Kim-Marie Cortez-Riggio

The Green Footprint Project: How Middle School Students Inspired Their Community and Raised Their Self-Worth

Students complete Internet research, create pamphlets, give presentations, and take on other activities to alert the school community to local environmental issues—and learn valuable ELA skills along the way.

That "Human–environment interactions impact our Earth" seems to resonate within our current generation of students. As a classroom teacher, I hoped that I would act as a catalyst, inspiring my fifth-grade students to become active participants in their world. Using Paulo Freire's pedagogical view of a problem-posing education, I approached my 20 students with a bare idea, "Green Project," knowing that it would be their curiosities, connections, debates, and negotiations that would infuse those skeletal words. Offering only "the practice of freedom" (Freire 89) and minimal guidance, I watched students transform their world through an environment-focused project and, in doing so, I learned that they also transformed themselves into critical thinkers and experienced speakers whose voices had become protectors of the Earth.

As a classroom teacher and doctoral student with interests in pedagogy, identity formation, and multiliteracies (New London Group), I designed a project based on students' intelligences (Gardner), knowing that it would need to be multigenre with big ideas interwoven throughout. Because I wanted to offer the students a choice, I organized a brainstorming session (see fig. 1) to determine a class focus for a local community environment project. My students chose to focus on the air quality outside the school, specifically the carbon emissions produced by idling cars. Project "Green Footprint" was created to remind the citizens of the school (and Earth) to tread lightly on Mother Nature's creations. Figure 2 shows students creating the symbol that would come to represent their cause. The color

FIGURE 1. Students Brainstorming Local, National, and Global Green Issues

FIGURE 2. The "Green Footprint" Is Born

green (not shown in this black-and-white photo) symbolizes the Earth and the footprint represents the mark we leave on our planet, to remind people that our actions are traceable. We worked on this project over five months for approximately three days each week. As a result of "Green Footprint," the students' transformative actions became reflective of how they saw themselves within their school community and the larger world.

Multidisciplinary Activities: Fitting "Green Footprint" into the Curriculum

After choosing their environment theme of local air pollution, the class formed four, mixed-gender cooperative groups of five students each and began storyboarding ideas by writing down important phrases and drawing rudimentary pictures on sticky notes to formulate into a larger action plan. The students also chose to categorize their action ideas into "local," "national," or "global" effects.

Science

The Green Footprint project began with inquiry activities, such as observing surroundings, researching the Internet and books, and taking notes on possible causes of air pollution and its detrimental effects. The idling cars outside our open classroom windows, which allowed harmful fumes to filter in and caused many students to cough, inspired an idea.

One group of students chose to time individual cars that idled, over a period of three school weeks, and convert these data into a carbon footprint (the amount of carbon dioxide emissions produced by an individual) to determine the emissions' impact on air quality. Another group researched how carbon emissions in the air affected children's breathing, especially those with preexisting lung conditions such as asthma. A different group focused on publicity and community awareness. It pondered ways to make their peers aware of this unnecessary situation and promote a greener community. This group took the green footprint idea literally and created bottle-cap necklaces and magnets with a hand-painted, four-toed, green footprint as a branded product (see fig. 3) and a slogan: S.T.O.P. (Each toe had one letter that represented "Stop, Turn Off Pollution.") The students created this product to sell within the school community as

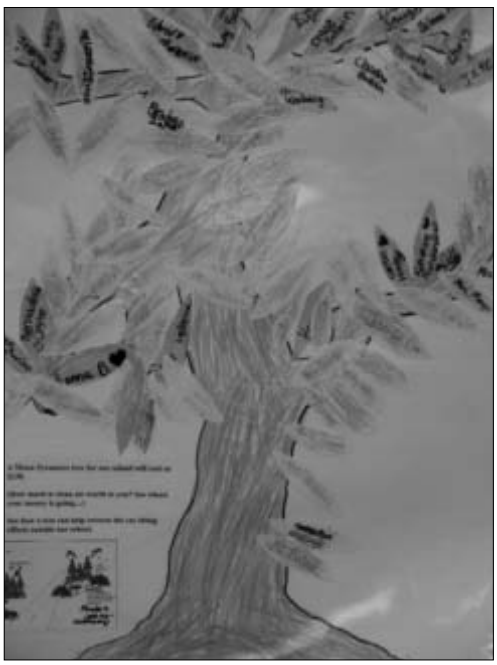
FIGURE 3. Student Volunteers Creating Green Footprint Products

a symbol of support for the Earth. They also chose, after reading about the carbon-oxygen cycle and a tree's role in this, to use 100% of the bottle-cap profits to purchase trees to be planted on school grounds to help offset the carbon emissions produced by idling cars. To represent their goal, each person who purchased a bottle cap wrote their name on a leaf that was placed on a bare tree trunk representation. As shown in Figure 4, the tree flourished and students' goal was accomplished.

