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# Place-Based Education: (Re)Integrating Ecology & Economy

Mark T. Kissling & Angela Calabrese Barton

It is common to hear of “the economy” and “the environment” in contemporary political discourses. Most daily newspapers or news broadcasts run stories about both. Although commentators often pit them against each other—as in the current debate over the future of the Keystone XL pipeline project—they are in fact deeply interrelated. If we consider the origins of the words ecology, which we view as the foundation for the environment, and economy, this interconnection makes sense: ecology involves studying one’s environment, and economy involves managing it. Neither exists independent of the other. In this respect, there is integrity—that is, deep interdependence; wholeness—among “the economy” and “the environment.”

The farmer and writer Wendell Berry argues this point in an essay called “The Total Economy” (2003), as he considers the “so-called environmental crisis”:

*The “environmental crisis” can be solved only if people, individually and in their communities, recover responsibility for their thoughtlessly given proxies. If people begin the effort to take back into their own power a significant portion of their economic responsibility, then their inevitable first discovery is that the “environmental crisis” is no such thing; it is not a crisis of our environs or surroundings; it is a crisis of our lives as individuals, as family members, as community members, and as citizens. (p. 64)*

As Berry highlights, no action—economic or otherwise—can exist separate from people’s stewardship of the earth. There is integrity of the “beings” and “doings” of people with the earth on which they stand. This is our entry into place-based education.

## Places Within Place-Based Education

Place-based education examines and cultivates integrity in and from particular places. Instead of abstractly framing subject-area content, place-based educators ground their pedagogy and curriculum in the complexities of their students’ lives and surrounding communities.

There is a growing body of literature on place-based education. While education rooted in the particular places of students’ lives is not new (e.g., Dewey, 1959; Tagore, 1961), a strong thread of place-based education has emerged in the past decade (Gruenewald & Smith, 2008; Smith & Sobel, 2010; Sobel, 2005). This thread has primarily developed from environmental education, with an explicit concern for the natural world. Bigelow’s essay “How My Schooling Taught Me Contempt for the Earth” (1996), calling for school curricula to become grounded in the places that students and teachers reside, is one example of the material shaping this thread.

Attention to the natural world, though, does not preclude attention to the human world. As Berry as well as educators like Noddings (2005) explain, there is deep interdependence and wholeness of all life on Earth. With all beings connected in a “pattern” (Berry, 1981), justice for nonhumans cannot be separated from justice for humans. Greenwood (formerly Gruenewald) (2003) has argued this point in his attempt to bring together critical pedagogy and place-based education in a “critical pedagogy of place” (p. 3). He explains that this approach to education

*aims to contribute to the production of educational discourses and practices that explicitly examine the place-specific nexus between environment, culture, and education. It is a pedagogy linked to cultural and ecological politics, a pedagogy informed by an ethic of eco-justice (Bowers, 2001), and other socio-ecological traditions that interrogate the intersection between cultures and ecosystems. (Gruenewald, 2003, p. 10)*

A critical pedagogy of place shows how the livelihood of humans is fundamentally tied to the livelihood of nonhumans, just as economy and ecology are intertwined. Thus, there is integrity of living beings with a need for sustainability of all parts within the whole.

We turn to one example of our work as place-based educators to show how middle level (i.e., late-elementary- and middle-school-aged) students in Lansing, Michigan, demonstrated an impressive ability to forego easy-but-incomplete economic or ecological responses to a proposed local power plant.

## **Lansing’s Need for a New Power Plant**

In Lansing and its surrounding municipalities, residents receive electricity and water from the Lansing Board of Water & Light (the BWL), a publicly-owned power utility. According to the BWL, more than a century ago, Lansing’s citizens felt “the benefits of electricity and public drinking water were too important to be trusted to anyone except the citizens themselves” (Lansing Board of Water & Light, 2009a, para. 1). There is a history of the city’s citizens, as both owners and consumers, taking an active role in the workings of their utility.

In the winter of 2009, the BWL made public its interest to build a new power plant. At the time, electricity in the city (and its greater metropolitan area) was generated from two power plants. The primary plant was an old coal-burning facility. Making the case for the building of a new plant in a letter sent out to all consumers, the BWL explained:

*The Eckert Power Plant near downtown Lansing is more than a half-century old, though it was designed to only last 40 years. Increasing operations and maintenance costs, environmental compliance costs, and the plant’s relatively poor efficiency make it ever more expensive to keep it operating. The cost to meet potential environmental regulations at the*

*plant could amount to approximately \$260 million in the next few years. The BWL staff recommends building a new, more efficient power plant whose air emissions, including greenhouse gas emissions, are much smaller than Eckert's. (Lansing Board of Water and Light, 2009b).*

The rationale noted economic and environmental concerns: The Eckert plant was costly and dirty.

