

# Grow an Oak *Kindergarten*

Language Arts: Written & Oral 1.1, 2.1

Science: 2.c.

## **Objective:**

Students learn about valley oaks by doing an interesting experiment.

## **Method:**

Students grow a valley oak and observe its development.

## **Materials:**

Milk jugs with the tops cut off (can also use planting pots, coffee cans or plastic cups), soil, water, acorns [contact Laura at the Sequoia Riverlands Trust for information about collecting acorns in the fall at Kaweah Oaks Preserve]. Optional: writing paper

## **Background:**

At the Kaweah Oaks Preserve, the valley oak can make its own food by capturing energy from the sunlight with its leaves, a process that makes the leaves turn green. All the oak needs to make its food, a type of sugar, are water, sunlight, carbon dioxide, and oxygen. The oak's roots suck up water and additional nutrients from the soil that help it grow stronger and taller.

Oak trees respond to their environment by growing in certain ways. In order for an acorn to germinate, or sprout into a seedling, it needs water and light. The seedling will grow towards the light once the acorn germinates so that it can get as much light as possible. Its roots will grow downward because they grow in the direction that gravity pulls them, and they are looking for water and nutrients in the soil.

Many animals feed off the energy the valley oak captures. Ground squirrels, acorn woodpeckers, insects, deer, and people eat the acorns and absorb the energy into their own bodies. Deer and cattle eat the oak's tender leaves, using their broad teeth to grind them up. Then, hawks eat the squirrels and birds; bobcats and people use their sharp teeth to eat the deer; birds eat the insects. Finally, decomposers return the animals' energy to the soil. The food web is very complex; each link is important for sustaining the many creatures living on the preserve.

The oak tree that produced the acorn you're using in the experiment has a predictable life cycle. It begins as an acorn, grows into a small oak tree, matures into an adult oak tree, and produces more acorns.

## **Procedure:**

1. Optional: take students to a valley oak grove in the fall so they can collect the acorns themselves. Valley oaks are the tallest trees that grow on the valley floor. Try to collect enough acorns to give each student 2 – 3 acorns; it increases the chances that each student will have an acorn that germinates.
2. Refrigerate the acorns for 6 weeks.
  - a. Why? In nature, acorns fall off the tree in the fall, then sit on the ground in the cold all winter. In the spring, they germinate. The acorns have adapted to thrive after a period of cold. That is why they have a greater chance of sprouting after refrigeration.
3. Explain the background information to students.
4. The students are going to provide sunlight, water, air, and soil to the plant and then observe its growth over the course of 2 – 3 weeks. The goal is to get their acorn to germinate.
5. Distribute the supplies.
6. First, students fill their containers with soil.
7. Next, students plant their seed about an inch deep in the soil. Have them poke a hole in the soil with their finger until the soil reaches their first knuckle. Then, they put the acorn in the hole, covering it with soil again.
8. Have students sprinkle water on the soil until it's damp.
9. Students write their name on their container, then put it on the window sill so it can get sunlight.
10. Watch as the plants sprout and start to grow. Water the plant if the soil gets dry, about once every day or two.
11. Once the plant spouts, point out its different parts: roots, leaves, etc.

**Language Arts Extensions:**

1. Regularly discuss the seed and the plant's growth. Ask the students to describe their seed and how it changes over time when it sprouts.