



New Jersey Green Schools Newsletter 12/09

Editor: Jeffrey Brown, Executive Director, Global Learning, Inc.

NJ GREEN SCHOOLS PROGRAM'S SPREADING ROOTS

The **New Jersey Green Schools Program** that Global Learning successfully piloted in Brick and Toms River school districts in 2004-06 is being expanded to another 75 schools in 11 additional districts. Funding for this expansion comes from the **TEACH Program** (<http://www.njcleanenergy.com/commercial-industrial/programs/teach>) in the **New Jersey Clean Energy Program of the Board of Public Utilities**. The Green Schools Program was created by the **Alliance to Save Energy** (www.ase.org), Washington, DC.

Global Learning began recruiting new school districts in October 2008. **Lacey Township Public Schools** were the first to schedule their initial professional development workshop for February '09 and quickly began to implement Green Schools activities throughout the rest of that school year. **Metuchen** also held their professional development workshop in February, while **Bound Brook, West Orange and Cherry Hill** came on board in May and June, with program activities targeted for the current school year.

This fall, Global Learning conducted professional development workshops for the remaining participating districts, including **Woodbridge, Runnemede and Lindenwold, Millville, and Hunterdon Central Regional High School and Hunterdon Polytech**. The newsletter pictures come from these workshops.



Measuring Computer's Energy Usage in Woodbridge

How the Green Schools Program works:

1. **The Green Schools Program is implemented by school teams** of teachers, custodians and administrators, who receive professional development training and ongoing support.
2. **The Green Schools Program provides a range of teacher-friendly lessons.**
3. **The Green Schools Program also provides a tool kit of professional energy monitoring instruments** that turn on students and help them monitor their own building's energy use.
4. **The Green Schools Program uses a flexible planning model**, which each school team customizes to meet their unique needs.
5. **Each school's baseline energy use is calculated and benchmarked for comparison with schools across the state and nation.**
6. **Energy dollar savings are returned to the individual schools' Green School Teams** for additional educational and outreach activities.

Global Learning expects to expand the Green Schools Program to an additional 100 schools in 12 more districts in early 2010. Please let us know if your district would like to participate if/when our anticipated funding is approved.

LACEY SCHOOLS TAKE THE LEAD

The returning Green Schools Teams in each of Lacey Township's K-12 schools reported exciting developments from their first half-year of involvement when they gathered in September for a new school year kick off workshop.

Following their February workshop, teams reported on the program at their respective faculty meetings and garnered widespread support for Green Schools. Teams shared some of the lessons and activities from their binders with teachers across the grade levels. Two elementary schools took advantage of the free Energy Hog program offered by New Jersey Natural Gas to schools in their service territory. Several schools instituted student energy patrols or monitors under varying names. The patrols focused on such actions as turning off lights in empty rooms, turning off computer equipment at the end of the day, removing non-essential appliances from the school building, keeping classroom doors closed during the heating season and lowering shades during heating season to prevent heat loss. Several poster contests were held, as well as



related science fair topics at the high school. Sometimes teams even uncover systemic problems that the maintenance department can address, such as the team that discovered a major HVAC-computer equipment malfunction that had been causing extremely high energy bills. The teams generally worked on environmentally-friendly activities not directly associated with energy as well, including recycling and composting. The buy-in to these efforts district-wide was demonstrated by the administration's decision to adopt a four-day summer work week, which was calculated as having saved almost 385,000 KWHs of electricity as well. The Lacey Green Schools fall kick-off meeting concluded with a special presentation by BPU Commissioner Joseph Fiordalisio, who shared an encouraging perspective on dynamic clean energy developments across the state..

Testing light levels in Hunterdon Reg'l. H.S.

METUCHEN'S EXAMPLE

How do schools take what we present in a Green Schools professional development workshop and incorporate the program into their ongoing operations? Each school's approach is unique, but Edgar Middle School in Metuchen developed the following plan in line with their "pupil performance objectives."

EDGAR MIDDLE SCHOOL Pupil Performance Objectives 2009-2010 Energy Conservation

Goal: By June, 2010, 90 % of students in fifth grade will be able to identify two or more ways to reduce the amount of energy used in their school.

Rationale: During the 2008-2009 school year, the Edgar School community participated in a Go Green! initiative aimed at introducing and encouraging the concepts of Reduce, Reuse and Recycle. In order to further students' understanding of how they may be stewards of their environment, this year's goal aims to raise awareness of energy use and conservation. To further this aim, the Metuchen Public Schools is participating in the Green Schools program of energy study and conservation. School wide activities will be targeted at raising awareness and enthusiasm for energy conservation. Learning activities will be conducted at all grade levels, with a specific assessment target for the fifth grade.

Implementation:

An Energy Conservation Committee will be formed to develop a school wide program. Suggested activities include assemblies, contests, announcements or other programs. The committee will seek input from the Edgar School community in developing a program.

