Making the Change to Sustainability:

Building Green Builds a Better Education

BY PAUL J. HOFFMAN

When I was in school, green was the color of one of my crayons and the vinyl asbestos tiles on the classroom floor. Today, the word "green" has a very different connotation. The age of the green movement and sustainability has grown from a few concerned citizens, often labeled as "tree huggers," to a mainstream media focus with a rapidly growing, but large and passionate following. For the education world, sustainable practices can impact your students, parents, teachers, staff, administrators and communities.

In addition to healthier students and staff, significant long-term cost savings are among the most exciting benefits that the recipients of an environmentally friendly educational facility enjoy. Improved test scores, lower absenteeism, better morale, greater community support, stronger teacher retention and certainly a more positive impact on the environment are all additional benefits that school administrators can expect from a sustainable school. With so many benefits easily recognized, there's really no reason that school officials shouldn't take a close look at all of the sustainable options available to them as they consider upcoming building projects.

It is important that new facilities lay the foundation for a great academic story while also being aesthetically pleasing, healthy and cost-sensitive. Additionally, you offer a valuable learning opportunity to educate students about the importance of creating buildings that demonstrate care for our environment.

The Myth of Higher Costs for Going Green

Educational facilities often provide the greatest and most visible venues for applying sustainable design and construction principles. Unfortunately, many owners of educational facilities are leery of incorporating sustainable practices because they think it costs more to be green. It's a myth and simply does not have to be true! Two Wisconsin school districts have recently recognized the possibilities, while dispelling the myth that it costs more to incorporate green principles and practices.

One Wisconsin school district, which covers 474 square miles, took on this challenge just a few years ago and has seen great success. Eagle River and its nearby communities in Wisconsin opened a first-of-its-kind building which has already been producing benefits that will continue to materialize for many years to come. Thanks to the visionary thinking of both the school board and administration of the Northland Pines School District, the much celebrated Northland Pines High School opened in 2006. It is the first LEED (Leadership in Energy and Environmental Design) Certified K-12 school building of any kind in Wisconsin and the original and currently highest-rated Gold Certified public high school in the United States.

This environmental designation—awarded by the U.S. Green Building Council (**www.usgbc.org**)—certifies that the school meets lofty standards for energy and water use, indoor air quality, recycling of building materials and other significant factors. By incorporating a wide span of sustainable principles, the school provides a positive impact on the Northwoods region of the Badger State. A Sustainability and Energy Efficiency Leadership Award from the Wisconsin Green Building Alliance at the 2007 Greening the Heartland Conference is one of the many awards that the project has received.

Main Corridor (River Crest Elementary School)
A large mural painted by students dominates the wall opposite the foyer. Painted with the same low-VOC paints used throughout the school, it depicts the history of Hudson and the importance of the river.

Foyer (River Crest Elementary School)
Clerestory windows illuminate the foyer, main corridor, and interior of the Guidance Office. A glass block partition is creatively used to dramatically transmit some of this light into the foyer. The wave theme is carried onto the walls and ceiling.

On the Wisconsin-Minnesota border, the Hudson School District opened River Crest Elementary School in September of 2008 to a host of enthusiastic fans. From the project's beginning, the district—led by Superintendent Mary Bowen-Eggebraaten and the Hudson Board of Education—set its sights on creating a school that would be a model of sustainable design and practices not only for River Crest's students, but for its staff, the entire district and the greater community.

"We originally envisioned River Crest as a teaching tool for our children, but that quickly expanded to include the staff, the school district and our community as well," said Bowen-Eggebraaten. "River Crest has become more than a sustainably designed school for us. It moved us to the next level and extended our thinking beyond the school walls and grounds."

River Crest is currently a LEED registered project and is awaiting recognition for the decisions that were made with the students, teachers and environment in mind. This project is hoping to become the first elementary school in Wisconsin certified at the Gold level using the new LEED for Schools rating system, and only the second school in the state (following Northland Pines) to achieve a Gold rating.