The final group researched greenhouse gases and global warming to learn about the long-term global effects of local air pollution. This group was provided with a variety of texts, both digital and traditional, to expedite their research. I used this research time to teach targeted skills, such as how to take and organize notes. Different graphic organizers were introduced, and more direct instruction on search engine use was given to those students who needed more assistance. Examining, cross-referencing, and reflecting on information found on the Internet (within context) allowed me ample opportunities to model critical-thinking skills that the students could then practice and refine within this core activity. Additionally, this group performed a greenhouse gases/ozone layer experiment and then synthesized the information with the other groups' findings to create a "Car Idling Effects" pamphlet that would accompany each bottle-cap purchase.

The class wanted the community to understand how car idling was indirectly harming their local en-

FIGURE 4. Tree-Goal Representation with Signed Leaves



vironment, and how actions, even of children, can make a difference in the world. Bottle-cap orders were astounding, creating a two-week backorder for the hand-painted products by student volunteers.

Math

The students who timed the idling cars entered their data into Microsoft Excel to determine the weekly idling average and corresponding carbon footprints and to create a line graph. They were also able to estimate the amount of gas and money wasted by idling, based on the price of "regular" gas at the time. I encouraged the students to express their findings in a format that they found most appropriate for their audience. Together, we created a list of goals that we hoped the car-idling research would accomplish and loosely formatted their findings and suggestions in a variety of ways (PowerPoint, poster, expository essay, comic, pamphlet). After careful deliberation, the students chose to share these results in an idling pamphlet, along with alternatives such as turning off the ignition, parents meeting their child at school to walk home together, carpooling, and even skateboarding instead of allowing a car to idle outside of the school. The students believed that in addition to promoting clean air practices, the pamphlets would also encourage community members to exercise more and appreciate the natural beauty of the world around them.

Social Studies

The car idling time measurement led the students to the idea of an "idle-free school zone." One group of students researched idle-free school zones within the county, state, and country. Using the note-taking mantra they learned from their Library Media Specialist, "Trash vs. Treasure," to identify important phrases, these students diligently searched school websites. Finding few schools to use as a model or as a source for informal interviews, the students chose to write a letter to their local congressional representative in which they suggested the idea of "idle-free school zones." The students thought to write the representative in part from our "U.S. Government" unit in Social Studies, which teaches students that important ideas can grow into bills and then, if they secure the required votes in each stage of development, evolve into laws. At this time, our writing workshop focused on the purpose and format of business-letter writing. Guided individual practice allowed students to familiarize themselves with this specific genre of writing as they chose to create "complaint or compliment" letters addressed to companies that they had purchased products from. The students made sure to include in their (project) letter their local and global research on car emissions, greenhouse gases, negative health effects, their Excel graph, and interviews with adult and child members of their school community.

After reading about students in Bangalore, India, who had organized a bike rally to lessen the carbon emissions from buses and cars bringing them to and from school, we decided to host our own Global Summit representing five greenhouse-gas-producing countries: the United States of America, Canada, Brazil, India, and China. We chose these countries based on their proximity to the United States (Canada) or their rate of economic development in conjunction with high contribution levels of greenhouse gases. Each group was assigned a country and researched the country's current or proposed environment plan for the Copenhagen 2009 Global Summit. The groups also researched their country's primary manufacturing industry, environmental issues, and population using Web-based research as

their main resource. A focus on the big understanding of "Where we live impacts how we live," along with specific geography skills, permeated this activity. Figures 5 and 6 show students using the Internet to locate, analyze, and discuss relevant information about their assigned country. Students had to decide if the information would support their stance on greenhouse gas production levels. Each group then proposed its own greenhouse gas compromise (the amount the country would be willing to decrease over a predetermined number of years). To generate these compromises, the students practiced negotiation skills and the art of persuasion as they all tried to reach an amicable agreement. It is here where I observed my shyer students begin to control their environment by unabashedly voicing their opinions. Public-speaking anxieties were no longer noticeable. One student reflected on the debate by stating, "It's hard to agree when you're not only looking out for you, but your whole country and the people and kids that live there." Another student responded, "Yeah, but we all share that air."

