



The Environmental Science and Engineering Program at Brooklyn Technical High School

By William Aghassi, P.E.

In 1996, I was recruited from private industry (at a 50 percent pay cut) to come back to Brooklyn Technical High School, my alma mater, to revise and revitalize its environmental program. Some of you may know that Tech is organized around a majors system; students in 10th grade choose a major for their last two years of high school. This accomplishes two goals: first, it reduces a large, sometimes impersonal high school from over 1000 students per grade to a smaller cohort of about 100 students, and second, it gives the students a taste of a possible college major and profession.

The Environmental Science major at Tech was moribund with no aim, no equipment space and no classroom or lab space to call its own. It was unattractive to both students and teachers and was in danger of disappearing.

My first step was to redesign the curriculum so that it flowed logically from the fall of the junior year to the spring of the senior year. In the junior year, we taught the curriculum of the new AP Environmental Science exam and also threw in some Environmental Engineering to fulfill the school's mission as a pre-engineering high school. In the senior year, students were required to take a course in Energy Engineering because I felt that the most pressing environmental questions these students would face in their lifetimes would be related to how energy is used and misused. The spring of the senior year brought students to a course in Urban Planning to show those who were about to go out into the world the built environment that they actually live in, rather than an ecosystem like the Serengeti that they might never see.

We overcame a lack of facilities in the school by taking students out in the field every few weeks to study marine/aquatic ecology at the New York Aquarium, forest ecology in Prospect Park and soil ecology in Fort Greene Park.

We sampled water at the Gowanus Canal and observed how conditions changed over 24 hours of varying tide conditions and when the flushing tunnel was both on and off. The students discovered that when the flushing tunnel was on during rising tide, water quality was decreased as turbulence caused by opposing streams of water dredged pollutants from the bottom of the canal. We recommended to the New York City Department of Environmental Protection (DEP) that the flushing tunnel be turned on only during ebbing tide, and that recommendation was accepted by DEP.



We also took the students to industrial facilities that would illuminate the curriculum: Astoria and Ravenswood generating stations, Red Hook and Owl's Head Wastewater Treatment Plants and the Van Cortlandt Chamber of the Third Water Tunnel. It was surprising to me to discover how many high school students had never been out of their neighborhoods and had never been to any of the great museums, parks and beaches that we have here in New York City.

We solicited internships from Con Ed, DEP and CCNY to provide students with a taste of what environmental careers might be.

As part of the program, students were asked to design an environmental education space. I thought some of these designs were pretty good, so I got an engineering firm to donate man-hours to take these student designs and develop a conceptual design for an environmental science lab. Some years later, in partnership with Matt Mandery and Tech's Alumni Association, we applied for and won grants from the City Council and Con Edison to build an Environmental Science Lab in what had been a Chemical Engineering Lab and what had been an unused space for some time. Taking the preliminary design, I modified this design to fit the space. Then, with the help of my colleague, John Cunningham, I compiled a wishlist that resulted in enough professional-grade equipment to

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EEAC NEWS.....

Steering Committee Meetings

EEAC Steering Committee members meet on the third Wednesday of every other month (except August). Upcoming EEAC Steering Committee meetings are May 19, July 21 and September 15.

Steering Committee meetings are usually held at New York University, Pless Building, 32 Washington Square Park East and Washington Place in the 5th floor Conference Room. Steering Committee meetings are open to anyone interested in learning about environmental education in New York City and sharing information about special programs and projects.

Meetings are also occasionally held at New York City sites associated with our members. Please be sure to contact an EEAC Steering Committee member or visit the EEAC website at www.eeac-nyc.org to confirm meeting location and schedule.

Newsletter Deadlines

If you would like to submit an article for the newsletter, please email it as a Microsoft Word attachment to lmiller296@aol.com. The newsletter deadlines are the first Monday in April, July, October and January. We would love your ideas!

Newsletter Committee & Contributors

Meg Domroese
Kim Estes-Fradis
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Joy Garland
Jane Jackson
Regina McCarthy
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(DEP) for helping to produce the EEAC newsletter. Visit the DEP website at www.nyc.gov/dep, email educationoffice@dep.nyc.gov or call (718) 595-3506 for information about DEP's education resources for students and teachers.

