

Chapter 14

Campus Without Boundaries: The Brooklyn GreenWalk

Monica Berger, Reggie Blake, Anne Leonard, Robin Michals, Mark Noonan, Susan Phillip, and Peter Spellane

“Unscrew the locks from the doors! Unscrew the doors themselves from their jambs!”

Walt Whitman

On May 1, 2008, City Tech students led a walking tour for the general public and the college community that explored urban environmental challenges and sustainable solutions currently being implemented in DUMBO and Downtown Brooklyn. Drawing well over 150 attendees, the tour was developed by students in five different disciplines—chemistry, English, communication design, hospitality management, and physics. At the seven locations of the tour, specific issues that relate to the sustainability of cities presented themselves. Within a half-mile radius of the City Tech campus, we found instances or sites impacted by the warming of the planet and rising sea levels, issues of disposal of waste, and the generation of power. Solutions were also evident: the recycling of paper, composting of domestic waste, construction of green buildings, absorption of carbon dioxide by trees in city parks, and marketing of locally grown foods. The project reached outside of campus walls, literally moving out of the box-like classrooms, redefining the classroom as an interaction between students and professors and between the college community and its neighborhood. The local neighborhood became “text.” During the GreenWalk project, first-hand experience, direct observation, and interpretation of the environment outside the classroom became a transformative complement to the intellectual study and analysis that normally take place inside campus walls. In every sense of the term, the Brooklyn GreenWalk sought to *radically* transform space of several kinds: classroom space, academic discipline space, and the space in which one defines oneself as a teacher and as a learner. As a one-time public event, the walking tour on May 1 succeeded in its mission. If the goals of general education are to develop the judgment and analytical tools that are needed to navigate contemporary civic and professional life, the GreenWalk suggested one way forward.

R. Michals (✉)

New York City College of Technology, Brooklyn, NY, USA
e-mail: rmichals@citytech.cuny.edu

A proponent of the New Humanities movement, Richard E. Miller has recently called on the university, especially in its introductory writing classes, to focus on breaking from its habit of teaching subject matter in isolation from other subjects and to attend to real-world issues, events, and new developments in the technologies, sciences, as well as the arts. Miller proposes that we must teach our students how to tolerate the ambiguity necessary to tackle complex issues such as climate change. Similar concerns are being expressed in other disciplines as well. Davis (2008), in a presentation at the American Institute of Graphic Arts (AIGA), recently stated, “I believe that design education, at the most fundamental level, views complexity as a *problem to be overcome through reductivist artifacts*, not as an inevitable and pervasive attribute of life in the post-industrial community.” The role of an educator is not to reduce material into simple shapes to be consumed by students but to guide students as they develop strategies for success in increasingly complex worlds. Teachers, administrators, and students all must strive to move beyond the confines of the university and make connections across fields of thought in new and arresting ways. Given the complexity of the problems we face today, we must interact with the world more fluidly, find real-world solutions, and use the latest in technology both in researching and in presenting our ideas. Preeminently, Miller asks that faculty help students move beyond “writing to tell”—writing that merely demonstrates mastery of an existing body of knowledge—to “writing to see.” For him, students need to go beyond the regurgitive book report and “take knowledge somewhere new” via a process of questioning and connecting, always moving forward to “other questions and other texts.” In doing so, the student becomes a co-creator of ideas, someone with a position and thus positioned to be an active citizen of the world.

Miller’s points are the bedrock out of which the GreenWalk emerged, but, in the spirit of Miller, our efforts sought to address crucial issues left unaddressed by him. The first issue concerns the idea of real-life experience. His emphasis on reading traditional texts about the “real world” misses the important fact that the real world includes the ideas of the academy as well as its physical structures (the classrooms) in which pedagogy is delivered. It also includes the physical space and the interactions that take place outside school structures. This physical space is itself a text that can and must be “read” intently and creatively if transformative connections are to be made. While much of his most recent work concerns the constructive use of multimedia in the classroom to break out of the classroom, he also omits mention of an age-old technology that can better allow both students and teachers “to see” their disciplines anew: walking and direct observation. Rather than students following their scholars, however, the GreenWalk sought to make the students the explorers. Our experiment sought to tear down the walls that, like those in Plato’s cave, blind humankind to available forms of evidence and hinder understanding.