FIGURE 5. Collaborative Internet Research

FIGURE 6. Global Summit Preparation

English Language Arts

Committing to this idea that the air (and subsequently our Earth) is shared, the students wanted their environmental messages to be heard by others. They presented the idea of a hosting a "Green Day" at their school to the principal. It was to be entirely organized by the students in my class. After the event was approved, the students created a program that consisted of an opening ceremony in which they would share their Excel graph results, air pollution facts, ways to be more responsible for our Earth, and bottle-cap rationale. Following the opening ceremonies, student groups visited individual classrooms to show grade-specific environment presentations that they created using either Microsoft PowerPoint or the Alice Storytelling program (http://www.alice.org). (See fig. 7.) The Alice program allowed the students to create digital worlds using basic story elements such as setting, problem, solution, and characters (primary and secondary). Presentations allowed the students to practice public speaking. Prior to the Green Day event, I conferenced with individual students to help them set personal presentation skill goals (fluency, eye contact, response to questioning, language use, preparedness). Many students created worlds that were dying because of pollution, but were resurrected after trying one of the solutions that my class created. The audiences connected to these short scenarios and gave positive feedback regarding the Green Day events. A local television station and two local newspapers covered this event as well. When interviewed by the news reporter about the Green Day assembly and our environment project, two students responded, "When we looked out, we knew that we really inspired them to start thinking about ways to save our planet." It was evident that the students' world was expanding and that this recognition of their project's impact on their community was a reflection of a stronger sense of self for each of them. The students also knew that this media coverage meant that children and adults in other towns would hear their message as well. This class environment project went well beyond the school community and gave the students a sense of power that grew from social circumstance, just as Anne H. Dyson found reflected in the children's public performances she observed. Using their own ideas and language use, my students' voices were heard, believed by Paulo Freire and Donald Macedo (20) to be necessary in the development of a positive sense of self-worth.

Students as Catalysts of Social Change

The students learned to position themselves differently because of the Green Footprint Project. They

FIGURE 7. Alice Storytelling Program

became more aware of their existence in a larger world and perhaps they even became more aware of their future life purposes. They were contributing citizens of their community and the world, included in public matters. Similar to Linda K. Crafton, Mary Brennan, and Penny Sivers's critical inquiry project in which elementary students learned to use their voices to support a local elderly woman who was fighting to keep her home and in turn examined the bigger world issue of homelessness, this project allowed my students to use their passion (the environment) along with their interests and individual and collective strengths (technology, public speaking, computations, art, science, written communication) actively to support a cause that extended beyond their local community. If, as Bill Cope and Mary Kalantzis (New London Group) believe, social change can come from students and educators that actively design their educational journeys, then I believe my students have become environmental catalysts to their peers and the rest of the world.

Newly planted tree with student-made Dedication Stones.

Works Cited

Crafton, Linda K., Mary Brennan, and Penny Sivers. "Critical Inquiry and Multiliteracies in a First-Grade Classroom." *Language Arts* 84.6 (2007): 510–18. Print.

Dyson, Anne H. *Writing Superheroes: Contemporary Childhood, Popular Culture, and Classroom Literacy.* New York: Teachers College, 1997. Print.

Freire, Paulo. *Pedagogy of the Oppressed.* New York: Continuum, 2006. Print.

Freire, Paulo, and Donald Macedo. *Literacy: Reading the Word and the World.* Westport: Bergin, 1987. Print.

Gardner, Howard. *Multiple Intelligences: The Theory in Practice.* New York: Basic, 1993. Print.

New London Group. "A Pedagogy of Multiliteracies: Designing Social Futures." *Mulitliteracies: Literacy Learning and the Design of Social Futures.* Ed. Bill Cope and Mary Kalantzis. London: Routledge, 2000. 9–37. Print.

Kim-Marie Cortez-Riggio teaches fifth grade and is one of the advisors to the Glenwood Landing Environment Club. She is also a doctoral student in Literacy Studies at Hofstra University. Her background in psychology, sociology, and education has contributed to her research interests in identity formation, pedagogy, and multiliteracies. She may be reached at kmgcortez@hotmail.com.

READWRITETHINK CONNECTION — **Lisa Storm Fink, RWT**

"Communicating on Local Issues: Exploring Audience in Persuasive Letter Writing" further explores this idea. Students will research a local issue and then write letters to two different audiences asking readers to take a related action or adopt a specific position on the issue. http://www.readwritethink.org/classroom-resources/lesson-plans/communicating-local-issues-exploring-945.html