
SYNOPSIS:

Plants have been on Earth for over four hundred million years. During this time, they have made the journey from life under the sea to a thriving existence on land, where they have blossomed into a vast variety of different species and given rise to the creation of trees.

CURRICULUM UNITS:

Biology
Botany
Conservation
Ecology
Horticulture

CAREER OPPORTUNITIES:

Biologist
Botanist
Ecologist
Environmental Engineer
Environmentalist
Horticulturalist
Naturalist

PROGRAM OVERVIEW:

There are approximately 260,000 known species belonging to the Plant Kingdom. Plant life began in the sea, where plants were dependent upon surface water for survival. Terrestrial plants first appeared during the Paleozoic era, developing a vascular system of roots, stems and leaves, which made it possible for them to glean water and nutrients from the ground.

With the exception of a few unclassifiable species from Kingdom Protista, green plants are the only organisms that can manufacture their own food, through a process called photosynthesis. Through this process, light, water and carbon dioxide are converted into sugar, water and oxygen.

Plants' ability to manufacture food makes them essential for providing food, both directly and indirectly, to every other living thing on Earth. In addition, plants also offer ingredients for modern medicine, as well as helping to purify the air and simply adding beauty to our lives. Scientists today continue to study plants because of their importance to our lives and to understand more about the contributions they can make to our world.

ISSUES AND CRITICAL THINKING:

Prior to showing the program:

Discuss the differences between various types of plants.

Have students make a chart labeled grasses, trees and shrubs. Take them on a walk around the school grounds to count how many of each they find.

Make a graph displaying their findings.

Identify any tree or plant species that is a local native.

What classifies a plant or tree as a native?

After showing the program:

1. Ask your students...

How did plants evolve from living in the sea to living on land?

The Wollemi Pine is considered a living fossil. Explain. What are the effects of deforestation on the environment?

Why are some redwood trees capable of living for thousands of years?

Research the Wollemi Pine and the Giant Sequoia. Using a venn diagram (intersecting circles), compare and contrast their similarities and differences.

Divide the class into small groups and have them brainstorm cooperatively the ways in which plants and trees are vital to all other life on Earth. Have a reporter from each group share their list with the class.

Draw and label the parts of a vascular plant. Summarize how it functions.

Write an essay explaining the ways in which you as an individual can help the environment.

Explain how the Venus flytrap is able to survive in soil that is deficient in nutrients. Bring in a Venus flytrap to show the students.

Arrange a visit to a local botanical garden.

GLOSSARY:

Carnivorous- Meat-eating

Chlorophyll- The green pigmentation found in plants that allows them to manufacture their own food.

Chloroplasts- Small, flattened granules containing chlorophyll, located in great numbers near a plant's cell wall

Climate- The weather conditions for a particular region

Evaporate- To change into vapor (gas) from a liquid state, essentially disappearing

Germinate- To sprout or grow, such as seeds

Lignin- A wood pulp that hardens and strengthens the cell walls of plants and trees

Nectar- A sweet liquid secreted by flowers in order to attract pollinating insects

Photosynthesis- The process by which green plants manufacture their own food using carbon dioxide, water and light. Oxygen is also created in this process.

Pollinate- To transfer pollen from one flower to another. This is a key element of the plant reproduction process.

Reservoir- A chamber used as storage—often for water.

Sequoia- A needle-leaved cone-bearing pine tree that grows to a height of about 91 meters (nearly 300 feet).

Tannin- An acid in the bark of redwood trees, which prevents their trunks from burning in fires.

The Wonders of Ecology & Conservation



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OUR GREEN PLANET



TMW MEDIA GROUP

2321 Abbot Kinney Blvd., Venice, CA 90291

(310) 577-8581 Fax (310) 574-0886

Email: sale@tmwmedia.com

Web: www.tmwmedia.com

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