The idea for the Brooklyn GreenWalk first took shape on Eastern Parkway in Crown Heights, Brooklyn. We had just finished the last walking tour of an NEH-sponsored project titled *Retentions and Transfigurations: The Technological Evolution and Social History of Five New York City Neighborhoods*. City Tech’s 2006 NEH Faculty Development Grant was conducted in partnership with the Municipal Art Society, one of New York’s most respected institutions devoted to

the study of the built environment. The project comprised a rigorous year-long seminar for 15 faculty members led by scholars affiliated with MAS, enriched by closely linked field studies of five neighborhoods: Harlem, Flushing, Jackson Heights, Crown Heights, and Sunset Park. Consistent with the aims of CUNY's General Education Project, participating faculty implemented a Humanities Across the Curriculum model for the infusion of humanities content into professional studies, developing curricular units for courses they teach—in fields ranging from architectural technology to urban tourism. This endeavor showed that the direct experience of place and the physical experience of walking add relevance and immediacy to reading. We knew it would do the same for our students.

We decided to develop a walking tour with students in the neighborhoods that surround our college. The urgency of the sustainability of cities gave us a strong theme to focus the project. New York City has 578 miles of waterfront, yet many City Tech students have never been to the water's edge. Within their lifetimes, that water's edge, however, might come to them. Scientists studying climate change and extreme weather predict that coastal cities such as New York will be in increasing danger of flooding as ocean levels rise. The evident scientific content of this complex topic demanded that the group add experience in chemistry and physics to its existing strengths in the humanities and applied technologies. Accordingly, the Brooklyn GreenWalk project brought together seven faculty members: Monica Berger (Library), Reginald Blake (Physics), Anne Leonard (Library), Robin Michals (Advertising Design and Graphic Arts), Mark Noonan (English), Susan Phillip (Hospitality Management), and Peter Spellane (Chemistry). Initially, we viewed such coming together as a way to marshal our expertise to enlighten students about climate change; what we discovered was that with real-world problems, we couldn't teach to tell; rather, we needed to teach to see. It wasn't enough to simply bring disciplinary boxes together; the walls between the boxes had to come down.

Teaching to see happens when faculty become learners. In the GreenWalk project, we City Tech professors who had begun a conversation on a street corner in Crown Heights met regularly to read and talk about the environmental challenges of cities. Other than Professor Blake, we were all new to the study of urban ecology. As "students," we began to appreciate the complexity and subtlety of ecological issues that surround our lives. For our walking tour, we assumed that we would find sites in the immediate neighborhood of downtown Brooklyn that could be used to explore these issues. What we found was richer than our wildest assumptions.

City Tech sits at the foot of the Brooklyn Bridge, five blocks from the banks of the East River. Its environs are rich in waterfront history. Many nineteenth-century warehouse and factory buildings still remain in the residential neighborhoods of Vinegar Hill and DUMBO. Separated from City Tech by the deafening Brooklyn–Queens Expressway, the cobblestone streets of Vinegar Hill seem separated from City Tech by a century. Unchanged from the first half of the nineteenth century when the area was a new housing development, the streets of the five or six city blocks in Vinegar Hill are quiet. At every edge of that neighborhood, activity is ceaseless. The Brooklyn Navy Yard is to the north, the Farragut Houses to the east,

DUMBO with its restaurants and galleries is to the south, and Con Edison's Hudson Avenue Generating Station is to the west. The power plant, with billowing steam and yards of open-air electrical equipment, is a cogeneration plant that produces steam for heating and cooling with electricity as a by-product. The former E. W. Bliss tin can factory is now Chambers Paper Fibres Corporation, a 24-hour waste paper transfer station. Steps from this warehouse are Brooklyn Bridge Park with its direct access to the East River and knock-out views of Manhattan. Galapagos, housed in a nineteenth-century horse stable, right on Main Street in DUMBO, was renovated in an attempt to become the city's first LEED (Leadership in Energy and Environmental Design)-certified performance space. The surrounding streets are lined with chic restaurants and boutiques. A few blocks inland, another pocket of quiet, Cadman Plaza, is found. Rows and rows of London Plane trees line the park, the center of which is dominated by a huge World War II memorial as well as a large artificial turf playing field. Across Tillary, the Borough Hall Greenmarket is open 3 days a week.