ENVIRONMENTAL EDUCATION ADVISORY COUNCIL

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This newsletter is a publication of the Environmental Education Advisory Council (EEAC), a voluntary organization of educators, classroom teachers, administrators and other professionals in active support of quality environmental education.

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GET CONNECTED!

If you are a member of EEAC and want to be part of information sharing and on-line discussion on the EEAC listserv, contact:

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Letter from the Chair

Let's hear it for warm weather! Spring and summer are exciting times of year in New York; plants are healthy and vibrant, animals are plentiful and active, while environmental educators all over the tri-state area are busy delivering wonderful and engaging programs.

March kicked off the first of our 2010 EEAC programs: a tour of the Bank of America Building at One Bryant Park. We were fortunate to have Helena Rose Durst, Vice President of The Durst Organization, lead our tour. What an amazing building! Here is a quick review of what we saw on the tour: the complex heating and cooling systems located in the depths of the basement, the aesthetically pleasing living wall located in the lobby area and the wide range of recycled materials that were used in both the building's construction and its interior design. It was inspiring to see that such a massive structure was able to successfully achieve LEED certification. I want to thank Ms. Durst once more for a truly wonderful experience.

With more programs and networking opportunities to come, the tour of the Bank of America Building was just the beginning! Our meetings and programs are a great way to meet fellow environmental educators. I encourage EEAC members as well as folks who are considering becoming members and those generally interested in environmental education to join us at our bi-monthly Steering Committee meetings and programs. If you're interested in sharing ideas advertising a program or would like to communicate your views on current environmental education-related topics, please come to a meeting! Our next meeting dates are May 19th at NYU, Pless Building, 5th floor, from 5:00-7:00 pm and July 21st at the New York Botanical Garden. I hope you'll be able to make it.

Sincerely,

Michelle Fufaro Beach

The New York City Department of Environmental Protection

invites you to the new

Visitor Center at Newtown Creek

Located at the Newtown Creek Wastewater Treatment Plant

329 Greenpoint Avenue

Greenpoint, Brooklyn

**Subway directions: Take the G train to Greenpoint Avenue (and Manhattan Avenue).
Walk east on Greenpoint, crossing McGuinness Avenue and then Provost Street.
Walk alongside the wastewater treatment plant until the next traffic light, at Humboldt Street.
The Visitor Center is the orange building with the water sculpture in front of you.**

**Hours: Fridays and Saturdays from 12 noon to 4:00 pm
Tuesdays and Thursdays from 9:00 am to 4:00 pm for school groups (by appointment only)**

**While you are there, visit the nearby NEWTOWN CREEK NATURE WALK
Open seven days a week from sunrise to sunset**

**For additional information please visit the DEP website at www.nyc.gov/dep
and click on Environmental Education or call (718) 595-3506.**

Book Buzz

by Lenore Miller

Remarkable Creatures by Tracy Chevalier

Remarkable Creatures is a remarkable book about two remarkable women, the intertwining of their lives and the enduring friendship that grew out of their discovery of then-unknown fossils. The women of the story, Mary Anning and Elizabeth Philpot, were early 19th century residents of Lyme Regis, a small town on the south coast of England. The cliffs that bordered this seashore village were battered by storms that washed away the sand to reveal fossils of creatures unknown in the world of science at that time, but which soon caught the imagination of Enlightenment Europe.

Mary Anning was an intriguing woman. She was struck by lightning when she was a 15-month old baby and SURVIVED, a miracle in itself. Mary was of the working class, not formally educated. But her sharp eye for shapes and shadows allowed her to discover fossils that others passed by. She helped support her poor family by selling the fossils she found to tourists and collectors. Elizabeth Philpot was an unmarried upper-class woman, fiercely intelligent and fascinated by fossils. A close friendship between these two women developed as a result of their mutual interest.

