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EXPERIMENTING WITH EDUCATION

Aina Haina Elementary sixth-grader Reece Yoshimura worked on building a compass in his science class. The school is trying a program to strengthen its science curriculum.
Educators working to make science fun

They hope hands-on teaching methods will help boost learning

By Crystal Kua

Justin Wong and Reece Yoshimura studied their simply made compass -- a drinking straw, plastic cup, straight pin, pieces of wire and a couple of magnets -- to see how it worked.

The two Aina Haina Elementary School sixth-graders poked, prodded and spun the contraption, jotting down their discoveries in their notebook.

"It's like fun," the bespectacled Yoshimura exclaimed about the science lesson, his compass now pointing north.

Making science exciting for students is just one way educators are looking to strengthen science lessons in the public schools.

"We'd like to see children become more adept at doing science and enjoying science as a subject area," said Madeline Yee, a first grade teacher and science coordinator at Liholiho Elementary in Kaimuki.

Hawaii's rock-bottom scores in a national science test -- the results released last month -- have educators calling for a greater focus on science. But for those who teach science, the National Assessment for Educational Progress scores were not a surprise.

"The emphasis has been on reading and math. Science, there just hasn't been backing for it as the other two areas," Yee said. "Maybe with the poor test scores, it'll get more attention."

Violet Harada, a University of Hawaii associate professor of information and computer sciences, and two colleagues studied the needs of Hawaii's rural public schools in science, math and technology education as part of the National Science Foundation grant application process. They found that for the most part, science is still being taught primarily out of textbooks instead of using a more hands-on approach, Harada said.

"Make it real for kids," she said.
Aina Haina Elementary students Hana Eharis and Frederick Wang worked on building their compass last month in science class.

With hands-on science, student retention is a lot better, Yee said. "They can make better connections."

Harada, UH assistant professor Daniel Suthers and Department of Education advanced technology research director Victoria Kajioka were successful in obtaining the $6 million NSF grant. They are now looking at ways to improve science, math and computer technology education at rural public schools over the next five years through professional development and other ways.

One aspect of the project will be to provide teachers and principals with a virtual resource database on the Internet where they can get project ideas as well as exchange information and communicate with experts.

Aina Haina science coordinator Janet Itano said science can be expensive and time-consuming as teachers search for materials for projects.

"Science teachers spend a lot of money," she said.

Itano's school is piloting a reform program called "Science and Technology for Children." It is one of three new programs the DOE is trying out at various schools across the state. The typical cost to order one set of materials for one teacher for each grade is $16,000 to $18,000.

"These programs make it easier for the teacher to the extent that it provides a strong backbone and it includes all the materials they need," said Justin Mew, a DOE educational specialist who
reviews science curricula. "It's not a panacea, but it helps get the ball rolling."

Mew and others also said that these programs provide guidance to many elementary and middle school teachers who are generalists and may not have a science background.

Aina Haina third grade teacher Corey Watanabe, who has been teaching lessons on sound, noted: "What I really like about it is that all the supplies are in that box. It all comes with the kit, and that really helps. I don't have to spend money and time hunting things down." The kit even included a tuning fork, Watanabe said.

Itano's science classes are learning about magnets and motors. In one lesson, students build their own compasses.

Students were in awe as Itano demonstrated the steps, eventually balancing the straw and magnets on her finger with a straight pin. "Wow, cool," student Austin Williams said.

"It's not only fun with simple materials, but it's also good science," Itano said.

Another student, Koa Leslie, said the projects are beyond fun. "The things you do, you learn so much."

On the Big Island, Steve Nemeth is using agriculture to entwine science into the lives of his students at Laupahoehoe High School. "They're surprised there's so much science involved in agriculture," the biological agriculture science teacher said.

Nemeth and his students are creating a botanical garden of endangered or threatened native Hawaiian plants.

"We're trying to re-create a native Hawaiian forest," Nemeth said. "In the meantime we're trying to teach science as we go along."

His students, many of whom are special-education students mainstreamed into regular education, study ecosystems, he said.

One exciting find has been visits to the site by an endangered butterfly, apparently attracted to the plants, that is normally seen at higher elevations.

"We were stunned," Nemeth said. "These students have never seen that before, and that's the first one I've seen alive."

The University of Hawaii's Harada points to the Laupahoehoe project as the type that can help beef up science education.

"The science and the math come in naturally. They're dealing with local issues that have worldwide implementation," Harada said.