

Germinate Acorns and Plant Oak Trees

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I. Project Description

Students will gather and germinate acorns. Students will plant and care for the young oak trees. Students will plant the oak trees out in the country and/or the community in cooperation with local environmental and community agencies.

II. Outline

During autumn, students collect the acorns. Students soak them briefly in buckets of water. The acorns that rise to the surface will be eliminated. Those that remain at the bottom of the bucket are good candidates for germination.

You can decide to germinate the acorns as a class or let students take their own acorns home. They can do that during the winter break. Students lay out the acorns on wet burlaps in a safe, not windy place and cover them again with burlaps. Students can use old towels and rags. Students can lay the acorns on a platter, or on the ground. Finally, students keep the burlaps or towels wet at all times. Do not over water: the acorns might rot. Every week students uncover the acorns briefly to check if they are starting to germinate. Eventually, the acorns germinate. When the new seedling is about 1 inch, it must be planted. Students will fill planters with dirt and bury the germinated acorns. Students will keep the seedlings wet and free of weeds. During the fall students and teacher search the community and write letters to various agencies in order to find a good home for the oak trees. Hopefully, by the time the first rains come, you will be ready to take a field trip and plant the trees

III. Science Lessons:

Plants have predictable life cycles.

Light, gravity, touch, or environmental stress can affect development of plants.

Earth is made of different kinds of material that have distinct properties and provide resources for human activities.

Soil is made partly from weathered rock and partly from organic materials,

Soils differ in their color, texture, capacity to retain water, and ability to support the growth of many kinds of plants.

Rocks, water, plants and soil provide many resources including food, fuel, and building material that humans use.

Math lessons:

Students estimate and count.

Students compare and classify.

Students manipulate capacity.

Students measure with standard and metric system.

Students keep track of events in a calendar.

Students draw charts and tables to record, represent, and manipulate data.

Language lessons:

Working on this project will produce an endless number of opportunities for English language development. New vocabulary acquisition happens best when words are acquired during hands-on activities and through direct experience.

Keep a weekly journal of the activities that involve the caring of the young trees.

Write letters.

IV. Notes/Tips for Teachers

I work with Land Conservancy, an excellent environmental agency that buys land, restores it to its natural state, and protects it thereafter.

Writing Subtraction Problems

California content standards: Number Sense 2.2

Find the difference of two whole numbers up to three digits long.

Objective: Practice subtracting tree-digit numbers with and without regrouping.

Materials: Acorns and seedling oak trees

Instruction

Record how many acorns have been put to germination. Record how many acorns have germinated.

Guided Practice

Ask: what is the difference between the number of acorns that were started and the number of the acorns that germinated? How many acorns did not germinate?

Independent Practice

Record the number of seedling oak trees that sprouted. Record the number of trees that were finally planted. Compare, record, graph

Ask: What is the difference? How many young trees did not sprout?

. Understanding Height

California content standards: Measurement and Geometry 1.2

Use different units to measure the same object.

Objective: Measure height in standard and non standard units.

Materials: seedling oak trees (or their shadows) cm and inch ruler, paper clips or other non standard unit of measurements.

Instruction:

Guided Practice

Measure the seedling oak trees (or their shadows) every week using cm and inches.

Ask: How many inches and cm tall is a specific oak tree? How many more units today than last week? Record, compare, graph.

Ask: Does it take more inches or cm to measure the same oak tree?

Independent practice

Measure the seedling oak tree with paper clips. Ask: of which unit do we need the greatest number to measure the same oak tree?

Using Arrays

California content standards: Number Sense 3.1

Use arrays to do multiplication.

Objective: Explore multiplication by using arrays

Materials: seedling oak trees

Instruction

Place the seedling oak trees containers in rows and columns.

Guided practice

Ask: How many rows of oak trees are there? How many oak trees in each row? How many oak trees in all? Use a repeated addition and a multiplication sentence.

Independent Practice

Rearrange the seedling oak trees. Ask the same questions.

Move from concrete objects (seedling oak trees) to representative objects (counters, markers) and practice doing arrays with different and larger numbers.

What is a Life Cycle?

California Science Content Standard: 2LS2.b Life Sciences

Review/Teach the sequential stages of a growth life cycle.

Objectives: Students define the terms plant life cycle, germination, and seedling.

Material: acorns, seedling oak trees

Instruction

Show pictures of an adult acorn-bearing oak tree. Observe the acorns. Watch the acorns germinate. Plant the acorns. Observe the seedlings sprout. Watch the young trees grow into the shape of an oak tree. Have students describe and draw what they see. Have students keep a journal of their pictures and observations.

What do plants need to grow?

California Science Content Standard: 2LS2.e Life Sciences

Review/ Teach with students that light, gravity, touch, or environmental stress can affect the germination, growth, and development of plants.

Objectives: Students describe what plants need to grow. Students name the four main parts of plants.

Material: seedling oak trees, water

Instruction

Water all seedling oak trees but one. Put all seedling oak trees in the light but one. Water all oak trees moderately but one which will be watered exceedingly. Ask students to observe and record the changes and the difference among the trees. Ask students to note what happens to the tree that receives too much water, to the tree that receives no water at all, and to the tree that was placed in a dark place.

What are natural resources?

California Science Content Standard: 2ES3.e Earth Sciences

Review/ Teach students that rock, water, plants, and soil provide many resources, including food, fuel, and building materials that humans use.

Objectives: Students identify oak trees as a natural resource

Material: seedling oak trees

Instruction

Define what a natural resource is. Explain and give examples of the many commodities we make with trees (furniture, homes, etc.). Explain how trees absorb carbon dioxide and produce oxygen. Have students draw the picture of an oak tree and a person. Draw arrows to show that the tree “breaths in” carbon dioxide and “breaths out” oxygen. Conversely, show that the person breaths in oxygen and breaths out carbon dioxide. Help students see the symbiotic relationship between the tree and the person.