



## The Green Design Lab: Smarter Students, Sustainable Schools

*“Solar One Educator Joe Chavez presented Green Design Lab lessons on a level where all students were able to contribute. He was able to pull from their experiences to guide the lessons. Our students are still turning off and unplugging unused appliances.”*

*—Dyanand Sugrim, Teacher, George Washington Educational Complex*

When you signed up to be an educator, did you think it would include worrying about how much electricity, heat and water your school uses? And how to use less?

Reducing the energy a school uses may seem out of reach for the average teacher or principal, who already has his or her hands full making sure their students pass tests. But schools now have a mandate to reduce energy use through New York City’s PlaNYC, a long-term and ambitious sustainability plan. Aimed at curbing the city’s greenhouse gas emissions by 30 percent by 2017, PlaNYC set goals for municipal buildings like public schools to reduce energy use and costs, leaving perpetually overburdened school administrators and teachers to figure out exactly how to accomplish the goal.

Seeing the opportunity in this challenge, Solar One began developing the Green Design Lab™ in 2009 at Manhattan Comprehensive Day and Night school. The concept is simple: use the school building – where students spend six+ hours per day – to teach the K-12 population about climate change, sustainable practices and, specifically, how to green their school. As a result, students become activists, advocates and agents of change while at the same time learning valuable Science, Technology, Engineering and Math (STEM) skills.

Using the Green Design Lab, a Solar One educator conducts sustainability lessons integrated into regular school classes one to two days a week, over the course of the school year. The lessons cover five modules: Energy, Air Quality, Food, Water and Materials/Recycling. Green Design Lab lessons are dynamic and emphasize STEM education. Students choose a joint, school-wide sustainability project that they implement themselves – teaching leadership, teamwork, planning and communications.



*Manhattan Comprehensive student making a solar panel*

What makes the Green Design Lab unique among environmental education programs? The tangible, immediate change it has in school sustainability. Consider the results from a pilot of the Green Design Lab, conducted in the 2010-2011 school year in 10 public schools: one was the Washington Heights school that reduced its electricity use by over 11%, placed 6th in the NYC Green Cup Challenge and won a \$5,000 prize! At Manhattan Comprehensive, where Solar One originally developed the Green Design Lab, students have so fully embraced sustainability that they proposed the school install a solar PV (photovoltaic) system on the roof, convincing administrators and launching a plan which has already attracted much of the needed funding. Student-led

*Continued on page 6*

## EEAC NEWS.....

### Steering Committee Meetings

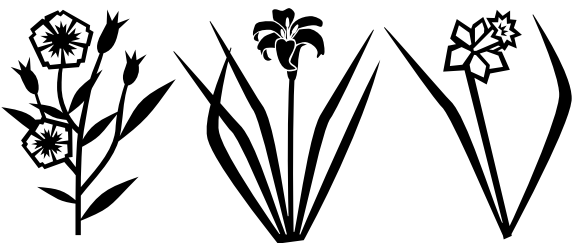
Meetings are held on the third Wednesday of every month. Upcoming EEAC Steering Committee meetings are October 19, November 16, December 21, and January 18, 2012. Steering Committee meetings are held at New York University (NYU) and at sites throughout New York City. When we are at NYU, meetings are held in the fifth floor conference room, Pless Building, 32 Washington Square Park East and Washington Place. Meetings are also held at facilities associated with EEAC members. Please visit the EEAC website at [www.eeac-nyc.org](http://www.eeac-nyc.org) for meeting location or contact an EEAC Steering Committee member. All 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.

### 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](mailto:lmiller296@aol.com). The newsletter deadlines are the first Monday in April, July, October and January. We would love your ideas!

### Newsletter Committee & Contributors

Kim Estes-Fradis  
Michelle Fufaro Beach  
Joy Garland  
Jane Jackson  
Regina McCarthy  
Lenore Miller, Newsletter Editor  
Betsy Ukeritis



The Environmental Education Advisory Council (EEAC) would like to acknowledge the support of the New York City Department of Environmental Protection (DEP) for helping to produce the EEAC newsletter. Visit the DEP website at [www.nyc.gov/dep](http://www.nyc.gov/dep), email [educationoffice@dep.nyc.gov](mailto:educationoffice@dep.nyc.gov) or call (718) 595-3506 for information about DEP's education resources for students and teachers.

## ENVIRONMENTAL EDUCATION ADVISORY COUNCIL

c/o Teresa Ippolito  
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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.

