**Life Sciences (Standard Set 2)**

Students in grade four expand their knowledge of food chains and food webs to include not only the producers and consumers that they previously discussed but also the decomposers of plant and animal remains, such as insects, fungi, and bacteria. The idea that all organisms need energy and matter to live and grow is reinforced. Students learn that plants are the primary source of matter and energy entering most food chains. They study the relationships between producers and consumers in food chains and webs and understand that decomposers recycle matter from dead plants and animals.

**Enhanced Whale Watching Cruise**

Facilitators give an in depth explanation of what plankton is and why it is important to the entire ocean ecosystem and especially the ocean food web. The idea that all organisms need energy and matter to live and grow is reinforced. Students also learn there are different types of plankton that are plant-like, and that they are the primary source of matter and energy entering marine food chains (phytoplankton).

**Life Sciences (Standard Set 3)**

The grade-four life sciences standards further develop the concept that organisms in an ecosystem interact and that living organisms depend on one another and their environment for survival. Students learn that ecosystems can be characterized by their living and nonliving components. The concept of adaptation is deepened as students learn that in any particular environment, some plants and animals survive well, some survive less well, and some cannot survive at all. Students study ecological relationships, such as animals using plants for shelter or nesting and plants using animals for pollination and seed dispersal. Fourth-graders also learn about the vital role and benefits of microorganisms in the environment. Common misconceptions that these organisms are responsible only for diseases and decomposition may be addressed and dispelled.

**Enhanced Whale Watching Cruise**

Organisms in an ecosystem interact and that living organisms depend on one another and their environment for survival. Whales depend on clean water, plankton, small schooling fish etc. in order to thrive in the marine ecosystem. Students learn about the complex ecological relationships between barnacles, whale lice, amphipods and Gray Whales and get an in depth explanation of how they depend on each other for survival.

**Science across the Content Areas**

The fourth-grade science standards are readily integrated with other academic content standards. In collecting data during investigative activities, they learn to follow a written set of instructions and continue to build their skills in expressing measurements in metric system units. They will analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns, all of which support development of mathematical skills.

**Enhanced Whale Watching Cruise**

Students are immersed in data collection throughout the whale watching cruise, and they even keep a collective and individual tally of marine mammals (identification and number and behavior) and marine birds (identification and number).

Students analyze and debate the complex issue of California Sea Lions in the Newport Beach Harbor. After listening to the Fishermen’s and Environmentalist’s perspective on the matter, students must determine where their opinion on the subject by voting with stones and placing them in the jar which best reflects their feelings on the subject matter.