California Science Standards linked with Generation Earth Service Learning Projects:

Biology

Waste Reduction & Recycling

6. Ecology

6.a Students know biodiversity is the sum total of different kinds of organisms and is affected by alterations of habitats.

6.b Students know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size.

6.d Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration.

Composting

1. Cell Biology

1.b Students know enzymes are proteins that catalyze biochemical reactions without altering the reaction equilibrium and the activities of enzymes depend on the temperature, ionic conditions, and the pH of the surroundings.

1.f Students know usable energy is captured from sunlight by chloroplasts and is stored through the synthesis of sugar from carbon dioxide.

1.g Students know the role of the mitochondria in making stored chemical-bond energy available to cells by completing the breakdown of glucose to carbon dioxide.

1.h Students know most macromolecules (polysaccharides, nucleic acids, proteins, lipids) in cells and organisms are synthesized from a small collection of simple precursors.

1.i Students know how chemiosmotic gradients in the mitochondria and chloroplast store energy for ATP production.

5. Genetic Composition of Cells

5.c Students know how genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products.

6. Ecology

6.e Students know a vital part of an ecosystem is the stability of its producers and decomposers.

6.f Students know at each link in a food web some energy is stored in newly made structures but much energy is dissipated into the environment as heat. This dissipation may be represented in an energy pyramid.

Stormwater Urban Runoff

6. Ecology

6.d Students know how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration.

Household Hazardous Waste

9. Physiology

9.b Students know how the nervous system mediates communication between different parts of the body and the body's interactions with the environment.

9.c Students know how feedback loops in the nervous and endocrine systems regulate conditions in the body.

9.d Students know the functions of the nervous system and the role of neurons in transmitting electrochemical impulses.

9.e Students know the roles of sensory neurons, interneurons, and motor neurons in sensation, thought, and response.

9.g Students know the homeostatic role of the kidneys in the removal of nitrogenous wastes and the role of the liver in blood detoxification and glucose balance.

9.i Students know how hormones (including digestive, reproductive, osmoregulatory) provide internal feedback mechanisms for homeostasis at the cellular level and in whole organisms.

ALL GENERATION EARTH PROJECTS CAN ALSO BE LINKED TO THE GRADES 9 THROUGH 12 INVESTIGATION AND EXPERIMENTATION SCIENCE STANDARDS.

1. Investigation

1.a	Students will select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.
1.b	Students will identify and communicate sources of unavoidable experimental error.
1.c	Students will identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.
1.d	Students will formulate explanations by using logic and evidence.
1.e	Students will solve scientific problems by using quadratic equations and simple trigonometric, exponential, and logarithmic functions.
1.f	Students will distinguish between hypothesis and theory as scientific terms.
1.g	Students will recognize the usefulness and limitations of models and theories as scientific representations of reality.
1.h	Students will read and interpret topographic and geologic maps.
1.i	Students will analyze the locations, sequences, or time intervals that are characteristic of natural phenomena (e.g., relative ages of rocks, locations of planets over time, and succession of species in an ecosystem).
1.j	Students will recognize the issues of statistical variability and the need for controlled tests.
1.k	Recognize the cumulative nature of scientific evidence.
1.l	Analyze situations and solve problems that require combining and applying concepts from more than one area of science.
1.m	Students will investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. Examples of issues include irradiation of food, cloning of animals by somatic cell nuclear transfer, choice of energy sources, and land and water use decisions in California.
1.n	Students will know that when an observation does not agree with an accepted scientific theory, the observation is sometimes mistaken or fraudulent (e. g., the Piltdown Man fossil or unidentified flying objects) and that the theory is sometimes wrong (e.g., the Ptolemaic model of the movement of the Sun, Moon, and planets).