

# Better education in science starts at R.I.'s coast

By Karen A. Sullivan

Rhode Island is now at a critical impasse that will determine the future of science education in the state. Starting in the 2007-2008 academic year, science will become a subject that students will be tested on across the United States as a result of the No Child Left Behind Act.

In preparation for the implementation of this science testing mandate, the R.I. Department of Elementary and Secondary Education is currently in the process of revising Rhode Island's K-12 Grade Span Expectations in science. Drafts of the science GSEs are posted on the RIDE's Web site. Field reviews of the science GSEs ended earlier this month, but the document has not yet been finalized.

Rhode Island has the opportunity to improve its science education program, but will Rhode Island sink or swim upon implementation of the new science GSEs?

The science GSEs were created by a tri-state partnership of Rhode Island, Vermont and New Hampshire and will be the basis for developing a new set of standardized tests, called the New England Common Assessment Program, designed to measure students' success in achieving those expectations.

The drafts of the science GSEs are an improvement from the old science standards that were recently criticized in "The State of State Science Standards" report released by the Thomas B. Fordham Institute. But there is something essential to the state of Rhode Island that is completely missing from the science GSEs.

RIDE is ignoring a valuable resource for teaching science in Rhode Island. This valuable resource is Rhode Island's coastal environment. The Ocean State has more than 400 miles of coastline and all Rhode Islanders live within a 30-minute drive of the Atlantic Ocean or Narragansett Bay.

Rhode Island's coastline is special because of its diversity. The coastline is home to a variety of marine environments, including rocky shoreline, bay, ocean and barrier beaches, salt ponds and salt marshes. The coastline is also a priceless resource for Rhode Island, serving as the backbone of Rhode Island's economy and the heart and soul of many Rhode Island communities.

The science GSEs lay out the specific scientific knowledge and investigation skills that a student in Rhode Island is expected to obtain from his or her K-12 science education. Examples of the specific scientific knowledge expected of a Rhode Island high school graduate include knowledge about the biodiversity of an ecosystem, about how organisms with different structures and behaviors contribute to each others existence and the stability of an ecosystem and about how activities such as weathering or erosion can bring about changes in Earth's surface both abruptly and over time. Examples of the investigation skills expected of a Rhode Island high school graduate include the ability to frame a question in all its dimensions, to hypothesize, to design and conduct experiments, to critique research findings and to collect and analyze data.

There is no better place for Rhode Island students to develop a scientific knowledge base and to learn to frame scientific questions than in the diverse ecosystems that make up Rhode Island's coastline.

For specific examples of what the Rhode Island's coastline has to offer as a learning laboratory, check out the University of Rhode Island's Office of Marine Programs Web site, <http://omp.gso.uri.edu>. The Web site provides teachers with learning materials based on the local marine environment. Elements of the Web site's content could serve as basis for the local coastal learning examples that need to be incorporated into the science GSEs.

Decades of research have shown that if students are provided with hands-on learning experiences, they will remember the material better and be able to transfer what they have learned to other situations with greater ease. To quote one of the greatest teachers of all time, Confucius, "I hear and I forget. I see and I remember. I do and I understand."

The best place to see and do science in Rhode Island is along its 400 miles of coastline. By experiencing science in action in marine ecosystems, students can experience science fully and therefore will be able to remember, understand and expand on what they have learned.

In addition to the benefits that individual students will receive from enriched learning experiences in the ma-

rine environment, society also benefits. By exposing children to the marine environment at an early age and "wowing" them with the science of the marine environment, it is more likely that they will develop into adults who possess a sense of respect and appreciation for the environment.

As RIDE finalizes their expectations for what every Rhode Islander should know about science upon high school graduation, RIDE should take advantage of Rhode Island's vast coastline and incorporate specific learning examples, relating to the local marine environment, into the science GSEs. If RIDE fails to take advantage of this magnificent natural laboratory in our own backyard, how can we expect our future leaders, our citizenry educated in our schools, to serve as stewards of this priceless resource?

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