### EEAC Officers

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Michelle Fufaro Beach, Secretary  
John Pritchard, Treasurer  
Judith Hutton, Program Chairperson

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\* Affiliation for identification purposes only

### GET CONNECTED!

The EEAC listserv has migrated to a new home at [EEAC-NYC@googlegroups.com](mailto:EEAC-NYC@googlegroups.com)  
If you are a member of EEAC and would like to join the listserv contact Carol Franken at [carolfranken@gmail.com](mailto:carolfranken@gmail.com)

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## CHAIR'S MESSAGE

Dear Members,

It's that time of year again: school has started, Autumn comes calling with nicer weather and the weekends are taken up with lots of fun outdoor events. As we move into this new school year, EEAC will be moving back to monthly meetings. The current plan is to have seven regular business meetings per year (with some of them conference calls), three hybrid program/member meetings a year and the annual meeting. The schedule of future meetings will be up on the EEAC website ([eeac-nyc.org](http://eeac-nyc.org)) soon.

The Program Committee has been hard at work and has an exciting schedule of events coming up (also to be seen soon on the website) including an Urban Farming discussion for the Annual Meeting on November 16th.

Can't wait to see everyone at the Annual Meeting and good luck with all of your Autumn events!

Betsy Ukeritis,  
Chair

## EE Resources

### Toolkit for Teachers to Facilitate an Air Quality Workshop

The EPA has developed "The Air Quality Workshop for Teachers: A Toolkit for Facilitators," designed to help K-12 teachers better understand air pollution issues and related health effects, experience hands-on activities and gain insights into global warming. The toolkit includes everything needed for a workshop: agendas, hands-on activities, PowerPoint slides, recruitment notices and more. Just change the logo, add your personal touch and you are ready to begin!

[http://airnow.gov/index.cfm?action=learning.workshop\\_for\\_teachers](http://airnow.gov/index.cfm?action=learning.workshop_for_teachers)

### New Web GISs for Investigating Energy

The Web GISs are part of the Environmental Literacy and Inquiry (ELI) "Energy" curriculum that focuses on the world's energy resources. Students use geospatial information technology (GIT) tools including GIS (Web GIS or My World GIS) and Google Earth and inquiry-based lab activities to investigate energy sources, production and consumption. "Energy" is aligned to national science and environmental education standards.

<http://www.ei.lehigh.edu/eli/energy>

### Another Blog: Learning Network from the New York Times

The Learning Network provides teaching and learning materials and ideas based on New York Times content. Teachers can use or adapt lessons across subject areas and levels. Students can respond to Opinion questions, take News Quizzes, learn the Word of the Day, try the Test Yourself questions, complete a Fill-In or read Poetry Pairings.

<http://learning.blogs.nytimes.com/>



## TOUR OF THE HIGH LINE ...an EEAC Special Event See Page 7 for details

*Washington Grasslands, between Little West  
12th Street and West 13th Street, looking South.  
Iwan Baan © 2009.*

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## Book Buzz Winter 2011

Regina McCarthy



### Rock Bottom

by Erin Brokovitch with C.J Lyons

I am not a lover of mysteries, but it seems I am reading them more and more lately. *Anthill* by E.O. Wilson, reviewed previously for EEAC Book Buzz, was also a mystery. *Rock Bottom*, however, was a bit too much of a thriller for my taste. The main character also seems to have more drama in her life than one would expect in a lifetime. Is this any different from what I see on Ms. Marple, Inspector Poirot or Sherlock Holmes on PBS? Probably not. So I will not hold that too much against the writers. It is an engaging tale with all the expected bad guys: coal industry versus the poor miners with the personal drama of the main character thrown in. Girl gets pregnant and her child is born disabled. She leaves town and becomes successful in environmental litigation. She then loses everything and returns home to find her town being destroyed by the coal company. Lots of twists and turns in the story which make it either interesting or possibly hard to believe. I'd recommend it, but don't expect to learn as much as you did in *Anthill*.

### Nature in the Neighborhood

by Gordon Morrison

Ages 7 and up

This carefully detailed book brings alive nature in suburbs and cities. Cracks in sidewalks, empty alarm boxes, rooftops, railroad tracks and bridges all offer places to observe nature. The author walks you through the seasons showing the variety of venues to find both flora and fauna. Around the edges of pages are additional details and spinoffs on the story. I remember when I was young child, many of my books had this feature and I love finding it in contemporary books. The books, *Pagoo*, *Minn of the Mississippi and Paddle to the Sea* by Holling Clancy Holling also have this feature. Although students who live in the Bronx, Brooklyn, Queens and Staten Island can best relate to this book, I think it is not too much of a stretch for Manhattan students to enjoy it too.

