

GRADE LEVEL

1st

STUDENT OUTCOMES

-Recognize the principal parts of a plant (root, stem, leaf, flower, fruit, seed)

-Identify the principal function of these plant parts

TIME FRAME

Year-round
45 minutes

LOCATION

Climatron/Anywhere in Garden

KEY TERMS

Root
Leaf
Stem
Flower
Seed
Fruit

I SPY A PLANT

Topic: Structure of Plants

MATERIALS NEEDED

For each small group:

- Leader sheet: "I Spy a Plant"
- One set of plant cut-outs
- Paper
- Crayons
- Clipboards
- Small box or bag

For the class:

- Enlarged "Plant Parts Illustration" page

PREPARATION BEFORE ARRIVAL

Make copies of the "Plant Parts Cut-Out" page and have each student color and cut out plant part shapes for day of field trip.

PRE-VISIT ACTIVITY

Students can role-play a drama about plants. Assign students to be plant parts and have them "create a plant." The "roots" may lay on the floor, the "seed" can be curled into a ball on the floor waiting to sprout, the "leaves" can have their arms open to the sun soaking in the light, etc.

For greater effect, announce that you wish to "plant some seeds." Turn off the lights, and have the students stoop on the floor and pretend to cover them with soil. Talk about how seeds need air, water, sunlight, and nutrients to grow. With a mister of water, go and "water" each seed. Students can begin to "grow" and stand tall with their "stem" legs and reach out wide with their "leaf" arms. Mention that sunlight is necessary for plants to grow, and turn on the lights. As the lights are fully turned on, have students reach their full height. Discuss the role-play to reinforce plant parts and requirements for plant growth.

BACKGROUND INFORMATION

All plants need water, sunlight, nutrients, and air to manufacture their food by photosynthesis. Photosynthesis occurs largely in the leaves which are exposed to the sun. The green pigment, chlorophyll, uses energy from the sun to convert simple chemical compounds (carbon dioxide and water) to sugars. The sugars are used in the leaves as energy for growth and are transported to the flowers and roots. Excess energy is usually stored in the roots but can also be stored in the stems or leaves.

Roots, then, may act as storage organs for excess sugars that the plant manufactures. Roots also support and anchor the plant, and are the plant parts that take up water needed for photosynthesis in the leaves. The roots also take up minerals from the soil which are needed by the plant for growth and survival.

The stem connects the leaves and the roots. It allows the leaves to be held high and exposed to the sun. Special cells within the stem act as a transport system, moving water from the roots up to the leaves, and moving sugar, water, minerals and other substances from one part of the plant to another. Not all stems grow up from the ground. Some grow horizontally along the ground and help the plant increase in size and number.

Flowers are the main reproductive site of a plant. Brightly colored sepals or petals, nectar, and pollen attract pollinators like bees, moths, butterflies or birds. The pollen on the male anthers may be carried by these animals or by the wind onto a similar flower, landing on the female stigma. The pollen then fertilizes an egg located in the ovary at the base of the flower. Each fertilized egg will develop into a seed, which in turn, can become a new plant. Often, the fleshy or hard part surrounding the seed, the fruit, is important in helping to disperse the seed to a new place to grow.

POST-VISIT ACTIVITY

Have a "Plant Part Party" in class by bringing different food products to school and identifying the part of the plant from which they came. Have older students sort these items by their plant part. After discussion, let students make block prints by cutting the plant crosswise and dipping the cross section in paint. Alternatively, sample the items displayed by eating them raw or by cooking them. Here are some suggestions for plants: **ROOT** (carrot, ginger, radish), **LEAF** (lettuce, spinach, mint), **STEM** (celery, kohlrabi), **BARK** (cinnamon), **FLOWER** (broccoli, cauliflower), and **SEEDS** (cucumber slices, beans, rice, nuts).

I SPY A PLANT

LEADER SHEET

Page 1 of 3

1. Linnean Plaza

Hold up an enlarged "Plant Parts Illustration" or a picture of your own design for the students to see. As each plant part is discussed, point to the sketch.

Today we are going to explore the Garden. Before we go, let's review the parts of a plant that we've been studying.

1. Seed

- What is this?

The seed has a baby plant inside and some food to help it grow.

- What do seeds need to grow?

Seeds need soil, water, air, and nutrients to grow.

2. Root

- What part is this?
- What can it do for the plant?

The root holds the plant in the ground like an anchor, it takes in water and nutrients from the soil, and it often stores energy.

3. Stem

- What part is this?
- What can it do for the plant?

The stem supports the plant. It holds the leaves and flower up off the ground. It has tubes inside that carry water, nutrients, and food (sugar) to different parts of the plant.

4. Leaves

- What part is this?
- What can it do for the plant?

The leaves grow from the stem and are where the plant makes its food using sunlight. In a way, the leaves are like the "mouth" of the plant, absorbing the sunlight and making food through photosynthesis.

5. Flower

- What part is this?
- What can it do for the plant?

The flowers try to attract pollinators. If a flower is pollinated, it can turn into a fruit.

6. Fruit

- What part is this?
- What can it do for the plant?

All fruits come from flowers that have been pollinated. Often the seeds are found within a fruit and it is from these seeds that a new plant can grow.

2. Climastron®

Walk to the Climastron. Stop to identify plant parts along the way. Pause just before the Climastron and let students know what they will be doing once inside.

1. Observe

As we enter the Climastron, let's observe what the environment is like where these plants grow.

