



LESSON: SORTING LEAVES AND SEEDS

Grade Level: 6th grade

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

INTRODUCTION

The Redlands Plant-A-Thon is celebrating the 50th anniversary of Earth Day through tree planting and supplemental classroom content. This activity is being provided to increase student awareness of the area around us, teach a sense of responsibility for the environment and encourages development of this knowledge in a free-form, group exercise. The suite of concepts and vocabulary covered will depend on the length of activity facilitated by the participating teacher, but at any length should increase student preparation for program participation. It would also be suitable for post-program facilitation, to reinforce concepts and vocabulary covered during the program for maximum content retention.

OBJECTIVE

The students will explore and identify different trees found in a natural environment by examining the leaves and seeds.

SUMMARY

In this activity, students will examine the different types of trees found in their own environment and how each leaf and seed differ from one another. They will also explain how the structure of the seed pods aid with dispersal.

MATERIALS

- A variety of different leaves and seeds
- Notebook and pencil
- Small containers to sort material collected

BACKGROUND

Trees all look very similar at first, but once you start to see the subtle differences, you will easily be able to tell them apart. Some trees offer shade in the summer and let sunlight in during the winter. Other trees have brilliant fall color, and many tree types provide food and shelter that beckon birds to your yard. Caring for the trees in your yard, or selecting trees for your landscape begins with understanding different types of trees.

Types of trees:

Deciduous Trees: Are also called hardwoods, these tree types typically shed their leaves in autumn. They have different shaped leaves, depending on tree species.

Coniferous Trees: Most of these are evergreens, which means you'll have greenery year-round on these types of trees. They have leaves that are needle shaped.

Types of leaves:

The most common leaves are the kind you find on flowering plants which includes most shrubs and



deciduous trees. This is the classic leaf, a skeleton of veins with a membrane between them. These leaves are delicate, but very efficient. They have a large surface area that is great at catching the sunlight and exchanging gases, the main functions of this type of leaf. They do attract a lot of animals, insects and pests. It is one of the reasons why they shed every year and replace new leaves in the spring. The leaves can grow directly from the stem, often alternating between sides. Sometimes multiple leaves, each on their own stem, grow from a single point on the plant.

Conifers have a completely different type of leaf. They are much more durable, because most conifers are evergreen. They do shed old or damaged leaves, but in a constant trickle instead of a sudden fall shower. Conifer leaves are usually needle-shaped, but there are exceptions. "Needle" doesn't really do justice to the complexity of many of these leaves, either. Some of them really are just long, slim green spikes; others are ridged or have a square cross-section, for added strength. Some are soft while some form a dense, spiky barrier that helps protect the tree from small animals. Almost all are much more resistant to pests or grazing animals than soft, broad leaves are. Needles do not collect sunlight or nutrients as efficiently as a broad leaf will, but they are much better at resisting harsh weather. Whether it is freezing cold or extreme heat, needles or scales will survive where normal leaves would be dried out or frozen.



Types of seeds:



There are two main types of seed plants. Gymnosperms are the types of seed plants that produce naked seeds, or seeds that are not covered or grown inside pods of fruits. The second type of seed plant is the angiosperm. The angiosperm is the type of seed plant that produces flowers. The flowers eventually form into fruits that contain the seeds. The types of seed plants can be broken down further.

Conifers are the types of plants that typically produce seeds in cones. The cones on these plants are modified leaves that house and protect the structures that produce the spores and seeds. An example is pines cones, which are woody cones composed of woody scales and on the base of each these scales are ovules that, when fertilized, develop into seeds. The trees in this varied group do not have flowers with petals in the way that we normally think of flowers, and the fruit is not the fleshy, edible kind that can be found in the angiosperm group.

Angiosperms have encased ovaries that produce seeds, as opposed to the “naked seeds” of the



gymnosperms. Some trees produce a multi-seeded berry on a single stalk, such as a persimmon tree; others produce multiple individual berries on a single stalk that contains seeds, such as a mulberry tree. There are also the common fleshy fruits that most people are familiar with, such as apple and pear trees, which produce delicious, moist fruit that encases multiple seeds. Trees such as the plum, cherry, apricot and peach produce fruit encasing a single seed, which is inside the hard object commonly referred to as a pit.

Hornbeams, ashes and elms have wing structures that have small pods covering the seeds at the base of the wings. These wings help disperse the seeds in the wind. Legumes are another angiosperm that produces two-parted pods with multiple seeds inside. Husks, such as the fruits of hickory and walnut trees, produce hard nut-like structures that are surrounded by leathery husks.



SKILLS

- Observing
- Identifying

DIRECTIONS

1. Have students bring in leaves, seeds or a flower from a tree or plant in their home or neighborhood.
2. Students can trade materials so they may have a variety of things to work with.
3. Have students examine the leaf or seed and try to categorize the tree.
4. Have students share their findings with classmates.

Sorting Leaves and Seeds

Conifer Trees

Deciduous Trees

Leaves



Seeds