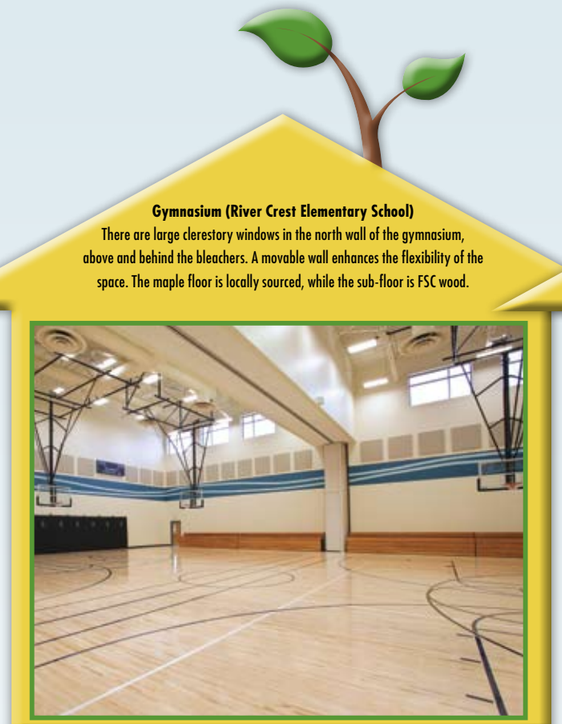
Sustainability Changes More than the Environment

Sustainable practices really do have an impact on more than just the environment. Green practices also affect:

Attendance: Making improvements in indoor air quality and lighting, outdoor daylighting, and other high performance (green) features have proven to increase productivity and reduce absenteeism. According to a U.S. Environmental Protection Agency report, the average worker spends almost 90 percent of his/her time indoors and building-related illnesses cost organizations tens of billions of dollars every year.

Classroom Learning: Among the many demands on school administrators, test scores and broader academic learning are always of great concern. According to the Heschong Mahone Daylighting study (1999), there is a dramatic correlation between daylit school environments and student performance, citing 26 percent faster progression in reading and 20 percent faster progression in math.

Attitudes: An overall awareness of the cultural shifts that are taking place with students is always important. According to the 2006 Cone Millennial Cause Study, a national survey released in October of that year, a well supported case is made that Millennials (those born between 1979



Gymnasium (River Crest Elementary School)
There are large clerestory windows in the north wall of the gymnasium, above and behind the bleachers. A movable wall enhances the flexibility of the space. The maple floor is locally sourced, while the sub-floor is FSC wood.

Classroom (Northland Pines High School)
Classroom lighting was designed to improve performance and reduce power consumption.

Commons (Northland Pines High School)
Northland Pines' commons area provides flexible space for a variety of uses. High ceilings, building orientation and window selection are key components for proper natural lighting.

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LEED Certification

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is the nationally accepted benchmark for the design, construction and operation of high-performance green buildings. Architects, facility managers, engineers, interior designers, landscape architects and construction managers are among those who use LEED. State and local governments across the country are adopting LEED for public buildings; the federal government has LEED initiatives in a number of agencies, including the Departments of Defense, Agriculture and Energy. According to the U.S. Green Building Council, "LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality."

and 2001) are more responsive to those institutions which are environmentally sensitive. The research demonstrates that 83 percent of Millenials will place more trust in organizations that are socially and environmentally responsible.

Staff: The new Northland Pines facility is already having an impact on students and staff: improved morale. A poll conducted by Mortgage Lenders Network USA found that 94 percent of Americans prefer to work in a setting that is designed to be energy efficient and ecologically sound. When potential personnel are considering their employment options, features like natural lighting and a comfortable, well-designed work environment are important attributes that give sustainable schools the upper hand in successful hiring and retention.

Integration is Key to Making the Change

The integrated process used for pre-design planning, design and construction services in each project is transferable to any region of the country. Working with the clients' desires, we achieved environmental standards which were met at a square-foot cost well below industry averages and less than conventional construction. For example, Northland Pines was delivered for 23 percent below the national median cost of $150 per square foot for high schools built in 2006.