In an attempt to merge old ways of knowing with new ways of seeing, the group participated in a set of lectures, shared readings, meetings, and neighborhood walks over the fall semester. A particularly eye-opening reading was Elizabeth Royte's *Garbage Land: On the Secret Trail of Trash*, which was followed by a lecture by the Brooklyn author for the college community at large. In her book, the author measures her own garbage and traces its path once it leaves her home. After having read Royte's book and hearing her speak, we came to understand the ecology of waste that surrounds us. Book learning, however, is only a precursor to knowledge of a different sort: direct observation. Later that week Professor Anne Leonard, for example, saw a number of diesel trucks leaving a DUMBO warehouse. Looking more closely, she noticed that they were filled with paper going to a waste paper transfer facility. Searching online, she discovered the name and address of this company, so that it could become one of the stops of our tour. These processes of discovery are at the core of how general education, understood in its widest sense, should function in a university setting. As CUNY's General Education Project argues, book knowledge, real-world knowledge, and technology need to be integrated. In this particular case, Royte's book allowed us to see what we hadn't noticed before, but that was just step one on our road to knowledge. We also needed to physically experience the flow of trash. Researching on the Internet allowed us to learn yet more about our topic. The reinforcement of literal text with spatial/experiential text and technology were the keys for true learning, or "seeing."

To prepare for the spring semester, other readings on environmental issues were selected and, with the assistance of Writing Fellows Ervin Kosta and Ellen Fridland, made available on Blackboard. The library faculty developed curriculum units on sustainability and made them available through the group's wiki. The librarians' goal was to design information literacy assignments that addressed the themes of the GreenBrooklyn project proposal. They designed small-scale assignments that could be adapted to classes in a variety of disciplines. These assignments could be integrated into larger assignments, serve as a starting point for a class discussion, or be offered as extra credit and were loosely organized by the shared readings and the

topics addressed by each stop on the tour. A chief goal of the information literacy assignments was to get students to think critically about the assigned readings and relate the readings to the universe of information on “green” and “sustainable” topics.

Given that the GreenWalk was being developed as one curriculum unit in a range of classes, faculty worked together to plan the tour route and then worked with students to develop the content of each stop on that tour. We refined the issues to be addressed by the GreenWalk and then selected specific locations that would stimulate discussion about those issues. With the use of a collaborative Google map, the tour route began to take shape, defined by what could be easily walked in 1.5 h starting from the front door of City Tech. Once the tour stops were selected, students were asked to develop 3- to 5-min presentations for the general public about those locations.

Publicity materials were developed with the help of Professor Mary Ann Biehl’s Design Team class. We knew that we wanted a poster that would feature a map and could be folded and sent as a mailed invitation. We also needed a new name. The project’s original title “GreenBrooklyn” was already the name of the Brooklyn Center for the Urban Environment’s annual conference. First, Professor Biehl’s students brainstormed to rename the project. They suggested “Brooklyn GreenWalk” which fit beautifully. Students presented a range of logos and poster designs to our committee. A design by Raul Rhodies was selected, and he worked with Professor Michals to refine the poster and prepare it for production. The poster was printed by Rolling Press with environmentally-friendly methods: the paper was 100% recycled with 50% post-consumer content, the inks were soy-based with low VOCs (volatile organic compounds), and the necessary energy was supplied by wind-power through a special program offered by Con Ed.



Logo design by Raul Rodiles (student, ADV 4700 The Design Team, Spring 08)

Tour Stop 1: Consolidated Edison Hudson Avenue Generating Station
Physics
PHYS 1112 Principles of Science II
Reggie Blake

At the first site, five long blocks to the north, past the Brooklyn–Queens Expressway and beyond the noise of subways on the tracks that run alongside traffic

on the Manhattan Bridge, several hundred participants stood at the corner of Jay and John Streets. The pavement was the standard black macadam, but at places where the blacktop had eroded, one could read the age of the streets. Cobblestones and dis-used railway tracks showed paths from the water's edge to old warehouse buildings. The group gathered at a street corner across from the sprawling Con Edison Hudson Avenue Station. Four students from my physics classes stood on the doorsteps of one of the old warehouse buildings and began to explain what is meant by "cogeneration" of heat and electricity. They needed to shout to be heard above the noise of traffic. The students explained that the Con Ed plant produced products: electrical power, heat, and lots of CO_2 and warm H_2O . Early that afternoon for about 10 min, that corner of Jay and Water Streets became our first learning space. The teaching-learning moment did not happen on the seventh floor of some science building but in the context of city life and commercial production of energy. As the group of people began to understand cogeneration, no one clung to a conventional role, and no one failed to see power production in this context, produced at this plant in front of them and transported to homes and colleges like their own. Nor could anyone fail to see the larger context, the barge traffic on the East River, the skyscraper city across the river, the noisy traffic on the Manhattan Bridge overhead.

