang.
- Hensley, N. (2013). Curriculum as bioregional text: Place, Experience, and Sustainability. *The Journal of Sustainability Education*. http://www.susted.com/wordpress/content/curriculum-as-bioregional-text-place-experience-and-sustainability-2_2013_05/
- Hensley, N. (2014). Incorporating Place-Based Education to Cultivate Watershed Literacy: A Case Study. In K. D. Thomas & H. Muga (Eds.), *Handbook of research on pedagogical innovations for sustainable development* (pp. 27–38).
- Hottenroth, D., Harper, C., & Turner, J. (1999). Effectiveness of Integrated Stormwater management in a Portland, Oregon Watershed. *Journal of the American Water Resources Association*, 35(3), 633-641.
- Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. Chapel Hill, NC: Algonquin Books.
- McGinnis, M. (Ed.). (1999). *Bioregionalism*. New York: Routledge.
- Mueller-Worster, A., & Ebersole, M. (2005). Place and Standards-based teacher preparation courses. In *Annual meeting of the North American Association for Environmental Education Proceedings* (pp. 1-10). Presented at the annual meeting of the North American Association for Environmental Education, University of Hawai'i at Hilo. Retrieved from http://www.allacademic.com/meta/p_mla_apa_research_citation/0/3/4/4/1/pages34413/p34413-1.php

- Project WILD. Western Regional Environmental Education Council, & Western Association of Fish and Wildlife Agencies (U.S.). (1992). *Aquatic Project WILD: aquatic education activity guide*. Boulder, CO: Project WILD.
- Sarabhai, S. (2009). Half the decade over or half to go? *Journal of education for sustainable development*, 3(2), 123-125.
- Thayer, R. (2003). *LifePlace: Bioregional thought and practice*. Berkeley: University of California Press.
- Woodhouse, J. L., & Knapp, C. E. (2000). *Place-based curriculum and instruction: Outdoor environmental education approaches*. Charleston, WV: ERIC Clearing house on Rural Education and Small Schools. (ERIC Document Reproduction Service No. ED448012).