It is vitally important that planners start working with the administration and school board members very early on and have the end goal in mind from their first interaction. We begin by viewing a project from its inception through a "green lens," incorporating sustainable goals and principles. The end goal in both school examples was a high level of LEED certification in attractive facilities that serve as beacons for their communities.

"Our vision was to create a building that set a positive example of responsible sustainable design and construction solutions that provided a tangible learning tool to enhance our curriculum," says Northland Pines District Administrator Mike Richie.

Through a value-driven process, Total Project Management: Vision Taken to the Power of Green (TPM^g), we integrated planning, architecture and construction management and a commitment to holistic sustainable design and delivery. A good example of this is the efficient planning and scheduling that was done before the former Northland Pines was razed. By using an integrated process, we had time to carefully plan sustainable solutions. One of those decisions was to bring in a crew of Amish workmen who removed and remilled the existing wood flooring and reclaimed large laminated beams.

Features of these Sustainable Wisconsin Schools

Both of these facilities contain myriad sustainable features that impact education and the environment in numerous and significant ways. Here are examples of sound environmental practices that were utilized through the TPM^g process that can be emulated in your next project:

- Construction Waste Management—At Northland Pines, concrete, brick and mortar from the deconstruction of the existing high school building was used under parking lots and in the roadbed, contributing to 83 percent of the building avoiding the landfill. An impressive 96 percent of all building waste at River Crest Elementary was reused or recycled.
- Conserving Water—Water-reducing bathroom fixtures and the use of climate-appropriate plants to eliminate permanent irrigation systems create annual water savings of approximately 35 percent. At Northland Pines, two large detention basins retain storm water on site.
- Designing Overall Site—At River Crest, walking and bike paths provide safe access to the school for students and staff. Walking and biking will become more important over time as the surrounding area is developed in keeping with the Hudson district's land use plan. Priority parking encourages staff and faculty car-pooling. At Northland Pines, bike racks offer secure bicycle parking, and a portion of the site is protected from future development.
- Maximizing Daylight—Strategic placement of gray low-E wood windows (developed in partnership with Andersen Windows, a local employer) and photosensors influence direct/indirect lighting. Daylighting in classrooms is proven to improve student performance, attendance and teacher morale and reduces power consumption while managing unwanted solar heat and glare. In Hudson, the large clerestory windows facing north will flood the gym with natural light, saving electricity and enhancing the visual appeal.

- Selecting Local Materials—More than half (by cost) of the materials used were manufactured within 500 miles of each construction site. These choices reduce pollution and fuel consumption associated with transporting products to the site. In addition, it reinforces and supports strong community relationships. For the Hudson School District project, more than 50 percent of the wood used in the school comes from the abundance of forests and forest processing facilities available in the upper Midwest, and are approved as Forest Stewardship Council wood.
- Protecting Air Quality—River Crest's classrooms feature air supply systems that use 100 percent outside air; classrooms, offices and other areas have the option of using natural ventilation if necessary. Low- or no-VOC (volatile organic compounds) products were specified for carpeting, paints and adhesives. Additionally, carbon dioxide levels are constantly monitored to ensure air quality is at the prescribed levels for LEED requirements.

A Better Educational Environment

As you consider your next building project, changing with the times and utilizing sustainable design is one choice that makes a lot of sense. The benefits of being environmentally conscientious will impact your students, staff and the overall environment. As Northland Pines School District's school board president said, "Everyone walks into that building and it's just: 'Wow.'"

For your next design and construction or renovation project, begin considering the overall positive impact of your choices. Choose an integrated project delivery method and professionals who incorporate great knowledge and a holistic sustainable philosophy right from the start. Those decisions can have a profound impact on the education of countless students over as many years while keeping costs low. They also provide a better working environment for your teachers and staff, decrease expenses, improve the educational atmosphere for your students and can result in the school being a role model for your community. Make the change and build a better education for your students by building green. T

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