



Growing 'Green' Schools

Districts Nationwide Exploring Environmentally Friendly Construction

by Melissa Locke Roberts

As populations increase and natural resources decrease, thinking “green” has become more the norm than merely a popular trend. We are all finding new ways to reuse, renew, reduce, or recycle in our daily lives. The construction industry in particular has experienced a sea change toward a more environmentally focused mindset, with green building products and services in the United States jumping from about \$7 billion in 2005 to more than \$12 billion in 2007.

Still, despite the obvious positive advantages of recycling, conservation, and energy reduction, school districts delving into building projects may be hesitant to take the big green step, fearing their budget will be in the red when it comes time to pay.

A little background and case study research in the area will help bring to light the possible pros and cons.

What Is a Green School?

The United States Green Building Council (USGBC), a nonprofit organization committed to expanding sustainable building practices, defines a green school as “a school building or facility that creates a healthy environment that is conducive to learning while saving energy, resources, and money.” A healthy learning environment centers around ample natural light, high-quality acoustics, and air that is safe to breathe.

According to the USGBC, building green schools can result not only in cost savings and improved student health but also in greater teacher retention, hands-on

learning for students, and setting an environmentally friendly example for the community.

Schools across the nation are steadily going green with positive results. A 2006 study sponsored by the American Federation of Teachers and USGBC found that on average, building green could save a typical school \$100,000 a year in energy costs, enough to offset the average 2 percent premium cost of state-of-the-art building materials within a year. Green schools cost less than \$3 per square foot more to build, an investment that most likely will be returned within a few years of operation.

Over years, the savings add up. The USGBC estimates that in a school building's life, which in the United States spans approximately 42 years, the savings can be

as much as 20 times greater than the initial investment.

Going Green with LEED

The first step schools make after deciding to build green is to find out what the recommended standards are and to develop a plan. That's where the LEED system comes in.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™, developed by USGBC, is a voluntary, consensus-based national rating system for developing high-performance, sustainable buildings. LEED is the nationally accepted benchmark for the design, construction, and operation of high-performance green buildings. State and local governments across the country are adopting the system for public buildings, and schools are following the specifically designed LEED for Schools Rating System.

According to the USGBC Web Site, LEED for Schools recognizes the unique nature of the design and construction of K–12 schools. By addressing such factors as acoustics, master planning, mold prevention, and environmental site assessment, LEED for Schools “is the recognized third-party standard for high-performance schools that are healthy, comfortable, and cost-effective.”

In the LEED for Schools Rating System, schools accumulate points for such improvements as:

- Construction pollution prevention
- Environmental site assessment
- Alternative transportation considerations
- Habitat restoration
- Quality stormwater and roof design
- Pollution reduction
- Joint use of facilities
- Water efficiency
- Measures of energy and atmosphere
- Materials and resources
- Indoor environmental quality
- Innovation and design
- Low-impact cleaning and maintenance

Certification in the LEED system will help a school target ways to conserve energy, build with students' health in mind, and make the most efficient use of materials, but there are other advantages, too. The USGBC encourages schools to participate so they can be recognized for

commitment to environmental issues in the community, receive third-party validation of achievement, qualify for state and local government initiatives, and receive marketing exposure.

Case Study in Green

The first public school in Texas to receive LEED certification was West Brazos Junior High School in Columbia-Brazoria ISD in August 2007. The 91,500-square-foot building, designed by SHW Group and built by Tellepsen Builders, was completed in May 2006 at a cost of \$9.5 million.

The building design included a 260-foot circulation spine connecting multiple learning/activity pod centers and featuring clerestory windows, which allow natural light to penetrate deep into core spaces. Zero-maintenance, energy-efficient classroom windows, shaded by devices that double as light shelves, distribute natural light further into learning areas. Locally manufactured materials were used for more than 55 percent of the building materials, with 17.7 percent combined recycled content, and a highly reflective Energy Star roofing system and reflective paving.

Additional green features included rainwater detention, natural filtration areas, and a drought-resistant native landscape. To complement the green philosophy, a green housekeeping and recycling protocol was set by the school district, and green awareness education for students and the community was implemented.

