

2nd Grade Science

Second grade students will be engaging in science through four modules: *How Can We Find the Best Place for a Plant to Grow*, *Grow, Changes*, *The Life Cycle of Butterflies*, and *How Can We Change Solids and Liquids*. These modules focus on three domains of science: Earth and Space Science, Physical Science, and Life Science. The units also incorporate engineering practices.

How can we find the best place for a plant to grow?

Students investigate what plants need to live, grow, and reproduce, and how these factors are parts of a system that work together in each plant's habitat. Throughout the module, students will be aiming to understand an overarching phenomenon: Why is the number of grand spider orchids in Western Australia decreasing? They begin by asking questions about what makes a good habitat for a plant and observing how different plant parts have structures that relate to their function in helping the plant thrive. Students collaboratively plan and carry out investigations about whether plants need water and/or light to grow. As students make observations and use them as evidence to make claims, they also begin to learn about the interconnectedness of plants and animals in habitats. They look at real bees to discern structures that help with pollination, and engineer hand pollinators that mimic bee structures through asking questions about how to solve the problem of pollinator population decline. Students then investigate how seed structure relates to dispersal method, and use a computer simulation to investigate how different animals and plants live in different places and work together as parts in a system. In the science challenge, students use their knowledge of plant needs to decide where to plant two types of seeds, and analyze others' claims. Finally, students use their knowledge and evidence accumulated throughout the lessons to construct an explanation for why there may be fewer and fewer grand spider orchids each year.

Changes

This module has students focus on the foundations of scientific inquiry as second graders conduct simple investigations to observe everyday changes. These experiences expand their understanding of solids, liquids and gases by exploring changes in state. They investigate freezing, melting evaporation, and condensation of water. In a sequence of lessons students produce a mixture of two solids and a mixture of solids with liquids and observe the results. They work through several methods to separate mixtures: sieving, filtration, evaporation, and chromatography. Students also observe some changes that occur immediately and some occur over time, and they begin to recognize the characteristics of chemical reactions. Children have many opportunities to practice their new skills and devise ways of separating a mystery mixture and plan and carry out investigations that involve other changes.

The Life Cycle of Butterflies

This unit introduces second graders to the concept of life cycles by having the children investigate one organism- The Painted Lady Butterfly. During an eight-week period, students observe, record, and describe the metamorphosis from caterpillar to chrysalis and from chrysalis to butterfly. In many cases, they watch the butterfly lay eggs. The butterfly ultimately dies a natural death, completing the students' observations of the life cycle. The children compare the life cycle of the butterfly with that of other organisms; this experience deepens their

understanding of the diversity of life and the patterns that characterize animal cycles.

How Can We Change Solids and Liquids?

In this unit, students explore how solids and liquids can change by heating, cooling, building up, carving, and taking apart. They investigate several properties of solids and liquids including color, shape, and hardness. They learn through a text that hard materials can be carved and soft materials can be built up. They build a sculpture and take it apart to make another sculpture with different properties (this leads into a later understanding of particles). They compare the properties of several liquids and solids and argue from evidence for whether sand is a solid or a liquid. They use what they have learned about solids and liquids to test different materials for a cold pack. They explore what happens when materials are heated and observe that a wax crayon still works as a crayon when it is heated and cooled. They obtain information from a text to construct an explanation for how a silver necklace is made by heating and cooling different materials. In the culminating science challenge, students choose the best material for a replica gemstone based on its properties.