

Grade Three

Applicable Curriculum

Science and History/Social Science

Science

Life Cycles for Survival

In grade three, students observe specific organisms to see different aspects of their growth and development, traits, and behaviors that help them survive. Students will learn how organisms meet their needs for surviving, finding mates, and reproducing. Students will learn that organisms have life cycles, they inherit traits from parents, and they often live in groups.

Guiding Questions

- What is the advantage of having a complicated life cycle of growth and development?
- How similar are animals and plants to their siblings and their parents?
- How does being similar to parents help an animal/plant survive?

Surviving in Different Environments

At this level, students gather specific evidence of cause and effect relationships where the environment affects which organisms survive. They draw on observations for both living organisms and fossils.

Guiding Questions

- How does the environment affect living organisms?
- How do organisms' traits help them survive in different environments?
- What happens to organisms when the environment changes?

History/Social Science

Students learn about their community today and its past history. They learn:

- Why people settled in California
- Who were the first people in their community
- Why people moved to their community
- How their community changed over time
- How to help their community

Discussion for Students Touring UCR Botanic Gardens

- Why would people settle in California?
- What would happen to plant and animal life if in 100 years all of California became a desert?

Grade Four Applicable Curriculum Science and History/Social Science

Science

From Molecules to Organisms: Structures and Processes

Plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin. Each structure has specific functions within its associated system. Examples of function would be root systems that bring water to plants, green leaves or stems where photosynthesis takes place, and production of flowers and seeds to reproduce the plants.

Guiding Questions

- What structures do plants have? Do all plants have the same structures?
- How do structures help with the functions within the plant?
- What evidence do you see to show how plant structure is adapted to maintain function?

History/Social Science

The story of California begins in pre-Columbian times, in the cultures of the American Indians who lived here before the first Europeans arrived. The history of California then becomes the story of successive waves of immigrants from the sixteenth century through modern times. They learn:

- How climate and geography varies throughout the state
- What life was like for native Californians before other settlers arrived
- How the diverse geography and climate affected native people
- Why water is important to the growth of California
- How the region changed after Europeans explored and established the mission system

Discussion for Students Touring UCR Botanic Gardens

- How would plants and people adapt to live in the desert with little water and hot temperatures?
- California has the largest variety of plants (over 2,100 native to California alone) of any state in the U.S. Why do you think this happened?

Grade Five Applicable Curriculum Science and History/Social Science

Science

From Matter to Organisms

Prior to grade five, students have developed understanding that all animals need food in order to live and grow; that they obtain their food from plants or from other animals; and that plants need air, water, and light to live and grow. Now, students tie all these ideas together to describe how energy and matter flow within a system. They trace matter from nonliving sources (water and air), to plants, animals, decomposers, and back again to plants. They also look for evidence to describe how energy flows from the Sun to plants to animals.

Guiding Questions

- What matter do plants need to grow?
- How does matter move within an ecosystem?
- How does energy move within an ecosystem?

History/Social Science

In grade five, students are learning the history of the nation, with emphasis on the period up to 1800. Focus is on the creation of a new nation peopled by immigrants from all parts of the globe and governed by institutions influenced by a number of religions, the ideals of the Enlightenment, and concepts of self-government.

Students are learning about United States history and geography including:

- The land before Columbus
- Colonial settlement
- How settlers used native plants and animals to survive
- How they used plants and animals which they brought from their native lands
- How explorers and pioneers used native plants and animals to survive
- How non-native plants and animals carried by the early explorers and settlers impacted the land

Discussion for Students Touring UCR Botanic Gardens

- If you were a Native American living here, what would you use to build your home? Why?
- What are native plants? How would you learn to use them? What happened to the plants the settlers brought from home to use in cooking or in other ways?

Grade Six

Applicable Curriculum

Science and History/Social Science

Science

From Molecules to Organisms: Structures and Processes

Ecosystems: Interactions, Energy and Dynamics

- Living things are made of cells, either one cell or many different numbers and types of cells.
- Characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants, respectively.
- Environmental and genetic factors influence the growth of organisms.
- The role of photosynthesis affects the cycling of matter and flow of energy into and out of organisms.
- There is a cause and effect relationship between resources and growth of individual organisms as well as numbers of organisms in an ecosystem during periods of abundance and scarcity.
- Patterns of interactions among organisms vary across multiple ecosystems. (Examples of types of interactions could include competitive, predatory, and mutually beneficial.)
- There is a cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

History/Social Science

Students are learning about history through the words of people who lived it (Ancient Rome, China, Mesopotamia, Egypt, Kush, India, Ancient Hebrews and Ancient Greece). Concepts students are learning include:

- Knowledge of hunter-gatherer societies, including the development of tools and the use of fire
- Climatic changes and human modifications of the physical environment that gave rise to the domestication of plants and animals along with new sources of clothing and shelter

Discussion for Students Touring UCR Botanic Gardens

- What characteristics of the Botanic Gardens would make it an ideal place for Native Americans to live? Where would they want to build their homes? What would they do for food, clothing, and protection from dangerous animals or enemies?
- What would Native Americans or settlers living in the area of the Botanic Gardens do if the temperature was over 115 degrees or below freezing for several months each year?