Martha Buckner, Columbia-Brazoria ISD assistant superintendent, said her district had already begun the process of moving toward energy-saving features long before the West Brazos Junior High project. “Our board is very visionary and progressive. They are committed to providing quality facilities for our children and staff. Our community is also supportive of our green building,” she said.

The first question the Columbia-Brazoria ISD Board asked when considering the West Brazos building project was, “What is best for the kids?”

“Studies have shown that green buildings contribute to a more positive and healthy environment,” Buckner explained. “Building orientation and the use of natural daylight are the foundations

“Studies have shown that green buildings contribute to a more positive and healthy environment. Building orientation and the use of natural daylight are the foundations of a green school and have been shown to contribute to higher test scores, higher attendance, and fewer discipline problems. Our data supports all three of these areas.”

In the last legislative session a couple of bills were introduced on the subject, one requiring schools to use green building measures, the other simply providing incentives. Neither made headway, but green building for public schools will continue to be a topic in the Texas Legislature.

of a green school and have been shown to contribute to higher test scores, higher attendance, and fewer discipline problems. Our data supports all three of these areas.”

In fact, test scores for West Brazos Junior High comparing the old campus in 2006 to the new campus in 2007 showed that reading improved by 5 percent, math by 4 percent, social studies by 7 percent, and attendance improved slightly, from 95.21 percent to 95.70 percent.

What about high initial costs? Columbia-Brazoria ISD Superintendent Carol Bertholf said they chose areas for certification that fit with the district’s already established move toward energy conservation and standardization.

“Truly, we did not see higher costs than we anticipated for structures and A/C, lighting, and plumbing fixtures, which we would have recommended because of our standardization and energy-efficiency efforts,” Bertholf said. “We were driven by the fact that the green concept fit with our perspectives.”

Buckner described some of the energy-efficient upgrades. “To control temperature and humidity, we employ DDC-controlled systems. This is slightly more expensive, but you more than recoup the initial cost with energy savings since the temperature and humidity are constantly monitored and adjusted by the system. The system is preset to turn off and on at specific times (which can be easily changed for after-hour events through the Web-based system).”

She cited other examples of higher initial costs that will bring long-term savings. “Occupancy lighting is a little more expensive up front, but lights automatically shut off when the room is not occupied, saving energy and electricity costs. Another cost-effective measure is using native plants and drought-resistant plants for landscaping. This eliminates the need for an irrigation system. Depending on your location in the state, a district may find capturing rainwater and using it for watering plants a positive strategy.”

The end result of a green focus has been positive for the district, the community, and the contractors.

“Going for LEED certification was an interest shared with our architects and contractor, as the

trend toward building green has been looming toward future requirements,” Bertholf said. “They saw this as an opportunity to work with the concept with a district that also embraced this perspective. The green approach is a relatively new concept in construction, which most parents or the community are unfamiliar with. Having said that, who would be against conservation, recycling, and building for energy efficiency?”

Yellow Light on Green Efforts

Not everyone is ready to give the green light to green building, especially if it becomes a required certification process for schools. Definitions and support at the state level have not yet been clarified.

The Fast Growth School Coalition (FGSC), a group of Texas school districts created to promote an agenda to assist the approximately 100 fastest-growing school districts in the state, helped defeat state legislation during the last session that would have required all school construction to fall in line with standards set by the USGBC. The group’s concern was high construction costs when the “green” is factored in.

FGSC Chair Karen Rue, superintendent of Northwest ISD, clarified the group’s position in the *Austin American-Statesman* (August 30, 2007): “We aren’t against the principles at all but definitely want the collaboration to make this happen.”

In the last legislative session a couple of bills were introduced on the subject, one requiring schools to use green building measures, the other simply providing incentives. Neither made headway, but green building for public schools will continue to be a topic in the Texas Legislature.

At the federal level, a bipartisan House caucus was recently created to promote green building practices in schools. The Green Schools Caucus, founded by Representatives Darlene Hooley (D-Ore-



gon), Michael McCaul (R-Texas), and Jim Matheson (D-Utah), plans to introduce its first legislation early in 2008. Also, in November 2007, former President Bill Clinton announced that the Clinton Foundation would work with USGBC to help fund energy retrofits in K–12 and university buildings throughout the country.

