



CLEAN ENERGY RESOURCE TEAMS

CASE STUDY: SCHOOLS | NORTHEAST REGION

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Hartley Nature Center School Outreach

By Lucy Rahn, The Minnesota Project

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- University of Minnesota Regional Sustainable Development Partnerships
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BJ Kohlstedt and Peter Gravett worked together in the late 80's at Wolf Ridge Environmental Learning Center. In 2006, they found another opportunity and incentive to collaborate, through CERTs. Peter is the Executive Director at Hartley Nature Center and was looking for a way to use some impressive renewable energy equipment that had been sitting, unused, for 2 years. BJ, now at North Shore Community School (a charter school), was looking for a hands-on way for 6th graders at her school to fulfill State science requirements. Peter and BJ took an opportunity to create an educational program focusing on renewable energy. They are firm believers that many of the best initiatives are grassroots ones and that starting with our children is very important.

The Hartley Nature Center, in collaboration with BJ at North Shore Community School, created Energy Education—6th grade curriculum including six classes that pertain to energy education and alternative energy. The classes spanned October, November, January, February, March and April of 2006-07.

The classes included two full days at the Nature Center and four on site at the school. There were three main Nature Center activities: *Energy Explosion*, *Green Building Class*, and *Green Transportation & Solar Sprint*.

For *Energy Explosion* students were shown a hydrogen fuel cell car, a hydrogen fuel cell generator, a biodiesel generator, a micro-hydropower unit, solar panels, and a wind generator (small and portable, at 500 watts). The equipment is worth over \$10,000, and was purchased with a Minnesota Power grant for educational purposes.

In the *Green Building Class* students took a building tour of

Hartley Nature Center. Green building highlights of the Nature Center include: a photovoltaic system of 13 kilowatts that is connected to the grid; a ground-source heat pump that heats the building using geothermal technology (with one mile of one-foot-deep tubing that circulates hot water through the floor); a solar wall that pre-heats air for ventilation; a clerestory (a series of windows at the top of the building that lets sunlight permeate throughout the entire building); and a temperature-sensitive passive solar design.

Green Transportation & Solar Sprint allowed students to build model solar cars. They designed the frame and built it with foam core. Every student left with a functional model car!

In order to meet Minnesota science education standards, Hartley Nature Center energy expert Mark Horlocker went to North Shore Community School and taught about energy and natural systems, refinements to cars (velocity and acceleration), Newton's laws, and mechanical advantage.

The Hartley Nature Center's collaboration with the North Shore Community School to build environmental education curriculum and fulfill state science requirements could be a model for other schools in the state to follow, hindered only by the fact that



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helping Minnesota communities determine their energy future

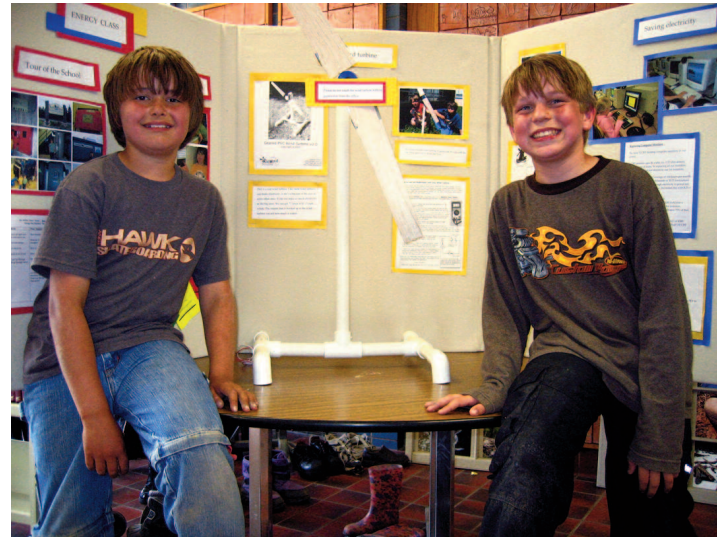
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most middle schools aren't permitted to take field trips. To this end, Peter hopes that Minnesota Power can provide a weather-tight trailer with a shell that can be lifted off to transport and display the equipment off-site, making it easier for the Nature Center to take its show on the road. Peter is also planning summer camps with an energy curriculum.

The overarching lesson Peter learned from the project is that energy education is the future of Hartley Nature Center and an opportunity for growth. He believes there is a certain level of commitment that goes with having a nature center—in educating others on how to take action, make sacrifices, and live sustainably. Peter and the Hartley Nature Center look forward to further development of energy education.



5th graders Ben Hudson and Adam Selhorst sit in front of their three panel display depicting, from left to right, their tour of the school with the facilities engineer; their research and building of a model wind turbine; and their project to determine the energy savings to the school in switching from CRT to LCD monitors.
Photo courtesy of BJ Kohlstedt

To learn more, visit the Hartley Nature Center's Web site at www.hartleynature.org.

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