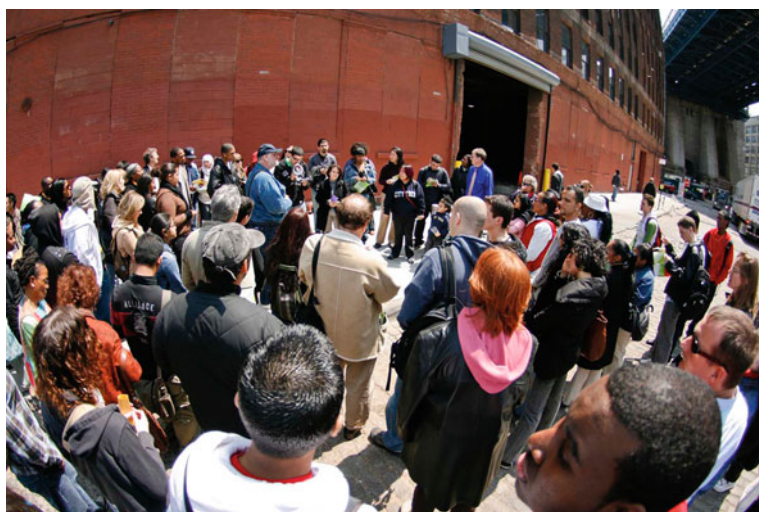


Kurt Sealey's presentation dealt with energy production and the chemical by-products at Con Edison's co-generating station on Hudson Avenue (Noriyuki Kuoda (Student, ADV 1230 Photography for Design II, Spring 08))

Site 2: Chambers Paper Fibres Corporation
Advertising Design and Graphic Arts
ADV 1230 Photography for Design II
Robin Michals

To reach the second stop on the tour, Chambers Paper Fibres Corporation, a waste paper transfer facility, the group walked a few blocks down John Street to Adams Street. Shouting over the subways rattling over the Manhattan Bridge, three sophomores from the Advertising Design and Graphic Arts department discussed the environmental impact of paper production and the benefits of recycling. The tour participants were able to look into the loading docks to see the messy reality of paper recycling.

The role of the teacher is, as Richard Miller states, to help the student transition from “writing-to-tell” to “writing-to-see,” that is, pushing interpretation to its limits. In a photography class, students enter the class knowing what is beautiful and what is worth photographing. City Tech is at the foot of the Brooklyn Bridge, which as every student knows what one is *supposed to* photograph. For the Brooklyn GreenWalk, however, we turned away from the bridge and looked at one of the old factories in the other direction. Now a waste paper transfer station, trucks move in and out 24 h a day, dumping paper from offices, that is then sorted by hand, banded and, finally, the great majority of it is shipped to China. This one building is a “text” that tells an important story about the American economy. Standing outside, observing trucks dumping their loads, it also yields a very visceral sense of the volume of waste paper produced in the United States that numbers alone could never impart. The Chambers Paper Fibres Corporation site, however, is not one that yields understanding from observation alone. The class read the chapter on paper recycling from Royte’s *Garbage Land* and did group research projects as well. While the facts and figures on greenhouse gases were scary, extra drama was added when the class



Students, Claudia Preciado, Yanifez Cantor, and Raul Ortiz presented in front of one of the warehouse bays of the Chambers Paper waste paper facility on Adams Street almost directly under the Manhattan Bridge (Noriyuki Kuoda (Student, ADV 1230 Photography for Design 2, Spring 08))

found out that the company's owner had worn a wire and testified in court to break organized crime's hold on waste disposal in New York City in the 1990s. This was a great example of "writing-to-see" in that in one building, students could learn how issues of economics and the environment were intertwined.

