

Eating Parts of the Plant

Eco-Schools Topic:
Sustainable Food

Grade Level:
Grades K-8

Guiding Question:
Which parts of the plant make up the food we eat?

Lesson Objectives:
Students will...

- Know 6 parts of a plant and their functions
- Understand that their food comes from different parts of a plant, instead of just the grocery store
- Enjoy a healthy snack

Key Questions, Attitudes, and Behaviors to teach:

- Identify the parts of the plant
- I try vegetables at home
- I like to eat plants

Prep:

- Review 6 parts of a plant background knowledge provided by Life Lab at the end of the lesson
- Buy necessary ingredients for your plant burrito
- Check with SACC instructor that it is ok to do a cooking class. SHOW INSTRUCTOR RECIPE AND CHECK IN ABOUT ALLERGIES. DO NOT USE ANY COOKING MATERIALS WITH COMMON ALLERGY INGREDIENTS LIKE PEANUTS.
- Pre-cut some plant parts to put in burrito, leave an example of each whole food or print images of whole food item
- Choose Explore in the Garden **OR** Getting to the root of processed food for third rotation. For first option, write scavenger hunt questions down for students exploring the school garden. For second option, pick processed food and investigate what are the REAL/ WHOLE food ingredients and what part of the plant do they come from.
- Know the Plant Part Song To Head, Shoulders Knees and Toes (video on website)

Materials:

- Plant Part Burrito
 - **Plant Burrito Veggies (pre-cut & suggestions):** lettuce, hummus, cherry tomatoes, broccoli, celery, carrots
 - **One whole veggie for show**
 - cutting board
 - Kids-safe knives (depending on the age, you do the cutting)
 - Something to play music while putting together burrito (to play the Banana Slug String Band Roots, Stems, Leaves song)
 - Paper towels/ plates
- Teaching 6 Parts of the Plant
 - White board



- White board markers
- Activity Paper
- Explore in the Garden
 - Create Scavenger hunt (optional)/ White Board and white board markers
- **OR** Getting to the root of processed food
 - 3 processed food items

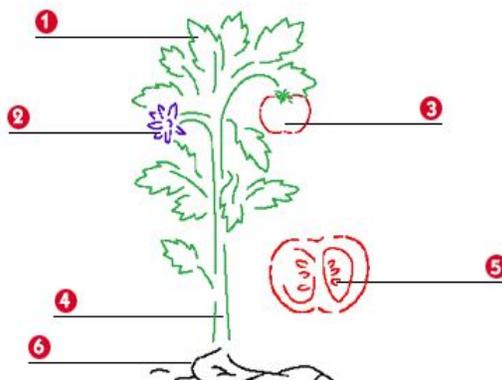
Engaging Intro (10-15 minutes)

- Ask your small groups “what is your favorite vegetable or fruit, does anyone have a garden in their backyard? Where does food come from?”
- Do the “Purple Stew” song with your group and have them add their favorite fruit and veggies.
https://www.youtube.com/watch?v=_NWYeVyz9I

Exploratory Activity--3 Rotations (10-15 minutes each)

Teach 6 parts of the plant

1. Draw the diagram of the plant (see below) **AND** Do LifeLab’s 6 parts of a plant skit. Explain that the plant is like a “plant part factory.” Each part of the plant plays an essential role in allowing the plant to survive. Instructor can call on groups of students to act out the role of each part. You then show them the part on your plant diagram. You can also write these roles out on a piece a paper and hand out to students. Have students guess and then the instructor reviews the names and functions of each plant part. **(Credits to UC Davis Children’s Garden Program)**
 - a. **Roots** – Sit or lie down on the ground and make a very loud slurping, sucking sound to represent absorbing water and nutrients from the soil. •
 - b. **Stems** – Stand up straight and tall to represent supporting the plant and move their arms up and down, while chanting “up and down, up and down” to represent moving water and nutrients throughout the plant.
 - c. **Leaves** – Reach towards the sun, as if they are grabbing something, then make a stirring motion and chant “take and make, take and make” to represent taking energy from the sun and making food for the plant.
 - d. **Flowers** – Wave their props around and chant “Hey bee, look at me!” to represent attracting birds, insects and other pollinators.
 - e. **Fruits** – Make a circle with their arms to represent a big, fleshy fruit like an apple that is surrounding its seeds OR Make a “rocking the baby” motion to represent protecting the seeds.
 - f. **Seeds** – Jump out from the plant and crouch down to the ground. Then slowly stand up raising your arms. Chant, “Pop out, grow up!” to represent seed falling and the growth of a new plant.