Grade 5: In collaboration with the fifth grade Science Lab teachers, fifth grade teachers will select and conduct lab activities targeted at developing students' understandings of energy usage, waste and conservation, particularly as it pertains to their lives and their school environment. Labs and activities may be conducted during the science lab period and during classroom lab periods. Lab activities and equipment may be selected from the Green Schools program, or from other suitable sources.

Suggested Energy Conservation Unit Schedule:

Lesson 1:

- Pretest
- Definitions: Conservation – what it is and how it pertains to their lives

Lessons 2, 3, 4 ...

- Suggested Lab Activities
 - o Keeping Warm – Insulating our bodies in cold weather
 - o In the Pink – Home insulation keeps heat in and cold out
 - o Bright Heat – Unwanted energy from incandescent light
 - o How Energy Efficient Are You? Web activity to gauge energy usage in the home
 - o The Mummy's Tomb – building a better pyramid
 - o Your Carbon Diet
 - o Energy Audits – School and Home
 - o Tools to Measure Energy Usage / Waste – Light meters, temperature probes, air flow detectors and watt meters



Preparing data presentation, Millville

Final Week:

- Post-test

- Additional ways to conserve energy and reduce the carbon footprint in School and at home

Grades 6, 7, & 8

A kit provided by the Green Schools program contains various meters for measuring energy. It will be shared by the Science Teachers to use with their classes to:

- Raise awareness of the need to conserve energy.
- Demonstrate methods to measure the amount of energy being used/wasted.
- Devise means to reduce the amount of energy being consumed.



Suggested kit use schedule:

- 1st cycle: 8th grade
- 2nd cycle: 5th grade
- 3rd cycle: 6th grade
- 4th cycle: 7th grade

Assessment:

A formal assessment survey will be developed and administered to fifth grade students in June. The survey will provide an opportunity for students to demonstrate that they can identify two or more ways to reduce the amount of energy used in their school.

Green Schools Lesson Prep,
Runnemede & Lindenwold

West Orange Green Schools Program Takes Hold

A mid-November visit to West Orange Green Schools revealed a strong start to launching the program this school year following their initial workshop at the close of last year. For example, an Energy Detective Squad is sniffing out inefficient practices at St. Cloud ES while trying to figure out the impact of five new electronic display boards in classrooms. Energy monitors are at work in all the second-to-sixth grade classrooms at Hazel ES where teachers are giving the program broad support. At Washington ES, K-3 students created a Green Schools mascot, Danny the Dolphin, who visits classrooms to make sure the students and the class are being environmentally friendly. Danny sent a letter with energy saving suggestions to each classroom. A Green Patrol (grade 5 students) is responsible for making energy saving posters and for clean-up around the building. Redwood ES is adding more volunteers to their team. The Mt. Pleasant ES team found additional resources in an issue of the magazine *Edutopia* featuring “Green Your School.” Their PTA donated \$500 for the school to participate in CooltheEarth.org, a program that provides Action Coupon booklets filled with low or no cost carbon saving initiatives for students to bring home to their families.

Science Club members are creating “switch off a little, save a lot” switch plate covers at the new Liberty MS where Green Schools lessons are being incorporated within the Character Education Program. The Roosevelt MS team launched their program with an assembly program focused on energy saving the second week of school. Energy saving strategies include switch plate covers,

unplugging equipment to eliminate phantom loads and one Friday a month as a lights-out/technology-free day.

At the high school, members of the Fight for Green Club will be adding Green Schools energy activities to their accomplishments. The Club members already collect recyclables (paper, glass, and plastic) from classrooms and offices in the building on a weekly basis. They have convinced food services to offer vegetarian meals at lunch, assisting the environment by eating at a lower trophic level. Students are now working on designing a garden for an area from which trees have been removed. They are also planning clean-up projects around the football field and wooded sites identified by the town.

Many of the West Orange Green Schools Teams are also focusing on turning off computer monitors at the close of school. The district turns off all CPUs centrally at 7:00 PM, but the monitors are not controlled centrally. The proverbial journey of a thousand miles has taken many initial and creative steps in West Orange.

Energy Resources at Liberty Science Center

Article by Dan Smith, Director of LSC Abbott Partnership Program & a Global Learning Trustee

When we reopened our facility in July 2007 after a \$109 million expansion and renovation, we had a 6,000 sq ft. green roof, two solar arrays totaling 227kw, and a 10kw wind turbine. The building though, wasn't really as green as we thought. It was built according to our specifications but when we examined the actual performance of the building, our engineers realized they had work to do.

Partnering with Noveda Technologies (www.noveda.com), an energy monitoring company, enabled our staff to see, in real time, what our facility was producing and consuming. This information enabled changes in operational procedures and equipment that reduced our electric and gas consumption by over 40%. The vast majority of the savings came from changes in procedures too, not light bulbs! In addition, we realized that our alternative energy production only represented about 5% of peak demand. This is big news. We saved 40% changing how we did things and only 5% by adding solar.