Site 3: Brooklyn Bridge Park

English

ENG 1121 English Composition II

Mark Noonan

The third stop on the tour was the amphitheater in Brooklyn Bridge Park. I wanted to bring my students here to integrate several fields of knowledge and to emphasize the importance of "place" in my composition class. As part of a section on environmentalism, I asked my students to discuss Walt Whitman's interest in urban and global sustainability. Sustain-a-what? The term was eventually defined, the first of what would come to be a bountiful glossary of "green" terms. Words such as biodegradable, chlorofluorocarbon, LEED certified, nonrenewable energy, fair trade, and zero waste were eventually part of my students' common vocabulary. After reading portions of *Garbage Land*, they were also asked to trace their "ecological footprints" as Royte had done. With a questionnaire designed with the help of the faculty librarians, students tabulated their patterns of consumption: the kinds of things they threw out on a daily basis, the amount of electricity they consumed, and the new items they regularly purchased. Working in groups, they added up their tallies and got to see just how huge their collective footprints were. On the day that we discussed our findings, one student quoted from memory the ending of Whitman's great poem "Song of Myself": "If you want me again, look for me under your bootsoles." Connections across disciplinary fields were slowly yet surely being made about what it means to be a global citizen, today's version of transcendentalism. My students were also learning that they, not only the teachers, could be producers of data and original thought.

When it came time for the tour, I selected two students to present based on the excellence of their Whitman essays. Standing before an amphitheater with the East River as a backdrop, Wing Wong and Tiffany Magdalene helped us all fully understand the beauty of the natural and built environment celebrated in Whitman's work. As each talked of the poet's Brooklyn roots and his use of the ebb and flood tide of the river as a symbol of human currents and interconnections, it was clear that Whitman had been humanized and his poetry brought down to earth, the earth we so desperately need to cherish and protect. On this intimate stage surrounded by a gorgeous backdrop, we all experienced a moment of transcendence in yet another way. Wing and Tiffany held court by virtue of *their* knowledge and *their* understanding.

Selber (2004) speaks to how students need to do more than concentrate on skills; they need to be able to participate in "highly interactive, complex, and contingent networks of forces that constitute human activity systems". To help in this aim, undergraduate pedagogy also needs to be much more student centered. Shor



Wing Wong spoke about Whitman to the crowd in the amphitheater in Brooklyn Bridge Park, near the base of the Manhattan Bridge. (Robin Michals)

(1996) summons the kind of experience students all too typically encounter in the classroom:

They know me before they meet me They have met my prototypes and precursors in the classrooms they already attended. Before I even say a word, they expect the teacher to be a unilateral authority. They expect an authoritarian rhetorical setting: teacher-talk, teacher-centered standard English, an official syllabus with remote subject matter, and unilateral rule-making. . . . [They have been] talked at, talked about, talked around, and talked down to, but rarely talked with in traditional schooling Exercising various kinds of agency in an unequal setting where they lack formal authority, students also resist/engage/manipulate the teacher, the process, and the institution through their informal power. (p. 16–17)

Shor's mantra essentially mimics Whitman's own insistence that intellectual maturity consists in moving beyond our teachers and by accepting nothing that is secondhand. On this day and hopefully for the rest of their academic careers, Wing and Tiffany became teachers themselves. The design of my course and the use of public space as a classroom, I believe, had helped them achieve this sense of authority.

Site 4: Galapagos Art Space
Advertising Design and Graphic Arts
Adv 3530 Advanced Photography Studio
Robin Michals

Three blocks away, the next stop was Galapagos Art Space. In front of this performance space, Horace Maxwell, a communication design student, gave the crowd

a few examples of design choices that can reduce the environmental impact of a building. Galapagos was renovating an old carriage house and aiming to win LEED certification in the process. They were seeking maximum energy efficiency, using recycled materials, and building a 1,600 square foot lake inside the space to control temperature and provide drama and beauty.

This was an architectural photography project in disguise; I had assigned Maxwell's class, working in four groups, to define what is a green building and then research what green buildings in New York City had been recently finished or were under way. Students then had to photograph those structures in visually arresting ways. When they got to the physical locations, the students were shocked to find that what they read on publicity Web sites might not be true. The Brooklyn Children's Museum in particular—spectacular now that it is finished—claimed on its Web site to be closer to completion than it was. After visiting the museum's construction site, one student came back to class very upset. I invited one of the project's librarians, Professor Monica Berger, to discuss with the class how to evaluate the veracity of a particular Web site. This led to a wider discussion of what is "green" and who decides. Galapagos had turned to the U.S. Green Building Council's LEED certification program to validate its efforts. With Professor Berger, the class evaluated USGBC's Web site. The students learned to distinguish between a condo that might use the term "green living" in its ad and a building designed to meet the requirements of a third-party standard. The difference in this class between "writing to tell" and "writing to see" was the simple one of asking, "Who determines what is green?"

