Diana Payne, education coordinator for Connecticut Sea Grant and organizer of the workshop, said the new standards are a major improvement in the way science has been taught.

“We’re finally going to do science in the classroom the way science is actually practiced,” she told the teachers.

The standards, developed in response to concerns about a shortage of U.S. workers with science and engineering skills, emphasize hands-on problem solving and learning through investigation rather than lectures. The three subject areas – physical science, life science, and earth and space science – are taught through a “three-dimensional” approach in which students apply science and engineering practices, learn the core ideas of each discipline and discover cross-cutting concepts that link them together.

The standards don’t proscribe particular textbooks, curriculum or lessons, though, leaving states and schools free to develop those independently. That’s where the LISMT workshop comes in.

Donna Rand, workshop co-leader and science specialist at Glastonbury-East Hartford Magnet Elementary School, let the teachers know they could expect to get their feet wet and their hands dirty.

“We’re going to apply science to a real environment,” she told the teachers, seated on picnic tables at a pavilion, as beachgoers toting towels and folding chairs filed past on their way to a spot near the water. “We’re going to give you all the equipment you need to bring your kids here – the seine nets, resource guides, minnow traps.” She and DuBaldo had written a section in Sea Grant’s Long Island Sound Curricular Resource Guide about using Hammonasset as a class field site that the teachers would be taking home that day.

When bringing a class to the beach, she and DuBaldo said, teachers should realize that they will probably have students who’ve never been there before, and start with the basics. They passed out some large roadmaps.

“We usually start off asking the kids, ‘where in the world is Long Island Sound?’” Rand said.

Locating the Sound and Hammonasset led to a demonstration about the Sound’s watershed that extends to the entire state. Then Rand and DuBaldo took the group on a short hike to an intertidal area for a lesson about invasive species and data collection that enlisted the services of the Asian shore crabs hiding under nearly every rock. It was the first of four activity stations at different locations at the park, a logistical challenge teachers used to working in traditional walled classrooms have to prepare for.

“You cannot do this alone,” DuBaldo said, as teachers sat along a driftwood log awaiting instructions for their next
station. “You need to get other teachers and parents involved at various stations.”

Paying attention to the tides is also key to success, Rand said.

“You really want to bring your class here at low tide,” she said.

After stopping at an overlook where the rubble of a glacial moraine shares the shoreline with large boulders, the group broke for lunch and prepared for an afternoon in the water. As sunbathers and swimmers enjoyed 76-degree water and 84-degree air temperatures, the teachers donned waders and learned how to drag seine nets. Their haul included small fish called silversides and the bluefish pursuing them, along with ctenophores (also called comb jellies), small shrimp, hermit crabs and several kinds of seaweed. Much of the catch was transferred into buckets and hauled back for closer examination with magnifiers, a microscope and identification guides set up on a makeshift picnic table lab.

“You can preserve it for the scientific value or for the artistic value,” she said, as the teachers arranged Irish moss, sea lettuce and rock weed on sheets of paper. For the final activity, the teachers headed to the beach for a geology lesson that involved sifting sand, then some time for reflection about using the beach experiences for art, creative writing, music and physical education lessons that would complement the science.

“We’ve taught kids how to use the seine net in gym class, using balls,” DuBaldo said.

At the end of the day, teachers were eager to put what they’d learned into action.

“I want to come back with a group,” said Doreen Abubakar, who works with an environmental education organization in New Haven.

As he filled a canvas bag with Long Island Sound guides, magnifiers, an hydrometer and other materials, Keith Sevigny, coach for STEM / engineering at the Annie Fisher STEM Magnet School in Hartford, showed his excitement.

“I’ve got a whole bunch of things I’d love to do,” he said. “This is what the kids need, to be learning science not from a book, but from real life. Now that I’ve got the program, I’ve just got to work on getting a bus.”

Connecticut Sea Grant resources for teachers:

The Long Island Sound Curricular Resource Guide can be downloaded at: http://seagrant.uconn.edu/2010/03/02/long-island-sound-curricular-resource-guide/

To request copies of “Seaweeds of Long Island Sound,” by Peg Van Patten, visit: http://seagrant.uconn.edu/2009/01/01/seaweeds-of-long-island-sound-new-second-edition/

To request copies of “Salt Marsh Plants of Long Island Sound,” visit: http://seagrant.uconn.edu/2009/01/01/salt-marsh-plants-of-long-island-sound-2/

To see a complete list of Connecticut Sea Grant educational guides available for purchase or download, visit: http://seagrant.uconn.edu/publications/education/