High-Tech 'Coconuts' Teach Ocean Science

In Hawaii, teachers and students are following the journeys of "coconuts"—floating global positioning system (GPS)-enabled sensors—cast into the Pacific Ocean as part of a K–12 science curriculum called Project Niu. "Niu"—the Hawaiian word for coconut and the nickname for the tracking device—is also an acronym for Nature Imparts Understanding. Educators, engineers, and scientists involved in the project hope it will increase students' understanding of human impact on the environment and oceans.

Project Niu is a long-term educational outreach effort of Archinoetics LLC, a Honolulu high-tech firm. Program manager Erin Nishimura and a team of Archinoetics engineers and scientists learned of a grant solicitation from the National Oceanic and Atmospheric Administration (NOAA) Pacific Services Center's Bay Watershed Education and Training (B-WET) Hawaii Program, established in 2002 to increase students' and teachers' environmental literacy. Nishimura says her company applied for the grant because it offered an opportunity to acquaint NOAA with its products, including the Project Niu devices, as well as a chance to contribute to the science education of Hawaii students.

"A lot of us have some education background," she notes. Colleague Josiah Sewell, for example, is a former college teaching assistant. As Archinoetics' "resident marine biologist," his background in ocean science came in handy when creating lesson plans for Project Niu. The Archinoetics team visits participating classrooms to help teachers and students use the project's website and become familiar with the sensor's technology.

Archinoetics received the grant in time for the 2007–2008 school year. Nishimura, whose background is in electrical engineering, helped design and build the Niu device, which is outfitted with a GPS, digital camera, and satellite sensors. Application specialist Evan Rapoport created the website *www.projectniu.org/home*, which contains lesson plans. Students, teachers, and scientists and engineers from Archinoetics and NOAA contribute to blogs on the website, which displays real-time data on a Google map. NOAA scientists are using the data to monitor ocean currents and weather patterns.

JOSIAH SEWELL

As part of Project Niu, students in Hawaii remotely monitor floating sensors to learn about ocean science and the effects of marine debris on the environment.

The Niu has provided teachers with hands-on, project-based learning experiences that engage students, says Nishimura. Students research