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The Green Hire

Your school building can serve as your newest—and potentially most valuable—teacher

Imagine employing a teacher who introduces new curriculum concepts, engages students through experiential learning, and saves your district thousands of dollars each quarter. Say hello to your new hire: the school building.

When used to their full potential, facilities enhance the learning experience rather than simply contain it. Green schools teach invaluable lessons on topics like conservation, stewardship, and environmental science. Students learn about renewable energy in their solar gardens, study conservation by monitoring rainwater levels in their cisterns, and study natural resources by examining the geothermal compressors in the school mechanical room.

But photovoltaic panels, green roofs, and wind turbines aren't necessary to develop environmentally literate students. Conventionally designed schools have important environmental lessons to teach, too. Helping your students and staff contribute to the high-performance operation of school facilities can save your district thousands, even millions, of operational dollars while teaching them about the interconnectedness of the built environment and natural systems.

Start small: Co-curricular green

It's likely that some or all of your schools have green initiatives or clubs that involve select students and staff in activities like recycling, energy and water conservation, or environmental awareness. However, a truly green approach to education requires the incorporation of environmental literacy throughout the curriculum and culture.

This doesn't have to increase the workload of teachers

and staff. A growing number of districts and local and national organizations share ready-made lesson plans and activities that can be utilized for co-curricular and after-school programming.

Students in Maryland's Montgomery County Public Schools have formed School Energy and Recycling Teams (SERTs). Consisting of students, teachers, parents, custodial staff, and other volunteers, the teams promote environmental stewardship throughout their school and across the district. Morning announcements remind occupants to shut down computers, turn off lights, and keep doors closed. Participants conduct building energy audits, administer recycling assessments, and install energy-efficient task lamps in computer labs.

Teams that save the most energy or improve energy management practices receive up to $500 per quarter to spend as they choose. The SERT website (www.greenschoolsfocus.org) has resources for teachers, administrators, and students—including activity packs, contests, games, and posters. New teams can download a toolkit that has all the information, forms, and templates they need to get started.

Programs like the School of the Future Design Competition encourage teamwork and fundamental skill building among students. The annual competition, sponsored by the Council of Educational Facility Planners International (www.cefpi.org) and open to middle schoolers, challenges student teams to design a dream school that will enhance learning, conserve resources, be environmentally responsive, and engage the surrounding community. The multidisciplinary solution requires students to follow a planning process from the concept phase to the project's completion, with thorough documentation. Projects are presented to a jury for review.

Teachers are encouraged to use the award-winning design competition curriculum and outline lesson plans to help students build skills in math, language arts, communication, science technology, architecture, and facility planning.

The curriculum also sparks creative ideas. The 2009 winners from Tucson's Imago Dei Middle School looked at their surroundings and community to inspire their plans for a hypothetical school facility. They chose an abandoned neighborhood site to construct their school and used recycled building materials from a vacant building.

The students' scale model boasted traditional adobe walls to keep classrooms cool during Arizona summers. Living walls on the school grounds provide shade in warm months and let sunshine into the building during cooler months.

Teacher Linda Cato says the program is "everything that I look for in an educational experience," providing hands-on exploration of real-world concepts and development of leadership skills. "The project is a springboard for a discussion regarding stewardship, sustainability, and social justice," she says.

Partnerships: A statewide project

Minnesota high school and college students are actively working to lower their schools' carbon footprint. A partnership between state agencies and Clean Energy Resource Teams (CERTs), Minnesota Schools Cutting Carbon provides 100 campuses across the state with support and funding to make a measurable difference in environmental impact.

Student teams, led by a faculty coach and supported by school administrators and building operators, explore no-cost and low-cost energy efficiency solutions as well as larger projects to cut energy use and create clean energy on campus.

Teams develop projects such as building and system audits to implement in schools, and are awarded mini-grants to start their work. Students engage community members and learn the value of involving everyone from facilities staff to district administrators to make a meaningful impact on energy consumption.

This year, 23 schools were selected to receive more than $200,000 in grants for energy-saving green projects. Proctor High School in Duluth will use the funds to install motion sensors, light harvesters, and efficient computer monitors. Students will be responsible for monitoring energy meters and will launch a composting campaign.

At Winona Senior High School in Winona, students will use part of their grant money to construct a bike shelter equipped with a security system and promote the benefits of biking to fellow students and staff. Through a shop class design-and-build project, students at St. Michael-Albertville High School in St. Michael will construct a passive solar air heating system in the school's greenhouse. The project will be integrated into the school curriculum and students in all grades will be trained to utilize an electronic monitoring system to ensure ongoing success.

