Why Building Green Schools Makes Sense

Does a better building produce better students?
Designers of so-called “green schools”—built with classroom and global environment in mind—think so. When architects and engineers design a high-performance school, they focus on good acoustics, lighting, thermal comfort, and indoor air quality, while reducing energy consumption. They also make sure that the building conserves water and is built with renewable or recycled materials. Many of these strategies can be applied to major renovation projects as well.

In the last few years, we’ve started to see a movement toward green schools. The reason? Research has shown that classrooms with poor air quality, that are too cold, too hot, too noisy, or too dark, detract from instruction. Green schools are built with the goal of creating clean, healthy, quiet spaces, suffused with natural light, that become ideal teaching environments.

In 1999, the Heschong Mahone Group conducted a study on behalf of the California Energy Commission Public Interest Energy Research (PIER) program. The study examined three school districts with a wide range of daylighting conditions and with very different climates, building types, curricula, and testing protocols. It found that students with the best daylighting in their classrooms progressed 20 percent faster on math tests and 26 percent faster on reading tests than students in classrooms with the worst daylighting. Test scores on the whole were 7 to 8 percent higher. Similar results were achieved in another study of schools conducted in North Carolina. Studies in Sweden and Canada found that natural light improved overall health and well-being, and decreased absenteeism.

Green schools also benefit teachers and improve staff retention levels, which is great news for principals. A 2004 study found that the quality of the classroom environment affects instruction. Teachers noted that the ability to control classroom temperature was a great contributor to their effectiveness and morale. The study also cited evidence connecting good acoustics to academic performance.

Many municipalities have been slow to adopt green building techniques because of the perception of high costs. Generally, energy-efficient designs cost more up front, but less over the life of the building. With some designs, there is a reduction in energy and heating requirements so that the size and cost of mechanical equipment can be reduced.

Green Guidelines
There currently are a number of guidelines on how to build a new green building or renovate an existing one. The most commonly referenced guide is the Leadership in Energy & Environmental Design (LEED) program created by the United States Green Building Council (www.usgbc.org). The Sustainable Buildings Industry Council and the U.S. Department of Energy also have programs and guidelines for designing high-performance schools.

All of these programs contain similar principles:

- **Environmentally friendly site designs** that protect open space, manage storm water, and reduce light pollution.
- **Minimal water consumption** through water-conserving plumbing fixtures and strategies such as harvesting rainwater or recycling water.
- **Use of alternative energy sources.** This can be as simple as positioning the building to take advantage of the sun’s light and warmth. It can also mean using photovoltaic cells to convert sunlight to electricity.
- **Use of renewable or recycled resources.** Rubber, cork, bamboo, and linoleum are all green flooring alternatives to vinyl and solid wood.
- **Creating a quality indoor environment.** Green buildings use non-toxic building materials and focus on providing good acoustics and ventilation. Classrooms should have abundant natural light and views, as well as windows that can open and thermostats in each room.

Are green schools a major trend for the future? Maybe not, but if there is a way to reduce school energy costs, keep teachers and students healthier, and improve academic performance, why wouldn’t you do it?

Jo Cohen is a project manager with Kaestle Boos Associates, Inc., a design firm in New Britain, Connecticut. Her e-mail address is jcohen@kba-architects.com.

Here’s Your Chance to Speak Out
You just read an architect’s argument for “greening” schools to make them cleaner, lighter, quieter, and healthier. Do you agree that the suggested changes improve student achievement?
Would you like to see some of these changes in your school? Share your thoughts and comments at www.naesp.org/speakingout.