While the BWL had not settled on a definite proposal for the plant, it had made public a working plan that called for “a hybrid biomass generating plant” (Lansing Board of Water and Light, 2009c, para. 6), at which electricity would come from the burning of 70% coal and 30% biomass sources. Enacting this plan, the utility explained, would mean operating “a more efficient, greener power plant” instead of having to “buy electricity on the volatile open market” (Lansing Board of Water and Light, 2009c, para. 7). The proposed plant, the BWL argued, would address economic and ecological issues faced by the communities it served. Important context surrounded both of these matters.

**Economic context.** Lansing was mired in an extended period of vast economic distress. The unemployment rate in Greater Lansing hovered between 10% and 15%, as local automobile plants and their supply chains—some of the area’s largest employers and, historically, the linchpin of the local economy—decreased productivity or shuttered altogether. The economies of Lansing and the rest of Michigan were struggling, especially among the working class. These financial woes, however, were not nascent (e.g., Melinn, 2009; Saulny & Davey, 2008).

Many families in Lansing had been severely impacted for years, well before the onset of the nationwide recession in the fall of 2008. They endured job loss and saw local businesses close and public services reduced. Budget cuts at the state and local levels in most sectors intensified family and community-wide economic hardship. A Pew Research Center study found that nationwide, the people and families hit hardest by the recession were racial minorities and those who were already poor (Taylor, Kochnar, Fry, Velasco, & Motel, 2011). The idea of any kind of stimulation to Lansing’s economy was therefore welcome; the construction of a new power plant, in addition to saving money, might also create a number of new, needed jobs.

**Ecological context.** In Lansing, as in other places across the country, there was significant talk about the impact of coal-burning power plants on the health and well-being of people and their surroundings. Such considerations had not been present when the Eckert Plant was built decades earlier. Topics such as pollution had been on the table then, but there had been no discussion about the legacy of environmental racism attached to the building of power plants.

The negative environmental impacts of power plants, as well as other problems caused by industries like manufacturing and oil refining, have historically burdened poor people and people of color (Brodkin, 2009; Bullard, 2005; Bullock, 2001). The concept of NIMBY—“not in my backyard”—proves powerful as decision makers locate industry in places where the neighboring

communities, often poor and/or of color, lack the political clout to push back. Although environmental justice advocates are finding some success in fighting this disproportionate distribution of environmental degradation (Danaher, Biggs, & Mark, 2007), the practice continues.

## Youth Studying the Power Plant Proposal

As the BWL considered Lansing's energy future, a group of youth at the Boys & Girls Club of Lansing (the Club) did as well. They were participants in Green Energy Technology in the City (GET City), an outside-of-school science program at the Club, and we were two of the teachers. The Club predominantly serves youth of color from low-income backgrounds, and GET City's participants ranged between fifth and eighth graders who attended a number of schools from across Lansing.

GET City's goal is for urban youth to learn about science and engineering related to energy sustainability and information technologies while working within and for their surrounding communities. The intent is for participants to develop "critical science literacy" while becoming "community science experts" (Calabrese Barton & Tan, 2010a, 2010b). The entire program is driven by the idea of teaching science for social justice (Calabrese Barton, Ermer, Burkett, & Osborne, 2003) and cultivating ecological citizenship (Kissling & Calabrese Barton, 2013).

When the BWL made public its proposed plan for a new power plant, GET City began an inquiry unit focused on the question, "Should my city build the proposed hybrid power plant?" This was an important local issue for all people in Greater Lansing. But it was particularly salient for GET City's participants and their families, given their racial and socioeconomic backgrounds (particularly in light of the ongoing recession and the history of environmental racism).

In the prior unit, the participants had studied coal as an energy source: its extraction from the earth; its transport to local power plants, its use to generate electricity, and that electricity's powering of the computers at the Club. Building on that study, the power plant unit sought to investigate alternative energy sources in the context of considering whether or not Lansing should build the proposed plant.