As the story unfolds, Mary discovers a huge marine creature, unknown before that time. Later named Ichthyosaurus, its discovery led to new thinking about life that no longer survived on Earth. The religious establishment of the time could really not reconcile the existence of these animals with its tenets. To complicate matters, the all-male scientific establishment could not readily accept that women were responsible for the discovery of these fossils. In fact, others (men) took credit for their findings! As time passed, rightful credit was given to Mary Anning, who also found another large specimen, later called Plesiosaurus.

The story also points out the role played by amateurs in scientific discovery, an important role that persists to this day.

Read the book and enjoy the thrill of the discovery as these women unearth long-gone animals and take on the male establishment.

Books about Mary Anning for children:

The Fossil Girl by Catherine Brighton

Mary Anning and the Sea Dragon by Jeanine Atkins



EE News

by Betsy Ukeritis

What are YOU doing 29 September to 2 October 2010?

Take some time from your busy schedule to grow yourself professionally! Spend a day, or a few days, at the **North American Association for Environmental Education's 39th Annual Conference**. Network with international environmental educators, share success stories, commiserate over similar challenges and discover new ideas about how to tackle environmental issues.

There is even a special "Teacher Day" on Saturday when workshops focus on K-12 education and there is a special one-day rate of \$60! Visit www.naaee.org for more information.

Project Learning Tree introduces a new early childhood curriculum

Just as more attention is being focused on the need to connect students to nature at a younger age, Project Learning Tree® (PLT) has released a new curriculum guide and music CD to engage children ages three to six in outdoor exploration and play. 11 field-tested, hands-on activities showcase over 130 "early childhood experiences" that integrate investigations of nature with art, literature, math, music and movement. Early childhood educators and caregivers can obtain a copy of PLT's Environmental Experiences for Early Childhood curriculum by attending a PLT professional development workshop.

In New York State, Early Childhood workshops will be offered starting this summer. You can keep an eye on the upcoming Teacher Workshops Schedule on the NYS Department of Environmental Conservation's website, www.dec.ny.gov/education/2035.html, for a listing of the workshops. (At the same site you can check for workshops, already scheduled, for Growing Up WILD, a new curriculum for early childhood created by Project WILD.)



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conduct any environmental research that might catch students' interest. Once the lab was completed, we were able to add to the mix another course, Environmental Inquiry, a lab-based environmental forensics course that allowed senior students to conduct this research under John Cunningham's guidance.

Future plans for the major include greening the school by having students design and install a green or solar roof.

All in all, as evidenced in our wins in six of the last seven NYC Envirothons, we feel that there is no better high school environmental science program in NYC. Come visit!

William Aghassi, P. E.

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Before



After

SAVING WATER EVERYDAY

Created by Terry Ippolito, US EPA

Suggested grades: K through 4th

Time: 15 minutes

Materials needed:

Watering can (large) 2 containers/buckets preferably see-through or semi-opaque

Food coloring (blue) 1 measuring cup

2 toothbrushes

(NOTE: cover the brush part and be sure to tell children NOT to put it in mouth)

Concept: Everyone can save water by turning off water while brushing their teeth.

The following is a suggested script/series of questions.

Introduction

- 1 **We're here to celebrate Earth Day... A VERY IMPORTANT DAY FOR US AND THE EARTH.** Something that is very important for the Earth and for all the things that live on Earth, including people, is to have enough water... especially enough clean water to drink.
- 2 **Today we're going to learn some things about water.** We'll talk about where water comes from, we'll create the sounds of a rainstorm right here in this room and we'll find out a way you can save water. So, let's get started.
- 3 **Where do we get the water that we drink?** Try to get an answer about the local water source; for New York City, the watershed and its reservoirs that are located upstate.
- 4 **What happens if we do not get enough rain to fill up the reservoirs/ rivers / wells?** (Most answers from students will likely be replies you can use...as long as they are about saving water).
- 5 **When we don't have enough water, what do we call that?** Drought
Should we waste water or save it??? Of course...we save it...**I am going to show you one way you and your family can save water everyday.**

Activity

1 DEMONSTRATION ON WATER CONSERVATION

We should always be careful with water and try not to waste it.