Site 5: Rice Restaurant
Hospitality Management
HMG 4983 Sustainable Tourism
Susan Phillip

After Galapagos, the group walked up Washington Street to Rice Restaurant. On the sidewalk in front the restaurant after an introduction by a Sustainable Tourism student, the owner, David Selig, spoke to the crowd about using recycled vegetable oil to power the restaurant's van. "Let's go," he said to the unwieldy group, "to the alley behind the restaurant. I can show you our truck."

The alley was the quietest site the group had yet found for a talk but was crowded by the presence of an 18-foot panel truck. The shiny Dodge diesel engine truck was painted with Rice graphics and with language describing its use of cooking oil as its fuel. The owner explained that the restaurant's used cooking oil was filtered and poured into the holding tank from which the fuel filler pumped. This fuel, besides being free, reduces carbon emissions. This process is not yet entirely legal although Mr. Selig believes that it should be. "I actually welcome getting caught," he said, "so that then I will have more of an opportunity to tell people what I am doing. I am an outlaw at heart."¹ What a teaching moment! I had hoped to consider with

¹Raanan Geberer, "City Tech Walk Shows the Green Side of Downtown Brooklyn," *Brooklyn Daily Eagle* (May 2, 2008 www.brooklyneagle.com/search/index.php).

students the moral responsibility of a restaurant owner, in terms of the restaurant's carbon footprint and waste stream. Mr. Selig unexpectedly opened an opportunity for a broader philosophical consideration. The question became: when you believe passionately that something is right, what is the correct course of action? Is it ever okay to break the law? Mr. Selig provided the perfect example of the kind of debate we must have with our students, the kind of debate for which general education should be preparing them.

Site 6: Cadman Plaza War Memorial

Chemistry

CHEM 2223 Organic Chemistry

Peter Spellane

From Rice Restaurant, we walked to the south, beneath the Brooklyn–Queens Expressway overpass and regrouped on the steps in front of the Cadman Plaza War Memorial. Five students from my organic chemistry class stood facing the small crowd. The group had become eager listeners; they seemed to realize that they were going to be surprised again and perhaps learn something that they had not known, some piece of commerce or science that would concern Brooklyn's environment.

"Look at these trees," one woman began. "Do you know how many there are? There are 732. We counted them." Site 6 was a disarmingly classical setting for teaching and learning. The student-speakers stood at the edge of a 100 yard long playing field; long formal rows of London Plane trees lined the playing field. Behind the audience stood the War Memorial, a small, neo-classical pile of white stones with two tall statues, male and female figures; text inscribed on the wall of the building spoke of the sacrifices of earlier generations and lasting world peace. In the sunlight and relative quiet of the park, the chemistry students began a Socratic questioning of their students. "How do the trees grow?" another asked then answered by giving the chemical equation for photosynthesis: six carbon dioxide molecules react with six water molecules in the presence of a chlorophyll-based reaction center in the leaves of plants to form a six-carbon sugar and six oxygen molecules. Another, glancing at notes of numbers, explained the experimental and theoretical basis for making an estimate of the amount of carbon dioxide that the 732 London Plane trees in Cadman Plaza would consume on a bright summer day.

I, who stood silently at the edge of the crowd, had been the only one with anything like stage-fright. Could the students convey the exquisite balance and silent miracle of photosynthesis to a group of people who had perhaps no training in chemistry? Could they explain it with energy and pleasure? Would the detail be close to accurate? Would their short time in front of a crowd make chemistry seem amazing or merely tedious? I should not have worried. The students, in taking their turns, spoke like well-practiced professionals, confident in their ability to learn and to teach. They presented complex information without flaw. They achieved what great performers and teachers hope to do: They let their audience take pleasure in receiving their message.



Chemistry students Michee Cheng, Shazadi Mohammed, and Tabita Bountsebe (CHEM 2323, Organic Chemistry 2, Spring 08) spoke about photosynthesis at the Cadman Plaza playing field. (Robin Michals)

Site 7: Borough Hall Greenmarket
Hospitality Management
HMG 4983 Sustainable Tourism
Susan Phillip

The last tour stop was at the Borough Hall Greenmarket. May 1 was a particularly perfect market day: The farmers had brought early spring vegetables like asparagus, flowers, and seedlings of tomato and pepper plants. A Greenmarket spokeswoman from the Council on the Environment of New York City explained to the group about sustainable agriculture, about the dollar and carbon costs of transporting food, about economies of small scale, and about the qualities of locally grown food.

