
Botany Basics Kitchen Botany Facilitator Guide

Big Picture Concept:

Plant parts have different functions and provide us with much of the food we eat.

Program Description:

What do plant parts and their function have to do with the food we eat? Did you know the fruit of an apple is really a protective layer for the seeds and an enticement for seed distributors? Your students will discover how the plant life cycle ensures the next generation of a species and provides us with many of the foods we eat. Take an up-close look at plant parts under the microscope, learn how the colors of plants are connected to nutrients, and then tour the Garden to see plant parts functioning in the Garden. Students will create a Plant Parts Pigment Pounding to take back to school.

Program Sections

I. Welcome/Introduction & Plant Part Search	20 min
II. What Plants Have You Eaten Today	10 min
III. Field Observation Book/ Plant Part Observation	20 min
IV. Plant Life Cycle Play	15 min
V. Plant Part Pigment Pounding	20 min
IV. Nature Walk	25 min
V. Take-Home Message	<u>10 min</u>

Total time:

2 hours

Materials:

microscopes
magnifying glasses
plants, plant parts (fruits and veggies) to observe and pound
reference books with pictures of plant parts
small lead pencils
colored pencils
paper

cardboard (for journals)
labels (for journals)
brads
glue sticks/glue
cloth (for plant pigment pounding)
film canisters (for plant pigment pounding)

Preparation Checklist:Before your group arrives

- ❑ Sign in
- ❑ Collect group confirmation sheet from your mailbox
- ❑ Each classroom should be set up with the proper materials. Double check to make sure that all of the materials are available
- ❑ Walk around the Fruit and Vegetable Island or the greenhouses and see what is in season. This is a good place for the children to explore in their nature walk. It's a good idea that you know what fruits and vegetables are there so you can help the children locate them

After your group departs

- ❑ Clean up materials and return to storage area
- ❑ Sign out on volunteer card
- ❑ Notify the Coordinator of School Programs of any positive feedback and/or concerns

I. Welcome/Introduction (20 minutes)**Location: From Parking Lot #5 to the classroom****• Welcome**

Welcome students, teacher(s), and chaperones at their bus at the portico at the Gateway Visitor Center. This might be a good time to address the chaperones and assign each of them to a group of children. The chaperone will be responsible for helping to guide the children in their group through their activities at The Garden.

• Plant Life Cycle search

Introduce yourself and briefly explain what they will do today: explore and observe. *"Today you are a botanist. A botanist is a scientist who studies plants"*. Ask them what scientists do? Scientists make observations so today they will need to look for some specific plant parts to observe. Begin by asking the students to look for specific items in the Garden as you guide them to the classroom. Perhaps ask them to look for a stem, for

roots, for fruits, for flowers, for leaves etc. The purpose of this activity is to engage the children on their walk to the classroom

- **Prepare for the activities**

Once inside the classroom, ask the class what they were able to see as they walked through the Garden. At this time you'll be able to get an idea of their knowledge of different plant parts. They may already know that plants have roots, stems, leaves, and flowers. You can use the models in the classroom to show these parts or better yet, use the live plants as models.

II. What Plants Have You Eaten Today? (10 min)

Location: Classroom

- **Plants you eat discussion:** After you've assessed their knowledge of plant parts and have reviewed the basic parts (roots, stems, leaves, flowers) ask the students "What plant have you eaten today?" You may have to help them. Some may say that they haven't eaten any plants but they have and just don't realize it. For example, orange juice comes from the orange fruit which is part of an orange tree. Cereal is made with wheat (which is a type of grass). We use the grains (seeds) of the wheat plant. If they ate potatoes, then they ate the stem of the potato plant. Write their answers on the board. This discussion will help you to lead into the next part of the activity.

III. Field Observation Book/ Plant part observation (20 minutes)

Location: in the classroom

- Materials for constructing field books will be provided (includes brads, cardboard, field book packets, string, cover sheet, colored pencils, small pencils to take with them).
- Each child can select a different plant part (from those provided) to observe using the magnifying glass or microscope. They should make sketches of it in their journal and record how it feels and smells. They should make sketches and connect the plant parts and their function to how we use them.