- How does it feel in here?
- Is the light in here similar to the light outside?
- Is it very humid or very dry?

We are going to play a game called "I Spy a Plant" that will help us remember plant parts. Divide into small groups with at least one or two adult chaperones per group.

2. Activity

Have each student pick a plant part cut-out at random from the box or bag.

As they pick a part, ask them to identify that same part on a plant in the Climastron. For example, if a student picks out a "root" shape, they can point to some of the aerial roots that are hanging down from trees above their heads.

I SPY A PLANT

LEADER SHEET

Page 2 of 3

3. Discuss

- Where is the ____ of this plant? (Root, stem, leaves, flower, etc.)
- Can we see it easily?
- What does this part do for the plant?
- Does this plant part have a smell?
- Can you describe how it looks?
- Does the plant need this part for it to survive?

It will help to choose plants that have clearly distinguishable parts.

Continue until each child in the small group has been able to find as many different plant parts as they can.

4. Conclusion

We've seen a lot of plants today and they have the same important parts: leaves, stems, flowers, roots, and sometimes fruits and seeds. We also know how these parts can help a plant grow. Now let's take a rest and draw a picture of a plant that we really liked today. Be sure to show all of its parts! When we return to school, we'll show them to each other to remember our day here at the Garden!

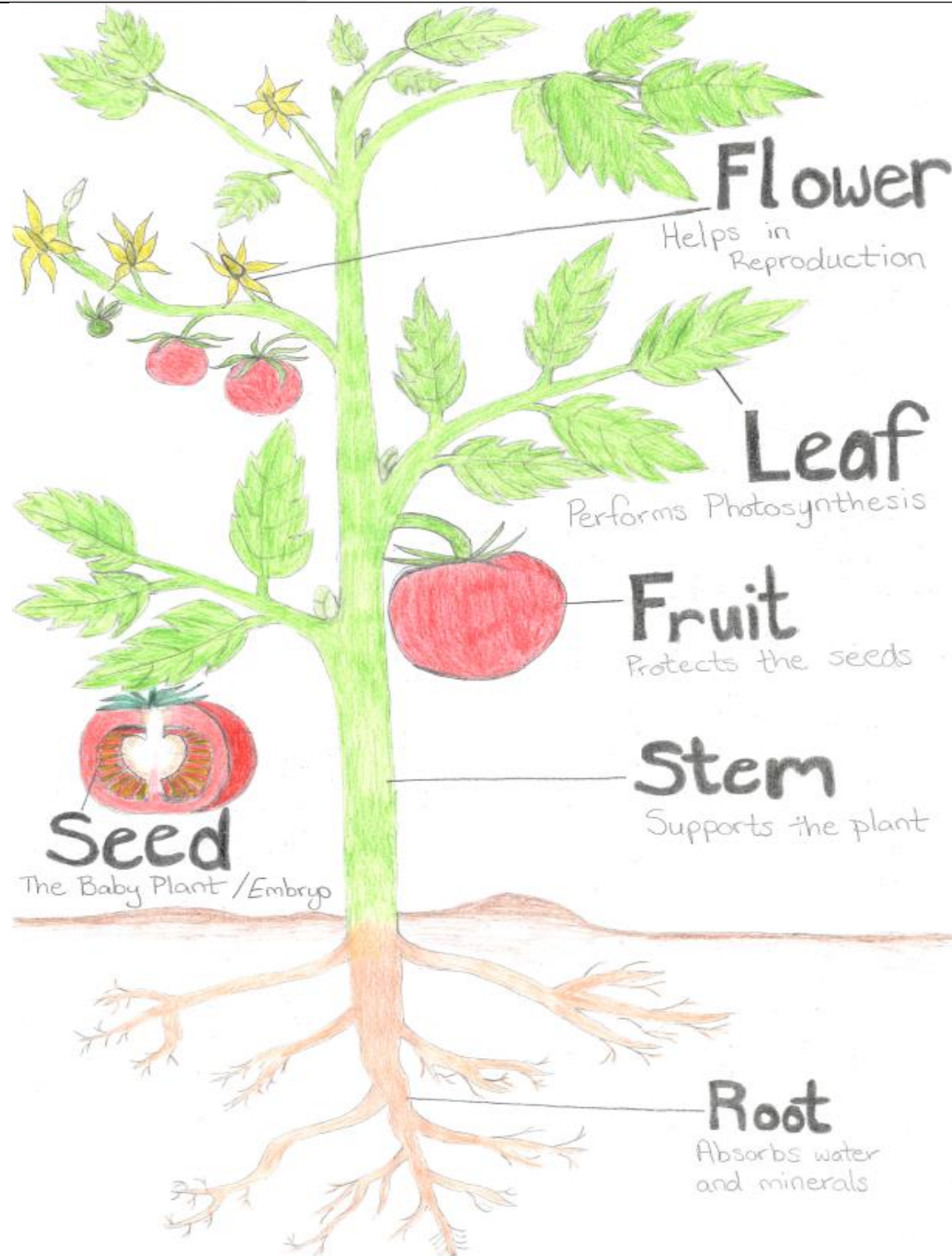
Teacher's Notes

I SPY A PLANT

LEADER SHEET

Page 3 of 3

Plant Parts Illustration



I SPY A PLANT

Plant Parts Cut-Out

Students: Color and cut out the plant parts below and put in an envelope.
Teachers: Provide one set for each adult chaperone for day of the field trip.