For years, educators in hospitality and tourism have been discussing the environmental *and* social concerns of tourism as part of the concept of sustainability. One reason for this is because so much of tourism depends on the environment. The environment is often the product; visitors do not knowingly choose destinations that are environmentally degraded. Other reasons are that tourism uses a lot of nonrenewable resources and that it is the largest industry in the world, with impacts (good and bad) on a local and global scale.

The GreenWalk project, as this particular site demonstrated so well, localized the green issue. In my class, students realized that the problem of water bottles in landfills is not one caused only by tourists visiting the developing world. Brooklyn has its own landfill problem. My students also debated about the responsibility tourists

have to mitigate their environmental impact and whether they themselves should have to take conservation measures. Most students said they would adopt more environmentally conscious practices as tourists to destinations in the developing world. At home, fewer admitted to be willing to change their behavior but once the course ended, I believe many had changed their minds about what they should do on the home front as well.

Site 8: Back to the Classroom

Reggie Blake

One of the central purposes of the GreenWalk had been to teach faculty and students alike to follow Whitman's instruction to "unlock the screws to the locks" of classroom doors. Physical Science takes shape and has meaning to students when it is applied in the real world. For PHYS 1112, the students are always intrigued at the direct application of theory to practice. Since the ambient environment is the true laboratory of physical science, the students relished the opportunity of venturing out into the neighborhood to study the "heartbeat" of their downtown Brooklyn environment. At the same time, the physical classroom continues to have its importance. For it is here where we come, in relative quiet, to examine findings and reflect.



Professor Blake demonstrated the hand-held infrared thermometers that were used along the tour path to take readings of surface temperatures. These were used to support a presentation at the college on "urban heat island" effect following the walk. (Robin Michals)

Several of my students who participated in the walking tour were involved with the application of two vital areas of environmental science that were initially taught in class—Energy/Air Pollution and the Urban Heat Island (UHI). During the tour, these students used what they had learned and then proceeded to take UHI measurements with specialized equipment. Many tour participants were also allowed to use the instruments to drive home various aspects of the UHI, particularly temperature differences of various surfaces within the neighborhood. Once we were back in the classroom, these readings were looked at and discussed. A packed house of students, faculty, and administrators then viewed an UHI-green roof presentation that illustrated how green roofs may be beneficial to both the energy and the water balance of an area.

Several other students took UHI measurements with specialized equipment (hand-held infrared thermometers) along the tour path, in the midst of the tour. Many tour participants were also allowed to use the instruments to drive home various aspects of the UHI, particularly temperature differences of various surfaces within the neighborhood. At the conclusion of the course, these nonscience majors were armed with the ability to contextualize and comprehend critical public issues such as the environment, energy, and sustainability. After participating in the Brooklyn GreenWalk, my students better understood the scientific process; they had become familiar with the role of experiments and research in probing nature, and they now recognized the importance of mathematics in describing nature's behavior. Additionally, the students were able to read and appreciate daily accounts of major scientific advancements in the physical sciences. Each student gained a deeper appreciation of the tool of research, and perhaps, a few students have been so intrigued by this early exposure that they will desire to participate in research projects in the future. However, the most important learning outcome—a guiding mission of general education—is for the students to become more vocal and more involved with the current state and the future of this “third rock” from the sun, this earth that we call home.

Conclusion(s)

Most of the City Tech students major in a department whose name includes the word “technology.” They, like us, are interested in the application of arts and sciences to mechanics and economics of everyday living and working. The risk of studying a technology involves loving the machinery of the technology but becoming blind to its place in the greater society. A technician may love the wrench that tightens the bolt but fail to see what exactly the bolt is holding together. As professors at this “technology” college, we need to advise our students to put down the wrench for a while and think and talk about the bigger machine to which they belong. Making connections between disparate pieces of reality was our fundamental goal of organizing the GreenWalk. Understanding such connections is the essence of general education. Understanding is finding the words that describe a new thing, words with which one can teach others what the thing is. This piece of the general education

process happened in the GreenWalk: sentences and paragraphs and performances were constructed at each site along the GreenWalk path. The students held both their megaphones and their audience's attention, and they said, "Look at what is in front of you. We will point out what you may not see. Together, we will explore what it is." This worked. A collection of places in downtown Brooklyn became more vivid, more complex, and more detailed to the group listening to the students than those places had been before.