Green Planning

Even as legislation remains up in the air, schools will continue to consider green alternatives when building and renovation projects develop—especially when it comes to energy savings.

On December 17, 2007, *eschoolnews.com* reported that “the National Energy Assistance Directors Association has predicted facilities across the U.S. will pay an average of 10.5 percent more to heat their buildings this winter, because the average retail price of heating oil has risen sharply in the last year... On average, green schools use 33 percent less energy and 32 percent less water than conventional schools. This means going green could help the United States become less dependent on foreign energy sources.”

As schools move forward with building projects, what should the board and administrators keep in mind?

“The key is to involve the architect and the construction company from the beginning in the design process,” Buckner said. “Good planning and good design equal sustainable buildings at about the same cost you would spend for a non-sustainable building. Smart decisions save money on operational costs and allow a district to direct the savings to improvements in instruction.

“The best advice I can give is to work with a first-rate architect firm and first-rate construction company. Make sure their folks are LEED-certified and completely understand the process. Insist on features that enhance teaching and learning. Look at the return on investment rather than the upfront costs.”

Bertholf added, “Be sure to discuss the implications from both an initial and long-range cost, balancing that against impact.”

Jasmine Azima, founder of Jasmine Engineering, Inc. and Jasmine Construction Management (San Antonio, Austin, and El Paso) gives a builder’s perspective

to schools considering green building and LEED certification: “The most common misconception about green building and renovation projects on the part of school districts is assuming that the benefits of building green (whether doing new construction or renovation) will automatically be included successfully into their project simply because the work is new. Green building features must be carefully thought out by a district and specifically required of the architects, engineers, and other consultants who are hired to design the projects and get them built.”

Azima, whose clients have included cities, university systems, and public school districts, said that the value of a LEED certification for school districts is very subjective, depending on the specifics of the project and on the financial and technical resources of the given school district.

“At the very least, the requirements and principles related to LEED certification are an excellent guideline or goal standard for school districts to use in approaching current projects,” she explained. “Actually going for a LEED certification can add substantial upfront costs to a project, so each case must be closely looked at to determine the realities of benefits versus both initial and long-term costs, savings, and payback. If the financial circumstances of a particular school district are such that obtaining actual LEED certification is too difficult, many of the most significant requirements of the LEED program can certainly be incorporated into most projects anyway by the right team of consultants. Consideration of long-term operating costs and energy savings should be stressed.”

She offered this checklist for school boards considering green building projects:

- Have an accurate, up-to-date facility assessment, including a dependable

cost estimate, to use as a base for the building program, budget, and schedule. (Make sure that a qualified construction or planning professional prepares or updates the program and cost estimates for the project.)

- To augment the school district’s in-house expertise, if needed, consider an independent project management and/or commissioning firm to help the district develop a detailed action plan to accomplish the work—before selecting architectural/engineering consultants and beginning actual design.
- Select an architect/engineer design team that best matches the school district’s goals and design intent for the project from a list of pre-qualified firms specializing in the type of project being done.

The Bigger Picture

Thinking green when building or renovating schools is obviously a consideration that must look beyond how much green will be left in the bank. Healthier students and teachers, better grades because of better indoor air quality, and longer building life should be researched as driving factors in green building projects.

But teaching children the advantages of going green by setting examples in their daily school setting may be the most important benefit, for the planet’s sake.

Buckner’s perspective about the West Brazos Junior High project confirms that. “The students get that global warming, conserving energy, and preparing for a better tomorrow are all important to their future. When the children are excited and committed to a green building, so is the community.”★

Melissa Locke Roberts is assistant editor of Texas Lone Star.



Check out the USGBC Schools Web Site at buildgreenschools.org for research studies, free publications, videos, and other information, including *Greening America’s Schools: Costs and Benefits*. This report, published by USGBC in collaboration with the American Federation of Teachers, American Institute of Architects, American Lung Association, and Federation of American Scientists, provides information on the cost-effectiveness of green schools.