The unit began with GET City participants analyzing the BWL's public statements regarding the proposed hybrid plant. The participants generated a number of questions from this analysis, which we used to drive a sequence of related investigations: How many and what kinds of jobs would the plant create? How green would the plant be? Were there other, better options? The participants studied the viability of solar, biomass, and wind energy by working with local engineers to build and test small-scale models of these systems and used state and national data sets such as those of the U.S. Department of Energy's National Renewable Energy Laboratory to plot GIS maps of resource availability.

Participants also corresponded with local energy experts from research and development departments of both public and private organizations. They took field trips to learn more about other local energy initiatives. They conducted surveys of friends, families, and community members

to gauge how much their community knew about the plant proposal. At the end of the unit, at a community forum held at the Club and attended by BWL representatives, scientists, and community members, participants shared what they had learned.

## Scenarios Pitting Economy Against Ecology

Throughout the power plant unit, we held a weekly discussion group with four GET City participants; it is a regular practice at GET City to hold weekly conversations with participating youths as a way to create a space for them to help shape the ongoing design and enactment of the program. Often the conversation groups involve youths of differing ages and levels of participation in GET City. Sometimes we hold a special sequence of conversations with particular groups of participants because we want to learn something specific. In this instance, the four youths whose perspectives we share here were the youngest participants in GET City at that time who also attended the Club regularly throughout the week. We wished to create a unique space for them to discuss their ideas within the larger program, and we wanted to understand how younger people made sense of the complex problems posed in the unit. We hosted these conversations in the Club's conference room after school on days that GET City was not in session. At the time, Jana, Nadia, and Zeus were fifth graders and Sam was a sixth grader.<sup>(3)</sup> All of them are African American and members of working class families.

We conducted 12 discussions, and at the end of the unit we concluded with conversations about a set of scenarios related to the proposed power plant. The three scenarios explicitly addressed competing economic and ecological considerations, and all involved the ultimate question of whether the proposed BWL plant should be built, although each approached that question differently. The first considered whether it was fair for the BWL to charge customers extra for electricity derived from renewable energies. The second asked the youths to consider a town in West Virginia where coal extraction via mountaintop removal provided jobs but jeopardized the health of the community. (Some of the coal imported into Michigan comes from West Virginia.) The third asked whether the BWL plan was “good enough.”

Given the participants' social marginalization in relation to race and socioeconomic status, as well as their participation in a green energy program, we were eager to see how they considered ecological and economic tensions. The youths' responses to the scenarios are entries into their complex thinking about Lansing's power plant proposal. While there were clear economic and ecological aspects to their analysis, their responses demonstrated that those aspects could hardly be separated. We start by dis-integrating their arguments along economic and ecological lines but then dig into how this separation fails to capture the complexity of the students' thinking.

**Economic perspectives.** For Jana, Nadia, Sam, and Zeus, any decision about the power plant and the electricity that it would produce had to take into account the impact on people's jobs. Jobs—the lack of them, access to them, and creating them—was a central issue for all of the participants, and it was their main economic concern. This focus was not surprising, as all of these youths experienced their parents or their friends' parents losing jobs during this time period.

While talking about the second scenario and how a move away from coal toward greener energies could take away the coal miners' jobs, Nadia said, "It's hard [to be in favor of ending coal as an energy source] because people need their jobs." Zeus also spoke in support of mountaintop removal that extracts coal. He argued that jobs were "more important than the mountains [because] how are you going to buy stuff for your family and raise your family?" For all four youths, jobs provided income that was essential to the survival of their families. If the power plant did not maintain its current jobs or provide alternative employment, directly or indirectly, there would be a fundamental problem. But if established jobs were protected and new jobs were created, the new power plant could significantly help families survive.

Two other economic perspectives emerged from a discussion about the costs associated with a new plant, particularly one that attempted to rely as much as it could on green energy sources. On a macro scale, Jana worried about the costs of such a plant, since the technology to cheaply generate enough green electricity had not been developed. "In Lansing we cannot use wind because we don't have enough and we can't use solar because we have too many cloudy days," she commented. While Jana was the only participant to consider the feasibility of the plant from this macro-level perspective, all four participants raised the issue of feasibility with respect to environmental matters.