Far too often, as Summerfield (2007) writes, "General Education slips between the cracks of both the administrative and academic realm: 'It' remains elusive as a project, is characteristically overseen by no one, and exists nowhere." Small wonder then that the thread through general education can be incomprehensible to students. This is also the case at City Tech where students often question the core requirements but rarely receive an explanation of why these requirements exist. Clarification could come, however, if faculty and administrators keep the goals of general education—which is to give students the intellectual power to grapple with complex issues and to make learning as real as possible—in the forefront. The Brooklyn GreenWalk presents a potential model for this to occur.

Getting outside of the classroom during the project also loosened the power dynamics of each of the seven participating classes allowing for successful integration of material and a new way of learning. The typical classroom space replicates what Trimbur (2000) calls a "middle-class family drama" in which the student/teacher relationship is like that of a parent to the child in a household. The student/child answers to the teacher/parent for guidance and reinforcement via a system of carrots and sticks. The school then serves "in loco parentis" of a systematic attempt to improve and discipline the youth, while always answering to an authority. Though theorists such as Peter Elbow and David Bartholomae have sought to empower students as self-disciplined, meaning-makers in their own right, Trimbur calls them to account for not extending beyond the production end of learning and limiting consumption of learning to "the intimate space of the classroom/home". Trimbur argues that for a student to successfully interpret the world, the delivery of knowledge needs a larger field: the real world itself, one "that includes the circuits of production, distribution, exchange, and consumption" that give knowledge "cultural value and worldly force." In the GreenWalk, we were in the real world. Students had the opportunity to "deliver knowledge to a larger field." They were speaking to a public audience with news media present on the urgent questions of urban sustainability. So often invisible, the goals of general education had been made transparent and recognizable.

Also significant, in the Brooklyn GreenWalk, we as faculty moved beyond "teaching to tell"—teaching that merely demonstrates mastery of an existing body of knowledge—to "teaching to see." In this project, a complex, real-world problem with no obvious answers, urban sustainability, was addressed from many disciplines. The neighborhood of our college was the primary "text." The project's lessons suggest that education that is interdisciplinary and outside the classroom, education that encourages the mixing of teacher-student roles, can engage students and transform "general" education.

Since the GreenWalk, several curriculum projects have moved forward at City Tech that use the combination of neighborhood investigation, active student learning, and complex problem solving. This project led directly to a year-long NEH-funded faculty development grant entitled “Water and Work: The Ecology of Downtown Brooklyn,” which uses the Brooklyn waterfront as a text. In a pilot course that was developed during this grant, students are becoming creators of original material that speaks to the history, economy, and development of this location. Professor Matthew Gold, in turn, secured a grant entitled “Looking for Whitman,” which involves faculty and students at City Tech, NYU, University of Mary Washington, and Rutgers University at Camden in a concurrent, connected, semester-long inquiry into the relationship of Walt Whitman’s poetry to local geography and history. Professor Richard Hanley was also awarded a grant entitled “Along the Shore: The Landmarks of the Brooklyn Waterfront” to explore the nature and multiplicity of American urban landmarks along the Brooklyn waterfront. To keep open the circuits of real-world learning, our college continues to encourage innovative pedagogy. The next step is to more fully institutionalize the use of its fantastic location.

References

- Davis, M. (April 4, 2008). *Toto, I’ve got a feeling we’re not in Kansas anymore...* Boston: AIGA Presentation.
- Miller, R. E., & Spellmeyer, K. (2006). *The new humanities reader* (2nd ed.). Boston: Houghton Mifflin.
- Selber, S. (2004). *Multiliteracies for a digital age*, Carbondale: Southern Illinois University Press.
- Shor, I. (1996). *When students have power: Negotiating authority in critical pedagogy*. Chicago: University of Chicago Press.
- Summerfield, J., & Benedicks, C., (Ed.). (2007). *Reclaiming the public university: Conversations on general and liberal education*. New York: Peter Lang.
- Trimbur, J. (December, 2000). Composition and the circulation of writing. *CCC*, 52(2), 188–219.