Seeds: Make new plants
Roots: Receive nutrients and water from the soil
Stem: Move water and nutrients up through the plant
Leaves: Use sunlight to make food (*if appropriate can explain photosynthesis- leaves use sunlight and water from the soil to convert carbon dioxide into sugar (food for the plant).*)
Flower: Make seeds and attract pollinators (bees, birds, insects).
Fruit: protect the seeds and helps seeds disperse

2. Group of instructors and students sing the 6 parts of a plant song.
 - a. "Seed, roots, stem, leaf, flower, fruit...flower fruit" to the tune of head, shoulders, knees and toes (see video).
- Planturritos
 - Instructor says "Today we will make a burrito using all 6 plant parts" and holds up the different food items and has the students shout out what part of the plant it is.
 - Instructors pass out different pre-cut ingredients of plant part burrito (See those bolded below to use)
 - Students make and eat their plant part burrito
 - Optional: Play "Roots, Stems, Leaves" by Banana Slug String Band while eating

- **Root: carrot, sweet potato, beet**
- **Stem: green onion stem (green part), asparagus, celery**
- **Flower: Broccoli, cauliflower**
- **Fruit: Avocado, Tomato, watermelon, pumpkin, cucumber, peppers,**
- **Seed: corn, Beans, sunflower seeds, peas, hummus from chickpeas**
- **Leaf: lettuce, chard, basil, Spinach,**

- Explore in the Garden **OR** Getting to the root of processed food
 - **Explore the garden:**
 - Do a scavenger hunt or exploration through your school garden.
 - Ask questions like "name a vegetable that is the root of a plant, name three different colored plants, name a plant that has been eaten by a pest")
 - **Getting to the root of processed food:**
 - Bring in three different processed food items and have the kids try to identify some of the REAL, PLANT-BASED ingredients, and what part of the plant they come from.
 - Phrase it as plant detective work, asking them to think of all the possible ways plants could be a part of the food.
 - Place the students in small groups and ask them to work together to read the ingredients and come up with hypothesis of plants found in the food.
 - Example foods:
 - Popcorn



- Tortilla chips
- Candy with corn syrup

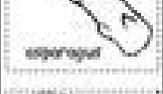
All of these foods have corn ingredients but some are more obvious than others!

- Finish this activity by explaining that foods that we could find directly in our garden are “GO” foods, that are healthier and give you more energy. The harder it is to track what plants our food come from, the more of a “SLOW” or processed food it is. We want to be eating those “GO” foods!
- Example discussion:
 - Popcorn is closer to the whole corn plant and more of a GO food while candy with corn syrup has been more processed and is harder to detect as a whole food, therefore it is a SLOW food.

Meaningful Discussion (2 min)

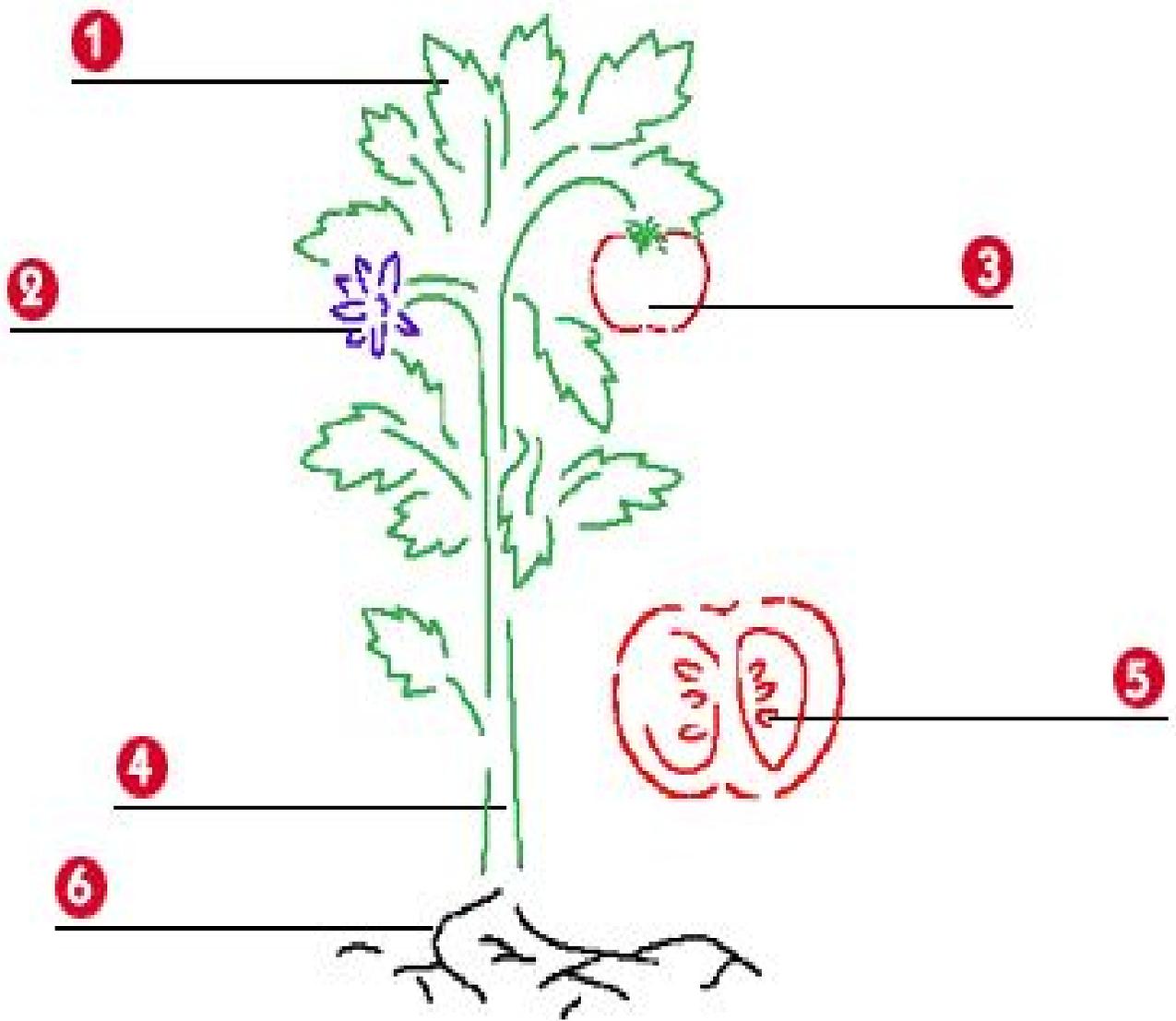
- Did you try a new food today? Ask them for different examples of the different parts of a plant (see below)

