

# Cool Tools for Learning

A lunchbox? A solar charger? A teaching device?  
The Solar Schoolhouse has a learning tool that's too cool.

The Solar Schoolhouse's Solar Power Lunchbox packs a little power punch that's helping schoolkids learn about solar electricity. The lunchbox is the brainchild of the folks at the Solar Schoolhouse, a nonprofit program of The Rarus Institute in Sebastopol, California ([solarschoolhouse.net](http://solarschoolhouse.net)). The program has hosted seminars and workshops to help educators teach solar concepts to students of all ages. The lunchbox kit is the latest teaching tool offered for \$90 through the Schoolhouse's catalog—which includes DIY solar projects like a PV cell classroom set and a solar fountain kit.

and students alike. Equipped with a USB charger for cell phones and iPods/music players, and a custom LED light for nighttime use, the handy box seems to hit the mark. Adding to the learning experience, an LED fuel gauge shows the battery's state of charge.

"The lunchbox allows teachers and students to play with, and understand, solar electricity in a relatively inexpensive way that has some application to their lives," Allen says. "We created the kit with all the parts but we encourage students to innovate the design. The whole idea is to play, explore, and come out with a new interest in clean energy."

Students do just that, according to Casey Shea, a math teacher at Analy High School in Sebastopol. Some of his students built solar lunchboxes in class last year. One student, who found the lunchbox too cumbersome for his personal use, designed a more compact version.

"When they're using the lunchboxes, you can just tell that they 'get it'—they understand that energy is a commodity, rather than something that is always going to be there," says Shea, who says he regularly uses his lunchbox when traveling.

Through its partnership with Schoolhouse, the Glendale Unified School District in southern California expanded its after-school program to offer hands-on solar projects, including the solar lunchbox. "What's really cool is

watching the students build the lunchboxes. They're extremely engaged from start to finish, turning a pile of parts into a working solar charger. They use soldering irons and connect the wires, and, in the end, they're so proud. They have this really cool box that uses the sun to charge their cell phones [and music players], and the best part is that they did it themselves," says Carol Gregory, who supervises the district's after-school program. "These little projects show the students that there are many ways, big and small, to bring solar energy into their lives—and that's probably the biggest benefit of all."

So far, Schoolhouse has sold more than 300 lunchbox kits via its catalog and lunchbox workshops. "Do the math, and



Courtesy Solar Schoolhouse

"There is a growing interest at K-12 schools in learning about solar energy, and we're here to introduce teachers and students to hands-on activities and projects—and put real products in their hands," says Tor Allen, Schoolhouse's executive director and founder of the Rarus Institute.

The program relies on donated solar products to develop teaching kits or demonstration projects at low cost. In 2009, GE Solar donated 25,000 1.25 W monocrystalline solar laminates after the original buyer backed out. Custom-made to power a 12-volt battery for a GPS signal mounted on truck trailers, the cells were ideal for any number of DIY projects. Schoolhouse aimed to create a teaching tool that would appeal to teachers

## Spreading Out

Though most workshops have been held in California, Schoolhouse is working with several sponsor partners to offer workshops in other states and countries. Those who can't attend the workshops can order teaching aids and project materials online. To learn more, go to [solarschoolhouse.net](http://solarschoolhouse.net).

needless to say, we still have quite a few solar laminates left, but they won't go to waste," Allen says. "The laminates are nice little building blocks for a variety of projects."

Schoolhouse created other kits utilizing the donated laminates—including a steampunk custom solar module, which uses a redwood frame to bundle 10 laminates for solar fountain projects. Prototypes for a solar bike light, a backpack version of the lunchbox, and DIY solar garden lights are in the works as well. The laminates also are available in bulk (50 per box, at a low cost) for larger educational projects.

—Kelly Davidson



Courtesy Solar Schoolhouse

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