We're going to do something right now to see that there is something you can do at least twice a day to save water.

- How many of you brush your teeth? (This is an of-course-you-all-do kind of question.) Do you know how much water you use each time you do that? We're going to find out and compare two ways to use water when you brush your teeth.
 - At this point we'll do a demo, twice. Each time, one student will pretend to brush teeth (with the brusher)—another will pour water into a basin (the faucet). The first time, water will be poured (from watering can) the entire time the student is brushing. The second time, we'll pour only at the beginning and end. ALL students can pretend to brush their teeth (moving a finger up and down in front of lips) during the count.
- 2 I need two volunteers to help me. You will be the brusher ...you will be the water faucet. (One of us will help the faucet.) Many of us let water run while we brush our teeth...so, that's what we'll do now.
 - Wet the toothbrush (at this point faucet starts pouring water from can into a bucket...and keeps on pouring until the end)...pretend to brush your teeth like this. Let's all count to 30 while s/he brushes...1, 2, etc...30 Now rinse the brush and stop the water.
 - Let's measure how much water was used. We'll measure the water and write the amount on a chart.
 - Thank you for helping, now we need two more volunteers.
 - 3 • We'll do the same thing, only this time, the faucet will only pour water to wet the brush (do it) and for the rinse at the end... So...wet the toothbrush... and now well count to 30 while you brush your teeth...and now the faucet pours water for you to rinse your tooth brush.
 - Let's measure how much water we used this time.

NOTE...you can round the amount from the first demonstration to nearest quart.

Compare the two amounts of water. You may have to pour the second amount into a small container such as a measuring cup.

4 Discuss results.

- Which way uses less water?
- How much water did we save? (We'll write it on flip-chart or wipe-off/chalk board)
- If you brush your teeth two times a day, how much water would you save in a day?
- How much could you save in five days?

Wrap Up

- 1 • So, we know that our water comes from_____. We've seen that water that falls as rain and makes its way to our homes and schools can be wasted or saved depending on how we use it.
 - Do you think you can find other ways to save water? What are they?
- 2 • Do you have any questions?
 - Do you think you can save water every day this way? Will you?



ROSE BLAUSTEIN, Environmental Educator, Friend and Mentor

by Joy Garland

Rose passed away on March 25th at the age of 95. She had been in a nursing home in NJ near the home of her daughter, Carol Barr. In 1989, I had the privilege of working with Rose and Stan Mandel at the Fireboat House Environmental Center which Rose founded in District 2.

Rose was a teacher's teacher. She and her husband, Elliott, inspired and mentored a legion of environmental educators who carry on their legacy. My own involvement with the creation of Stuyvesant Cove Park and its environmental center (now known as Solar 1) flowed directly from Rose's example and encouragement.

Rose was also active in EEAC, ESSA (the Saturday Science program was named after Rose and Elliott), as an adjunct professor at Hunter College (where she sometimes brought the class homebaked cookies which earned her the title of "Mother Rose"), in the City Gardens Club of New York, as head of the education section of the New York Academy of Sciences and author of scientific publications including "Investigating ECOLOGY" with husband Elliott Blaustein. Rose will be remembered and missed by all who knew and loved her.



MEMBERSHIP APPLICATION 2010

New Member Renewal

Name: _____

Address: _____

Apt. _____ Zip Code _____-____

If Sustaining Organization, Name of Contact Person

Business Phone () _____

Home Phone () _____

Affiliation (for categories other than Sustaining Organization): _____

Title/Position: _____

Address (for categories other than Sustaining Organization):

E-mail address: _____

Mail completed form and check to:

Jay Holmes, Treasurer, EEAC, American Museum of Natural History, 79th Street and Central Park West, New York, NY 10024

Date: _____

Please check the appropriate calendar year membership category:

- \$ 20 Regular \$ 50 Sustaining Organization
- \$200 Individual Life Membership

Please make checks payable to EEAC.

Thank you!

EEAC is a 501-(c)3 organization.

I would like to become involved in a committee.

Please provide me with information about the following committees:

- Communications Programs Membership
- TEEP (Teacher Environmental Education Preparation)



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