

Chapter Ten

Plant structure



Day One:

Today, you and your child will:

1. Read the text
2. Review the text with your child
3. Complete the student worksheets
4. Collect the materials you will need for days two and three

National Science Education Standards covered this week:

Plants and animals have life cycles that include being born, developing into adults, reproducing, and eventually dying. The details of this life cycle are different for different organisms.

In plants, the life cycle begins with a seed that germinates into a seedling. The seedling eventually grows into an adult plant which can grow flowers in order to produce fruits which contain new seeds. These seeds begin the life cycle once again.

Definitions

Roots	the parts of a plant under the ground that support the plant and soak up its water and nutrients from the soil
Leaves	this part of a plant use the nutrients from the roots and sunlight to make food for the plant
Photosynthesis	a way for plants to use sunlight, nutrients and water to make their own food
Stems	parts of a plant that carry all of the water and nutrients from the roots to the leaves; they also help the plant stay upright
Flowers	parts of the plant that make all of the seeds
Fruits	the parts of the plant that hold the seeds
Life cycles	a pattern for all organisms that include being born, growing into adults, reproducing and dying
Germinate	to begin plant growth
Seedling	a young, small plant

Sample questions to ask your child after completing the weekly reading.

Which part of the plant is responsible for carrying water to the leaves and flowers?

The stem

What is a young plant called?

A seedling

In order for a plant to go through photosynthesis and make its own food, what things does it have to use?

Sunlight, water and nutrients

Answers to worksheet questions:

Page 1:

roots
leaves
photosynthesis
stems
flowers
fruits
life cycles
germinate
seedling

Page 2:

5 - roots
3 - leaves
8 - photosynthesis
9 - stems

6 - flowers
4 - fruits
1 - life cycles
2 - germinate
7 - seedling

Page 3:

"Draw a picture of a plant. Label the following parts on your picture: Roots, Leaves, Stem, Flower, Fruits"

Answers will vary

Day Two:

Today, you and your child will:

1. Review Day One using the following text
2. Run the first activity this week

The following text will give you the most important items to review for your activity today.

All seeds need warmth and water in order to sprout into a seedling.

The environment of a plant determines how fast its seeds can germinate. Seasonal variations and annual climate affect not only the growth rate of a seedling, but also its size, shape and functions.

Several different growing conditions can be created to model the growth rate of plants in different environmental settings.

The “Tropical Swamp Radish of the Desert”

Objective:

Children will attempt to sprout radish seeds in four different environments.

Materials:

paper towel

scissors

one baby food jar and lid (or other similar container)

plastic wrap

12 radish seeds

Procedure:

Fold a paper towel in half three times in order to make a long strip.

Cut off two pieces long enough to touch the bottom of a baby food jar and drape less than halfway down the side.

Fill the jar less than half full of water. The outside ends must stay above the waterline so that the water in the jar will not siphon out. Cut a 1 inch square of plastic wrap.

Stick the plastic wrap onto one of the moist towel ends. Make certain you keep the plastic wrap even with the end of the paper towel. If it hangs lower than the water level, it will siphon water out of the jar.

Rest the lid upside down on top of the jar.

Put three radish seeds in the following “environments”:

Under the plastic wrap (tropical area)

Under water (swamp)

On the lid (desert)

On the other moist towel end

Place your jar in a warm, sunny spot. Have the students predict which seeds will sprout first, last or not at all.

Explanation:

Radish seeds need warmth, water and air in order to sprout into a seedling. The seeds placed in the tropical area (under the plastic wrap) will have a wet, moist area in which to grow. This is because the plastic wrap keeps the heat and moisture trapped against the seeds. The seeds in this area have plenty of air in which to survive.

The seeds under the water may sprout, but there is not a lot of air that the seeds can use under the water. The seeds placed in the desert (on the lid) will not sprout. There is no water reaching the seeds at all. The seeds placed on the other moist towel end may not grow as well. If you touch this part of the paper towel, you may feel that it is very cool. The radish seeds have plenty of water and air in this area, but it is far too cool for them to sprout.

Day Three: Lab Activity

Today, you and your child will:

1. Review Day One using the following text
2. Run the first activity this week

The following text will give you the most important items to review for your activity today.

During the process of photosynthesis, energy is utilized by a plant to convert inert chemicals into a useable form of food.

The energy needed by plants to undergo photosynthesis comes from the sun or an artificial light source.

ESP Activity: Popcorn Photosynthesis

Objective:

A traditional snack will be used to study the process of photosynthesis.

Materials:

popcorn
oil/butter (optional)
popcorn popper/pan

Procedure:

Count ten kernels and place them into the popcorn popper.

Turn on popcorn popper and wait until first kernel pops.

Leave popcorn popper on for ten seconds after the first kernel pops, turn popper off and record the number of popped kernels.

Remove all kernels from the popper and replace with 10 new kernels.

Repeat this procedure; however, increase the popping time to 20 second intervals and 30 second intervals for experimentation.

Explanation:

During the process of photosynthesis, energy is utilized by a plant to convert inert chemicals into a useable form of food. This type of reaction is analogous to the popping of corn. Naturally, the process of photosynthesis is much more complicated, but the general synthesis of an inedible food source into a tasty treat is apparent.

Independent Variable: Exposure to heat

Dependent Variable: Amount of popped kernels

Hypothesis:

If the exposure to heat is (increased/decreased), then the amount of popped kernels will (increase/decrease).