Plug and play: Ready-made green

A small percentage of schools have been designed and built as "green" schools, but many more have energy-efficient or green practices, policies, or operational procedures that can be used as a departure point to educate for sustainability. The Internet is a veritable treasure trove for green learning modules that can be incorporated into the current school curriculum.

Groups like the North American Association for Environmental Education, the National Energy Education and Development Project, and the U.S. Green Schools Foundation provide free curriculum guides, classroom resource directories, and links to additional lesson plans and activities.

In the wake of Hurricane Katrina, New Orleans' Recovery School District (RSD) decided to rebuild its schools green. The new schools present unique opportunities for project-based learning around sustainability concepts, but the district wanted to identify green curriculum

opportunities that wouldn't require teachers or district staff to create new content.

Many of RSD's schools needed to be rebuilt from the ground up, but the district wasn't interested in reinventing the wheel to implement an environmentally focused curriculum. Instead of building new lessons from scratch, the district partnered with community-based organizations to develop a database of green curriculum resources that were created by fellow school districts, colleges and universities, education associations, environmental nonprofits, and federal agencies. More than 150 relevant activities and lesson plans that easily could be plugged into existing state-based curriculum were identified.

The Children's Environmental Literacy Foundation (CELF, www.celfeducation.org) is a nonprofit that provides experiential sustainability education programs for K-12 students and teacher-training opportunities for teachers and administrators. From full-day programs that teach middle schoolers how to conduct environmental audits and calculate a school's ecological footprint, to summer institutes that help teachers give the curriculum a "sustainability makeover" that keeps with state standards, CELF helps prepare students to face the most critical issues of the 21st century.

School as teacher: Integrated green

Green schools present a great opportunity to utilize the facility itself as a teaching tool. Schools across the country are implementing replicable models of a green curriculum, using their buildings to teach place-based lessons about the connections between people and the planet. These schools serve as models of inspiration and present a vision for the future of school design.

Wyck Knox, project architect for Virginia's new Manassas Park Elementary School, believes green schools are obligated to educate environmentally literate students. "A green school can be the most energy-efficient building in the world, but if the kids graduate without learning something about that, we've missed out on an opportunity," he says.

When Knox and the rest of the project team started to design Manassas Park, a public school in Northern Virginia that is seeking LEED certification, every choice made was with the district's education goals in mind. The project team consisted of design and construction professionals as well as district administrators, teachers, and staff members who worked together to design a building that would support, enhance, and inspire learning. The result is a facility that unearths educational opportunities where they are least expected, a place where the walls, the windows, and even the bathrooms convey sustainable concepts to students.

A day at Manassas Park is all about movement. Though the school serves grades 3-5, an average student's schedule looks more like that of a high school junior or senior, where they move from class to class and teachers stay put. This structure means high traffic throughout the school's three floors, and the project team did not let this opportunity go to waste.

Each floor is named for a level of the adjacent deciduous forest. Instead of the first, second, and third floors, students attend classes on the Forest Floor, Understory, and Canopy levels. Students are literally surrounded by their local ecosystem, with views of the forest out almost every window. Each classroom is named for a local plant or animal that students can hope to spot in that level of the forest. Says Knox, "We didn't want this to be a 'Hey, look at me' school. We wanted it to be a 'Look out and see' school."

The way students move through the space has also become a teaching opportunity. The building is grouped into three "houses" around one common area. Buses drop off in the morning outside Summer House. Students move through the seasons of the school year, down the corridor through Autumn House—where the primary academic classes are held—and through the Winter Commons, where arts and music take place. The walk continues into Spring House for other classes and pickup at the end of the day. Describing these passive-learning opportunities, Knox says, "Learning when you don't know you're learning is the best kind of education."

The building's green features are not overlooked when it comes to instructional opportunities. The HVAC system is connected to sensors in each classroom; a green light means the conditions are right to open the windows. The students are "all over it," Knox says, noting they are eager to take the initiative to save energy.

An underground water cistern is set up with outdoor classroom space atop it. Murals describe the process of rain collection and detail how water drains from this site all the way to the Chesapeake Bay. According to Knox, the students are better at explaining where the water goes than are the architects who put the system in place.

"The kids don't need an instruction manual," he says, when it comes to how the building works and the ways in which it impacts its environment.

Manassas Park's outdoor classroom is always in use. Whether it's for band practice or quiet reading time, students are constantly connected to their environment. Wireless Internet access throughout the campus allows digital learning to take place outside.

"We want the kids to make the connection that the environment is right there," says Knox. "A green school should promote environmental stewardship. It's the obligation of a green building." ■

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