ANSWER KEY

Seeds	Roots	Stems	Leaves	Flowers	Fruit
					
 corn	 carrot	 asparagus	 spinach	 broccoli	 apple
 peas	 turnip	 asparagus	 spinach	 broccoli	 avocado
 beans	 radish	 celery	 lettuce	 cauliflower	 tomato
			 cabbage		

Name: _____ Date: _____





<http://extension.illinois.edu/gpe/images/plantdiag-blank.gif>



The Six Plant Parts

ROOTS

The root, the part underground, anchors the plant and absorbs water and nutrients from the soil.

Simple sugars, made in the plant's leaves, are stored in the form of starches in the roots, to be used later for plant growth or for animals to eat. Some plants that store a particularly large amount of starch in their roots have become important in our diet, such as carrots, beets, radishes, and turnips.

STEMS

The stem supports the plant and contains most of its circulatory system. Vessels in the stem transport sugar and starches made in the leaves as well as water and minerals absorbed through the roots--to other parts of the plant where the nutrients are needed. Some stems we eat are asparagus, stem of broccoli, sour grass, and fennel.

LEAVES

The leaf is a flattened or extended part of the stem. **Leaves are the main food-producing part of the plant.**

They produce food through a process called photosynthesis, using carbon dioxide, sunlight, and water. The chlorophyll in leaves collects the sun's energy (light). The pores (stomata) of leaves absorb carbon dioxide (CO₂) from the air. This carbon dioxide plus water from the roots is combined, using the sun's energy, to make simple sugars and starches: CO₂ + H₂O + Light ---> CH₂O (a simple sugar.) We eat leaves such as lettuce, spinach, chard, basil, cabbage, and mint.

FLOWERS

The flower is the reproductive part of a plant. It gives rise to seeds from which new plants develop. Just like humans, flower must be fertilized so that the male and female genes can be brought together. But, some flowers have both sexes in the same flower and others need insects, animals, wind, or water to fertilize them. Flowers that we eat are cauliflower, broccoli, brussel sprouts, and artichokes. Some ornamental flowers such as borage, nasturtiums and calendula are also edible.

FRUITS

Fruits grow from fertilized flowers. It is the outer covering that surrounds and protects the seeds. Fruits we eat are apples, plums, zucchini, cucumber, tomato, peppers, green beans, pumpkins, and pea pods. Some fruits we don't eat like the husk of the corn or the shell of a walnut, but they are considered fruits too since they grow from the ovary and protect the seeds.

SEEDS

All seeds come from the ovary of a flower that has been fertilized. After fertilization the seed contains the embryo of a new plant, and its own food supply stored in the surrounding tissues. When a seed sprouts, it produces an above ground shoot with a stem and leaves, and roots that sink underground. Some seeds we eat include peas, corn nuts, sunflower seeds, beans and wheat.