Some programs we have relating to energy:

Assembly Program:

Flash! Bang! All About Natural Gas and Electricity (Grades 1-6)

Arcing electricity! Balls of fiery gas! Join us for an interactive look at the two most common forms of energy used in homes. Your students will generate electricity, explore insulators and conductors, and participate in their very own game show, all while learning how to safely use both natural gas and electricity. (Contact: 201-253-1584, cost \$695 + travel fee)

Electronic Field Trips:

Green Power - Alternative Forms of Energy (Grades 3-12)

Did you know that the sun, wind and water are valuable sources of energy? As non-renewable sources of energy dwindle, renewable sources must be developed. Explore Liberty Science

Center's Energy Quest gallery and experiment with a variety of Earth's renewable energy sources.

It's Easy Being Green: Green Buildings (Grades 6-12)

There's more to green building than just using green paint! Liberty Science Center's Skyscraper! exhibition examines design and engineering techniques that reduce their carbon footprints, making them more environmentally friendly. Learn how you can do this in your own home.

For more information or to sign up for an Electronic Field Trip, contact Reservations at 201.253.1382 or EFT@lsc.org. Grades: Pre K-12 | Length: 45 minutes | Program Cost: \$190.00

Discovery Challenges:

Design a "Green" School! - Every day we use it, waste it, and are on a quest to conserve it. Energy comes in many forms. By understanding how these forms are generated, we can begin to develop ways to create greener living. In this Discovery Challenge based on our [Energy Quest](#) exhibition, students will explore the many kinds of energy and design a school using cleaner energy. The future of our environment depends on creatively using renewable resources!

Monitor Your School - Grades: 9-12

This Discovery Challenge will encourage students to explore their own school building, then come to the Liberty Science Center and learn about energy conservation in large buildings. At the Liberty Science Center they will explore the Energy Quest Gallery to learn about traditional and alternative energy production. In our Skyscraper! Gallery they will acquire knowledge of how Skyscrapers are built and how they function. They will study our "Noveda" exhibit, which shows how we monitor our own energy flow, and displays real time data on the energy production and consumption of this building.

They will return to their school to design an energy monitoring system for their building, incorporating the concepts they learned about in our galleries. In addition, they can suggest strategies for conserving energy in the school.

(no charge beyond general admission, \$10.50 for students and \$5 for chaperones)

<http://www.lsc.org/lsc/edprograms/field-trips1/discovery-challenges>

General Field Trip information can be found at <http://www.lsc.org/lsc/edprograms/field-trips1>.

An Update (i.e., Really A Correction)

A question by a workshop participant in Millville got me to dig a little deeper in checking the current accuracy of an item in the the Test Your Energy I.Q. pre-test we've been using in the initial Green Schools workshop. When the original survey was created in 2002 for the National Environmental Education and Training Foundation, the question about how the average miles per gallon of gasoline used by vehicles in the U.S. in the past ten years had changed was correctly answered with the statement that the mileage had "gone down," i.e. cars were less efficient. However, the correct answer now is that car mileage has "increased." According to the executive summary of the E.P.A. report, *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 Through 2008*:

Since 1975, overall new light-duty vehicle fuel economy has moved through four phases:

1. a rapid increase from 1975 through the early 1980s,
2. a slower increase until reaching its peak in 1987,
3. a gradual decline until 2004, and
4. an increase beginning in 2005.

<http://www.epa.gov/otaq/cert/mpg/fetrends/420s08003.pdf>

It's certainly nice to report a positive trend.



GS Team Planning Session, Lindenwold

Participant Evaluations of Green Schools Workshops

We'd like to share another positive note, which is to report the cumulative results of participant evaluations from all the Green Schools professional development workshops mentioned on page one: Excellent – 52%, Good – 42%, Average – 6%, Fair – 0%, Poor – 0%

Additional Resources

Support for Youth Environmental Projects Worldwide

Captain Planet Foundation

The mission of the Captain Planet Foundation is to support hands-on environmental projects for youth throughout the world. The Foundation is interested in funding innovative programs that empower children and youth to work towards solving environmental problems in their neighborhoods and communities. All funded projects must involve young people ages 6-18 (elementary through high school). Nonprofit organizations and public schools worldwide are eligible to apply for grants of \$250 to \$2,500. Deadlines for submitting grant applications are March 31, June 30, September 30, and December 31. Online application guidelines are available on the Foundation's website <http://www.captainplanetfoundation.org>.

New Jersey Clean Energy Program Rebates Available

Residential rebates are available on many of the items you use every day. These energy efficient products can help lower your monthly energy bills!

Rebate Information Quick Links at: <http://www.njcleanenergy.com/residential/home/home>

- [Furnaces](#)
- [Central Air Conditioners](#)
- [Clothes Washers](#)
- [Dehumidifiers](#)
- [Water Heaters](#)
- [Solar Domestic Hot Water Heaters](#)
- [Heat Pumps](#)

Applications Available for Renewable Energy Projects

The Renewable Energy Incentive Program is accepting applications for solar, wind and biopower projects.

Renewable Energy | Renewable Energy Incentive Program

Source: New Jersey's Clean Energy Newsletter, December