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Shining a (Natural) Light on Green Schools

By *LIBBY TUCKER*

SRG Partnership An addition to the Da Vinci Arts Middle School in Portland, Ore., will use skylights and a diffuser to avoid using electric lights during the day.

Faced with a large stock of deteriorating public school buildings, school districts [across the country](#) are experimenting with new construction and renovations that save energy as well as improve educational facilities.

Even though Congress cut the \$16 billion originally proposed for school construction from the stimulus bill, the U.S. Department of Education will award states \$48.6 billion under the bill's [fiscal stabilization fund](#) to fill budget gaps in public schools and universities. School construction, renovation and repair projects can qualify for the money if it's applied to "green" buildings.

A school addition that doesn't use electric lights, heat or air-conditioning may sound like something straight out of "[Little House on the Prairie](#)," but several architects and researchers from the Pacific Northwest hope to see such features become standard in new classroom construction nationwide.

A prototype green classroom addition under construction at the [Da Vinci Arts Middle School](#) in Portland, Ore. includes natural daylighting, passive heating and cooling systems, solar roof tiles and other green features that yield a 70 percent efficiency improvement over Oregon building code requirements.

The architecture firm [SRG Partnership](#) worked with the University of Oregon's [Energy Studies in Buildings Lab](#) to design the 1,500-square foot music classroom and studio in order to achieve a LEED-platinum rating and net-zero energy use.

One of the more unique features of the Da Vinci addition is the university's experimental natural lighting system, called "[the halo](#)," which provides enough light, even with overcast skies, so that there's no need to flip on a switch at all during the school day.

The system channels the sun's rays through a skylight and into a diffuser on the classroom ceiling set at precisely the right angles to spread natural light evenly throughout the room. After dark, the lights are on but they're mounted inside the diffuser so that the light is amplified and dispersed, using only 0.4 watts per square foot – or half of the energy used to illuminate a regular classroom, said G.Z. "Charlie" Brown, an architect and director of the university's buildings lab.

The Da Vinci addition is the second building to test the diffuser designed by the lab — one of five Pacific Northwest labs in the Betterbricks [Integrated Design Lab Network](#), which is researching how to improve energy efficiency in schools, hospitals and office buildings.

Portland Public Schools plans to rebuild or remodel every building in its portfolio over the next 20 years and hopes to integrate as many green features as possible, said Nancy Bond, a resource conservation specialist for the district. The Da Vinci addition is a pilot project for the district to decide which new technologies will be included in future sustainable classrooms, she said.