



## *Hands On Science Program Provides Insights for Dealing with State's Math Challenges*

The quiet of Debbie Nye's classroom becomes a cacophony of happy chatter, scraping chairs and backpacks thumping on the floor as her 27 students take their seats for the day's science class.

Sitting in front of the students are large clipboards, with a black flashlight attached to a string.

The question for today: How will the sun look in the winter when it tracks across the sky? And, conversely, how will it look in the summer?

Nye--yes, a hazy relation by marriage to the science guy--coaches the students to use correct language when they describe what they are about to do.



Hypothesis versus guess. Manipulated variable versus "sun thingy."

For the next hour, Nye guided the kids through the lab; prompting them with questions and occasionally, helping them get their flashlights to work. But she said little Tuesday about the lab's true focus--discovering why the earth has seasons. That, students will figure out for themselves in future lessons.

"I wish I would have been taught science this way, versus the way I learned it," Nye said after the class ended and the room was once again still. "I would have really enjoyed it more."



Debbie Nye

Nye is one of hundreds of teachers in the state who are using [Leadership and Assistance for Science Education Reform, or LASER](#)-based teaching methods to bring science alive to students and bring up the WASL scores while they are at it. Started seven years ago in Washington state among a few districts, the program now covers 151 districts representing 75 percent of the students in the state.

LASER champions inquiry-based science, where students are urged to discover the answers by hands-on activities, rather than reading about say, the reason for seasons in a book.

"The teachers are taught to ask questions, and not answer them," said Michael Brown, co-director of the South Central LASER Alliance and science coordinator for Educational Service District 105.

The state program began rather organically in 1999 with the help of the National Science Resource Center and some seed money from Battelle, said Dennis Schatz, vice president for education at the [Pacific Science Center](#). Boeing joined Battelle as an early supporter. The state started kicking in money in 2001. The program has grown since then to a strong public-private partnership with a \$2 million annual budget. These funds help subsidize districts participation in this program.

Along with the program come instructional kits, or materials that are available to science and elementary school teachers. Larger districts, like Renton, have their own kit center, where hundreds of kits from life sciences to physics labs are sent out and returned to be restocked and then sent out to another classroom again.

Except for live critters. Animals needed for experiments, such as crickets and mealworms are sent directly to the classrooms in Renton, said science coordinators in that district.

Smaller districts, like those in the Yakima area, have a central location where teachers request and receive fully stocked kits. The program in these districts operates as a cooperative, with each of the districts kicking in some money as "membership" dues for the South Central Laser Alliance, noted Brown.

The program initially focused on providing the kits and giving training to elementary school teachers, and then LASER moved to the middle schools. This year, the program is poised to expand aggressively into high schools, Brown and Schatz said. OSPI is reviewing a including \$26 million in its budget request to the legislature to expand and deepen the program, Schatz confirmed Thursday.

This push by LASER leaders comes as a [report released last month by the National Research Council](#), the main operating agency of the [National Academy of Sciences and the National Academy of Engineering](#), stated that much of the science education in the U.S. is too broad, dumbed down and doesn't track with how students really learn.



"We are underestimating what young children are capable of as students of science--the bar is almost always set too low," the report states.

According to a Washington Post report, the study reiterates concerns that have been expressed by business leaders and educators that the country is in danger of losing its scientific superiority because of a poorly trained work force.

"Current teaching approaches are insufficient to launch students on a path to participation in a society infused with job opportunities in scientific and technical fields, as well as scientific issues such as alternative fuels, avian influenza, global warming and nanotechnology," said Richard A. Duschl, professor of science education at Rutgers University and the chair of the committee that wrote the report.

LASER leaders contacted did not know if the state program was mentioned in this report, but added that Washington's program has been highlighted as a model that works in other national studies.

In LASER, teachers receive training in three areas, life science, physical science and earth science, and up to 18 hours of training on each module. Based on two recent studies, it appears that LASER is making a difference in WASL scores.

Peter Finch, assistant superintendent of the West Valley School District, along with Schatz and Dave Weaver, of the Portland-based RMC Research Corporation, looked at fifth-grade science WASL results, the average scores of students and the number of LASER units they were exposed to.

Of the West Valley fifth graders who had not been exposed to the LASER, only 19 percent met standard on the test. The state average for students who met standard on the fifth-grade science WASL is 30 percent. About 48 percent of the students in the test group met standard when exposed to three modules of Laser, the 2005 study found.

Just last week, RMC released an update of this study looking at 1,400 students statewide and their science WASL scores. The results were similar to those found in West Valley in the 2004-2005 study period.

For his part, Brown said that he didn't mention WASL scores too much in his classes. Brown recently moved out of the classroom and into administration after 22 years of teaching. He said last week he preferred that students learn the topics and be excited by the results and the discovery. But it's no coincidence that the requirements for the lab write ups mirror the analysis and explanations that will be required of the students on the science WASL tests, Brown said.

"If you look at the scaffolding of the (units), it has the exact scaffolding of the WASL," Brown said. "The kids will do fine."