

PUERTO RICO SCIENCE OBJECTIVES RELATED TO NATIONAL SCIENCE STANDARDS:

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Content Standard A: Science as Inquiry

- Understanding about scientific inquiry
 1. Students will use their experience with creating a multimedia presentation about their investigations to understand that scientists make the results of their investigations public; they describe the investigations in ways that enable others to repeat the investigations.
 2. After using rulers, magnifying glasses, and cameras for their observations, students will understand that using such instruments provide more information than scientists obtain using only their senses.

Content Standard B: Physical Science

- Properties of objects and materials
 1. After recording observations at the saltorns, coral reefs, bioluminescent bay, and rain forest, students will understand that objects have many observable properties including size, weight, shape, and color.

Content Standard C: Life Science

- The characteristics of organisms
 1. By observing animals in the coral reef and bioluminescent bay, students will understand that each plant or animal has different structures that serve different functions in growth, survival, and reproduction.
 2. Students will understand that the behavior of organisms is influenced by individual cues.
- Organisms and environments
 1. Through discussions with Dr. Gonzalez at the botanical research center, in the rain forest, and at the coral reef, students will understand that all animals depend on plants.
 2. In the rain forest, bioluminescent bay, students will learn that humans depend on their environments and that we change the environments in ways that can either be beneficial or detrimental for themselves and other organisms.

Content Standard D: Earth and Space Science

- Properties of earth materials
 1. By comparing soil samples from the rain forest, saltorns, research station, and beach, students will understand that soils have properties of color and texture, capacity to retain water, and ability to support the growth of many kinds of plants, including those in our food supply.
- Changes in earth and sky
 1. By comparing and contrasting the karst topography of Puerto Rico with the rocks at the base of the cliffs at the beach, students will understand that the surface of the earth changes. Some changes are due to slow processes such as erosion and weathering, and some changes are due to rapid processes such as landslides.

Content Standard E: Science and Technology

- Abilities of technological design
 1. By using cameras, cassette tape, and iPod recording devices, students will understand that tools help scientists make better observations, measurements, and equipment for investigations. They help scientists see, measure, and do things that they could not otherwise see, measure, and do.
 2. By working with an oceanographer, NASA engineer, computer technology expert, students will come to better understand that women and men of all ages, backgrounds, and groups engage in a variety of scientific and technological work.

Content Standard F: Science in Personal and Social Perspectives

- Science and Technology in Local Challenges
 1. Students will understand how the collection of salt crystals from the saltcrusts benefit people by melting ice and snow on roadways but are also harmful because of the effects of the salt on local plants.
 2. Students will be able to explain how food quality and quantity have been improved by scientific exploration after visiting the Federal Experiment Station and witnessing experiments being conducted on plants.

Content Standard G:

- Science as a Human Endeavor
 1. By observing and interacting with an oceanographer, an engineer, several graduate students engaged in research projects, and an astrophysicist, students will understand that many people choose science as a career and devote their entire lives to studying it. They will see that many people derive great pleasure from doing science.
 2. Throughout the trips experiences, students will come to understand that, although men and women using scientific inquiry have learned much about the objects, events, and phenomena in nature, much more remains to be understood. Visiting the saltcrusts and observing and learning about brine shrimp within the context as extremophiles, they will demonstrate an understanding of the fact that science will never be finished as they learn of the new research that has uncovered many new species of this type of organism.

EXPECTATIONS:

1. Throughout the trip, students will be expected to carefully record observations in writing, with cameras, and with digital videography, and orally with an iPod and hand held tape recorders. They will record interviews with scientists on hand-held tape recorders and will integrate all observations into a multimedia presentation upon their return.
2. Students will collect samples of salt crystals, soil, and brine shrimp and practice scientific inquiry upon our return as they record observations and conduct experiments which align with the MCPS curriculum on these samples.
3. Students will keep journals of their scientific observations and inquiries throughout each step of their travel.