On an individual scale, the participants considered what it would mean for the BWL's customers to pay for increased costs related to green (or greener) electricity. Jana, Nadia, and Sam were not eager to support increased costs for customers. As Jana argued, "[the BWL's customers] need that money to buy food, water, and other things that their families or themselves need to survive and be healthy." Zeus, though, saw the issue differently. "If you want to live healthy," he said, implying that using green electricity was an healthy way to do that, "you're not just going to get it for free—everything costs." Then Zeus added: "But it is kind of not fair because some people may not have the money and those who don't have the money can't afford to pay [the extra cost for green electricity]."

Zeus's point was the foundation for the other three participants' concern about increased electricity costs. What about people who would struggle to pay the additional amount? As Sam argued, the environmental result of the extra cost was worth it: "We need a clean environment!" But not all people could afford to pay for it. As Nadia considered the extra cost, she said, "It depends on how much more [money the customers will have to pay]." She felt that green electricity was best for people and the environment but, at the same time, she supported having BWL customers pay less because "people don't have lots of money to pay for renewable energy sources." After doing the math to figure out what the cost differences might be for a household for one year, Nadia exclaimed, "Oh no!" as if to say, "There's no way this is going to work." She followed this up by saying that BWL customers "shouldn't pay that much [for greener electricity]—well, oh gosh, they shoooooooouuuuuldddd, but all of our energy doesn't have to be renewable."

The participants also raised concerns about what economic impact building a power plant committed to generating electricity with the greenest sources would have on people's jobs and income

as well as about the costs that BWL customers, particularly those with the smallest income flows, might have to shoulder. Based on these considerations, there was good reason to oppose the proposed plant.

**Ecological perspectives.** At the same time that the youths voiced the economic perspectives above, they maintained that a power plant must operate in whatever way is best for the earth and its people. Sam said that he would not support the proposed 70% coal, 30% biomass plant “because it could be much better.” With such a dependence on coal, “it will just make [the environment] dirty and people’s health will get messed up.” Implied here is the need for more extensive reliance on alternative energies.

But Sam recognized an important limitation. While he wanted the new plant to emphasize wind energy, he noted, “We can’t depend all on wind.” (In their GIS-based investigations of wind energy, the youths discovered that Michigan’s wind potential ranked in the top 15 nationally. However, the greatest potential was along the shore, not inland where they lived.) Therefore, some coal was needed. “If we’re not using a lot [of coal], it ain’t going to hurt the environment as much.” He recognized that technological restraints make a dependence on green energy sources for electricity difficult. Sam knew that Lansing would have a problem generating all of its electricity from wind.

Jana encountered a similar tension. On the one hand, she felt that Lansing should not build the proposed plant “because it can still cause CO<sub>2</sub> and pollution.” (During their surveys of experts, Zeus, Sam, Nadia, and she learned that there was significant disagreement about the carbon neutrality of biomass.) But on the other hand, Lansing should build it “because the power plant is our only electricity source.” Since Lansing did not have the technological means for cost-effective alternative electricity generation, she argued the proposed plant was necessary because “we still need to figure out how we are going to transfer all the renewable energy to all the houses in Lansing.” The plant proposal was not ideal for her—she made clear that it would be far better to go with “renewable energy sources [that] will never run out”—but it appeared that it could not be avoided.

Zeus recognized a tension similar to that expressed by Sam and Jana, but he viewed the circumstances differently. The proposed plant “could be even better,” he admitted, but “it’s healthier and better than the old one.” For him, moving from 100% coal sources down to 70% coal was important. He felt the plant was not ideal but that it was a step in the right direction. Thus, he could support it “as long as we’re making a positive change.” Both people and the earth would be better off.

A final ecological perspective that came up at various points involved the importance of the public being informed about what was at stake in building the plant. The youths felt Lansing’s residents needed to know the environmental aspects of the issue in order to participate in deliberations on the proposed plant. Exasperatedly, Nadia commented, “Some people don’t even know about coal.” Jana called for the BWL “to put poster signs up around Lansing because a lot of



people do not know what is going to happen [with a new plant].” Sam advocated that residents who were familiar with the issue should help those who did not understand it.

## **(Re)Integrating Ecology and Economy**

The GET City youths’ perspectives on the proposed power plant show a number of their commitments: caring for the earth, creating jobs, living healthy lives, supporting technological innovation that allows for greater dependence on renewable energy sources, and using electricity produced from environmentally friendly sources/methods but with minimal financial burden, particularly on the community’s poorest people. Amid these diverse commitments, none of the youths clung to one at the expense of all the others.

