

Innovative classrooms put to the test

Northwest schools using green, modular units developed at PSU

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Some students in Oregon and Washington this week started classes in new, green portable classrooms developed at Portland State University.

The 2014-15 school year marks the debut of Smart Academic Green Environment (SAGE) classrooms designed by PSU architecture professors and married couple Margarette Leite and Sergio Palleroni with the help of their students.

The Corvallis Waldorf School in Corvallis opened a new modular building with three of the energy efficient classrooms, and the Edmonds School District in Lynnwood, Wash. has installed nine SAGE classrooms at five schools with plans to add three more.

Leite said seeing the classrooms used for the first time in schools marks the fruition of efforts that began four years ago after she and her hus-



Courtesy of Portland State University
A portable classroom being used at Hazelwood Elementary School in Lynnwood, Wash., was developed by Portland State University professors and students.

band worried that their daughter's portable classroom provided an unhealthy learning environment. The couple organized a symposium at PSU with modular classroom manufacturers, and taught classes where architecture and engineering students helped develop the SAGE classrooms. The design features high

ceilings, natural light, nontoxic building materials and highly efficient ventilation systems.

Now that the classrooms are being used in schools, feedback from teachers and administrators will help refinement of the design, Leite said.

"That's the big part is hoping to continue to

re-evaluate the design of the classrooms," she said. "We're going to keep an eye on them."

The classrooms are billed as a more efficient - yet affordable - alternative to traditional portable classrooms, and the couple is partnering with several modular classroom manufacturers to distribute them nationwide. They based costs on what Portland Public Schools typically pays for a portable classroom - approximately \$120,000 to \$125,000 per unit.

"That's how we were able to keep costs low, because we worked with manufacturers from the beginning," Leite said. "We worked with a lot of how (portable classrooms) perform already. Our goal was to make it close to what schools in Portland were paying."

At \$140,000 to \$150,000 each, SAGE classrooms cost about 20 percent more than traditional portable classrooms, but are designed to last longer and save money over time - especially because they are 50 percent more efficient.

In 2011, the concept garnered attention from Gov. John Kitzhaber's Oregon Solutions initiative, which provides state staff support to solve community problems. Program staffers helped Leite and Palleroni navigate the process of building a prototype. Chehalis, Wash.-based Pacific Mobile Structures then

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New OHSU data center may become a model

Test: Steel-floor frame makes classrooms easier to move

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offered to construct one that was displayed at the 2012 Greenbuild conference in San Francisco. The company is now the Pacific Northwest distributor for the classrooms.

While designing the SAGE classrooms, Leite said she and her husband aimed to create a better learning environment by eliminating the drawbacks of traditional portable classrooms, including poor ventilation systems, inadequate lighting and potentially hazardous building materials.

"What we were most concerned about was the health issue," she said.

This is why the SAGE design carefully avoids toxic materials, Leite said. The classrooms have paint with low amounts of volatile organic compounds, natural cork bulletin boards and bio-based flooring made with corn. An energy recovery ventilator brings in plenty of fresh air to eliminate high carbon dioxide concentration, which studies have found affects student health and performance. Lots of windows let in sunlight.

"There are actual qualities in natural light that actually spark your brain to stay more alert," Leite said.

A design that promotes passive ventilation, with the addition of ceiling fans, means the SAGE classrooms don't require air conditioning, especially in the Northwest, she said.

The SAGE classroom focus on providing a healthy learning environment for children resonated with Corvallis Waldorf School administrators when they sought to replace an existing modular building, school director Peter Zarembo said.

"The whole (SAGE) building is designed to support student and teacher health," he said. "It's a healthy building in a school that is designed to create a healthy place for children to grow and learn."

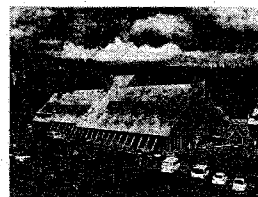
Unlike traditional wood-frame portables, the SAGE classrooms also feature a steel-floor frame that makes them sturdier and easier to move with less risk of damage, Leite said.

The SAGE classrooms' sturdiness and energy efficiency were big selling points when the Edmonds School District needed to quickly add more than a dozen classrooms to meet a state mandate for all-day kindergarten, said Edward Peters, district capital projects director.

"What we needed was permanent classrooms," he said. "So we were looking for classrooms that were like any classroom that we would build."

Peters said district officials have long sought an alternative to traditional portable classrooms.

"We were always interested in finding something better," he said.



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