### How Things Work in the Yard

by Lisa Campbell Ernst

Ages 6 and up

This book explains what children will find in their yard, animate and inanimate, and how they work. The author has lovely papercut illustrations which make the detailed explanations stand out. Even before I looked up her other books, I knew that she was not a science book writer. She misses so many instructional possibilities. She has a whole two pages on dandelions. For example, the illustration of the dandelion is perfect but she leaves out the roots, only saying they are "underground". Had she included the roots, she might have added that they were used to get water from the soil. I don't get why folks always seem to think adding a piece on making a dandelion (or daisy) chain is important. Who does that anymore???? That was included on these pages.

Speaking of "soil", nothing gets the hairs on my neck up more than when educators say "dirt" instead of soil. As I often told my students, "dirt is what's left in the bathtub". There is a two-page spread on "How Does Dirt Work". ERRR!! It has a lovely illustration of trees, plants, roots, worms and other underground critters. Here she does mention more on the function of roots.

On the whole, though, I'd recommend the book because it is a nice collection of both biological and physical science concepts that young readers will enjoy learning about.

### My Baby Blue Jays

by John Berendt

Ages 5 and up

This is a sweet little story that I imagine actually happened. The author is the former editor of New York Magazine and I could see this happening on a street in Manhattan. It's the story of a pair of blue jays who build a nest outside the author's home office. The photos are amateurish but that makes it even more believable. At times, it is a bit anthropomorphic in dialogue but, hey, it is a young children's book. Some of my biology friends get more upset with this than I do. They never taught kids this young. A good teacher will know to customize this in class discussions depending on grade level. I would recommend this for students under 8 yrs old.



## Garden-to-Classroom Learning

### Vegetable gardening as a teaching tool, hands-on and in the classroom

Teachers love their work. It's challenging and rewarding. Recently, and with growing enthusiasm, teachers around the country have been discovering a new resource: vegetable gardens.

Requiring only soil, water and a little know-how, school gardens support lessons in science, math, social studies, language and any other topic you can name. As a bonus, healthful eating and environmental appreciation are imbedded in every lesson.

These are sights to behold: 30 eighth graders using the scientific method to analyze sugar content in heirloom lettuce varieties, a Special Education class exploring sensory observations in an herb garden, a Social Studies class grinding wheat into flour for their segment on Native American heritage. A small garden goes a long way when productivity in learning is measured.

Garden-incorporated curriculum takes place on any schedule that suits a class, from once a week to every day. Students are greeted with a different experience each time. Activities can be as basic as measuring the height of corn plants each week or as complex as deciphering the Fibonacci sequence in sunflower seeds' pattern by eye. For creative teachers, the sky's the limit. Some ideas I've seen in action:

- Middle-school math classes use compasses and calculators to document plants' angles and lines, then spend the week using that data to explore geometry or algebra. No extra tools are needed, and the class might even see a pollinator or two.
- A social studies class might track the growth and harvest quantity of corn or rice, as societies all over the world rely on staple crops like these. Back in the classroom, they can explore the crop's history in detail: Pharaohs in ancient Egypt held power by storing grain, China's enormous stores of rice have carried it and its neighbors through several droughts. recent use of corn for bio-fuels have affected Mexican peasants' food supply and so on.
- High school journalism students interview their classmates as they plant and water, learning skills of investigation and publishing while keeping the rest of the school up to date on the garden's growth. The season's first tomato or a sparrow perched on a sunflower offers eye-catching headlines and beautiful photos.

- American History teachers can use gardens to bring to life the work of historical figures like George Washington Carver (1864-1943), the black inventor born of slave parents who went on to attend college, introduced crop rotation to the U.S. Congress and developed over 200 uses for the peanut, revolutionizing perceptions of African-Americans long before the civil rights movement.

These gardens are not without challenges. Urban schools encounter soil toxins, extreme heat and vandalism. (Solutions: compost, water and fences.) Rural schools battle deer and deep shade. (Solutions: fences and shade-tolerant plants like lettuce and kale.) Watering often falls to a custodian or devoted teacher, coming in early each day to check on the plants.

But supportive resources are growing fast. Teachers can consult the many books on organic gardening to get a sense of what to expect, such as regional planting schedules and harvest guides. Foundations and agencies offer grants for schools to build an educational vegetable garden on site. Local botanical and community gardens welcome class trips, giving students and teachers a taste of gardening.