As members of a program interested in green energy technology, the four youths were certainly predisposed to thinking about energy and the impact of the production and consumption of energy on the earth. Mindful of what they had learned from GET City, it would have been reasonable for them, in response to the scenarios, to offer perspectives that only reflected green commitments.

At the same time, as members of families and a community struggling through difficult financial circumstances (either directly or indirectly), the four youths were experiencing firsthand the economic recession. It therefore would also have been reasonable for them to view the scenarios through a solely economic lens.

However, the participants’ responses did not fall simply into ecological or economic camps but instead showed an understanding of the complex relationship between the two. Green(er) electricity was important to them, but so too was making it affordable. Limiting coal extraction that is harmful to the earth and local residents was important, but so too were residents’ livelihoods. Indeed, every single economic stance had an ecological dimension to it, and vice versa.

For example, when, while discussing BWL customers paying extra for greener electricity, Nadia said, “They shouldn’t pay that much [for greener electricity]—well, oh gosh, they shoooooooouuuldddd,” her drawn out should was an indicator of the importance she placed on green(er) electricity. Although she didn’t want Lansing’s residents, particularly the poorest, to have to pay more for green(er) electricity, she recognized the importance of green(er) electricity for the well-being of the earth and all its inhabitants.

Responding to the second scenario, Zeus found himself confronting a similar complexity. Coal extraction from mountaintop removal harmed the health of the earth and its inhabitants—and yet such mining supported people’s livelihoods. On balance, he felt jobs were more important than a healthy environment. But, he noted, “People should have another choice”; he felt that people should not have to choose between employment or healthy living conditions and the protection of the earth.

This point about the integrity of the issue—the need to attend to all the concerns involved—is not unique to this specific situation. However, it is particularly meaningful in the arguments made by youths from marginalized backgrounds about a justice issue directly affecting them. People with economic and political clout can talk about the economic and ecological crises as separate issues. In the short term, they do not suffer the consequences of that view. But for those who live the realities of economic recession and environmental racism, the repercussions are not only immediate—they are one and the same.

The lone instance in the youths' thinking about the scenarios where there was a lack of attention to economic and ecological integrity involved Jana's and Sam's responses to the second scenario. Although each youth had concerns about both the economic and ecological aspects of the two scenarios that were explicitly local to Lansing, Jana and Sam were unwavering in their ecological perspectives with respect to the scenario that focused on a coal-mining community in West Virginia. Both adamantly opposed coal extraction via mountaintop removal in this community, regardless of the economic burden that its residents would likely experience as a result. A salient point for us, here, is the locality of the issue. Even though Lansing was implicated in the scenario (as its new plant might receive coal from mountaintop removal areas in Appalachia), Jana and Sam did not identify with the bind in which the people in the scenario found themselves.

We wonder what Jana's and Sam's responses might have looked like if the coal-mining community were somewhere in mid-Michigan or if the youths had relatives who lived in that community. The challenge that emerges from this for place-based education is to cultivate authentic connections to people and all living creatures in other localities. While students need to understand the integrity of ecology and economy, they also need to recognize the integrity of all life on the earth—what Berry (1981) calls “living in pattern.”

## Conclusion

Place-based education has focused primarily on the importance of connecting children to the natural world. However, the GET City youths remind us that the complexities of their lives, as lived in their surrounding communities, require a more nuanced stance. Jana, Sam, Zeus, and Nadia help us see that we need to facilitate opportunities for youth to experience their natural and lived worlds meaningfully. There is not much that is natural about a coal-fired power plant, but it is certainly part of the world of the people who live in the area surrounding it, and it also has a distinct impact on the natural world of that area.

Some might argue that this approach to place-based education is only possible in an out-of-school setting. We disagree. The integrity of ecology and economy is vitally important in school, where youth are routinely subjected to disembodied views of science, society, and community—not to mention many other curricular aspects. Imagine if all teachers and students had the curricular room and encouragement to consider the relationship of school life to local community challenges—and even to make that relationship central to classroom learning practices (e.g., Bigelow & Swinehart, 2014; Kissling & Rogers, 2014). Reflecting closely upon the perspectives of Jana, Nadia, Sam, and Zeus, who in deliberating about whether Lansing should build its proposed

power plant showed that economic and ecological considerations are inseparable, we call for educators to wade into the complexity of the integrity of ecology and economy in their classrooms.

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