II. Plant Life Cycle Play (15 min)

Location: Classroom

- Begin by talking about a plant life cycle. Ask the children if they know what a life cycle is. If they don't you can ask where plants come from? Use some sort of questioning to get them to discover that seeds are the first stage. What do seeds need to grow? (Water, sunlight, nutrients). Continue in this same manner until you have guided them through a basic plant life cycle: seed to germination to growth to flowering to pollination to fruiting to seed again.
- Begin by assigning roles to the children. You will need narrators, seeds, rain, sun, and pollinators. All of the children should be involved.
- Give the narrators their script cards to read (numbered 1-5). Arrange the "seeds" in the middle of the room with the pollinators, rain, and sun standing to the side. The narrators will "tell" the class what to do. The children will act out the plant life cycle. The students who are rain and sun will act out raining and sunlight over the "seeds". Those who are seeds will act out becoming plants with flowers. The bees/pollinators will act out pollination by visiting the flowers.

IV. Plant Parts Pigment Pounding (20 min)**Location: classroom**

- In this activity the children will learn by doing. Plant parts can be rubbed, smashed, and pounded to extract their pigments. These pigments are an indicator of the plant chemicals/nutrients (phytochemicals) contained in the plant. These nutrients help in the proper functioning of our bodies. Students will choose plant parts to pound using the pigments to transfer the colors to a piece of cloth.

VI. Nature Walk (25 min)**Location: Fruit and Vegetable Island, Greenhouse or location of your choosing**

- Lead your group through the Garden for the nature walk. You could go to different areas like the fruit and vegetable island and play a plant parts game. You could ask everyone to find a stem or they could find a leaf that's not green. Encourage them to make sketches of the plants they find. They can draw their favorite plant in the Garden.

V. Take Home Message (10 minutes)

- Ask the students what they've learned to day about plant parts.

- Thank everyone for visiting the CBG and invite them to return with their families.
- Direct teacher(s) and chaperones to bathrooms if needed.

Nutrient /Pigment information

Pigment Color	Example Plants	Health benefits
Red	Cherries, strawberries, watermelon	Strengthens proteins in the body. Good for the stomach and lungs
Orange	Carrots, squash, citrus	Beneficial to the lungs and heart.
Yellow	Corn, legumes, yellow peppers	Good for lungs, eyes, heart health
Green	Spinach, broccoli, tomatillos	Good for eyes, skin, heart
Blue	Blueberries, grapes, plums	Good for the digestive tract, strengthens proteins in the body
Purple	Grapes, raspberries, eggplant	Helps prevent pain (analgesic and anti-inflammatory).

I See Vitamin C

Vitamins and minerals are parts of the food we eat. Plants absorb minerals in the soil or dissolved in water. Plants make their own vitamins. We absorb vitamins

from the plants we eat. Today we will become **Phytochemists** (Phytochemists are scientists who study plant chemistry) and conduct an experiment that tests for the presence of Vitamin C in some common plants we eat.

Supplies:

Blue Test Solution (Starch-Iodine Solution)	3 Clear cups
Vegetable or Fruit Solutions	3 Droppers
1 Tablespoon	3 Stirrers

Procedure:

1. Begin by writing the following question in your journal: Which plant contains the most Vitamin C?
2. Make a prediction based on this question. Which plant do you think has the most Vitamin C? Why? Record your prediction(s) in your journal.
3. Conduct the experiment:
 - a. Put 2 tablespoons of the blue test solution into a cup
 - b. Add 1 drop of the vegetable or fruit solution to the same cup and stir.
 - c. Does the color change? If not, repeat Step b until the solution becomes clear. Be sure to record the number of drops you added.
4. Record your results in your journal. What do you think the results mean?

As the final step, please clean up your work area so that the next Phytochemist can perform this experiment