I have been doing this for many years, and I've never seen a kid go home unchanged. My favorite quote, from a fourth grader in the Bronx: "I thought this trip was going to be boring, but it was great!" They love it even more than the adults do. And with the right mix of soil, food, conversation and earthworms, the experience will last them for the rest of their very long, very healthy lives.

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Rachel Franz is an environmental entrepreneur living in Brooklyn, NY. She has been gardening and farming organically for nearly a decade, including farms in upstate New York and Costa Rica. She leads gardening workshops for children and teachers at the New York Botanical Garden. She is also co-founder of Big Apple Edibles, Inc., an urban gardening business based in New York City. For more information or a free consultation, contact her at [info@bigappleedibles.com](mailto:info@bigappleedibles.com).

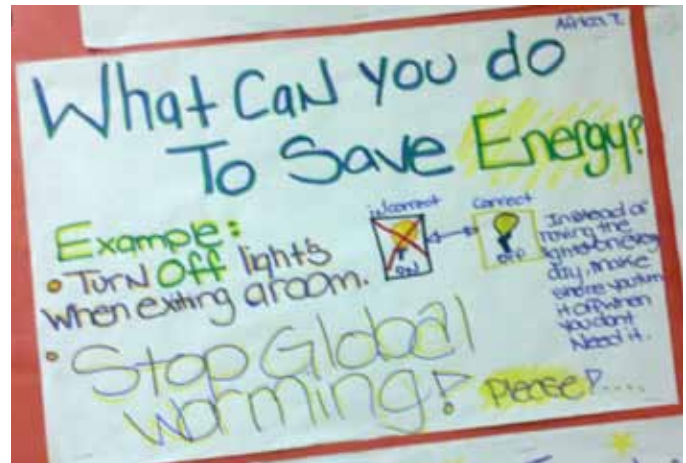


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projects in other schools have produced enviable results: a school in Brooklyn started an urban farm; a school in Chelsea added new, easy-to-use recycling stations; a performing arts school held an eco-art show and won a grant to build a green roof. Teachers at several schools report that students now remind them to shut off lights after class. At all schools, colorful, student-made signs guide the entire community to reduce energy use.

Student achievement remains in the forefront of the Green Design Lab. Dynamic and engaging, STEM lessons have students studying solar power and electricity, while learning physics. They visit an urban farm, learning biology. They conduct energy audits and estimate the monetary costs of wasting energy, learning math in practical, relevant ways.

Following this highly successful pilot, for 2011-2012, Solar One is launching the Green Design Lab in a total of 30 schools in all five boroughs, with the potential to reach over 10,000 students. More than 65 schools applied for the



30 slots. The year kicks off in October 2011 with major school projects beginning in Spring 2012. And, Solar One is thrilled that in the April 2011 update to PlaNYC, we were listed by name as an official partner organization for New York City's sustainability education. Designed to be a "best-practice" model for place-based education, Solar One has already begun conversations with schools in other states about adapting the Green Design Lab for their own sustainability curricula.

Best of all, Solar One sees students, teachers, principals, parents and custodians embracing sustainable practices, leading their schools forward into New York City's greener future. This is a big achievement for a small but growing organization founded in 2004. Solar One is excited about the prospects for NYC public education, and for how we can support schools, students and all of New York City.

Solar One is New York City's only Green Energy, Arts, and Education Center. The Green Design lab is free for public schools. For more information go to [www.GDL.Solar1.org](http://www.GDL.Solar1.org)

Contact:  
Sarah Pidgeon  
Solar One Education Coordinator



# TOUR OF THE HIGH LINE...an EEAC Special Event



*Chelsea Grasslands, between West 19th Street and West 20th Street, looking North. Iwan Baan © 2009.*



*26th Street Viewing Spur, recalling the billboards that were once attached to the High Line, a frame now enhances, rather than blocks views of the city, at West 26th Street. ©Barry Munger, 2011*

Join EEAC for a tour of the High Line  
with Mary Ann Stubbs, High Line Gardener

**Saturday, October 29th from  
10-11a.m.**

Learn more about the intersection between native plants and  
urban wildlife on this habitat walk. Space is limited!

**RSVP a must; contact Judith Hutton at  
[judithhutton@gmail.com](mailto:judithhutton@gmail.com).**



## MEMBERSHIP APPLICATION 2011-1212

New Member       Renewal

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Address: \_\_\_\_\_  
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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):  
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E-mail address: \_\_\_\_\_

Mail completed form and check to:

Jay Holmes, Treasurer, EEAC, American Museum of Natural History, 79<sup>th</sup> 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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