LiveWell Kids
Garden and Nutrition Program

Lesson 4: Plants
From Pollination to Food

OBJECTIVES

By the end of this lesson, students will:

- Observe the anatomy of a flower and become aware that each part has an important job. (K-5)
- Identify the six main parts of a plant. (K-5)
- Recognize that people eat a variety of foods that are parts of a plant. (K-5)
- Learn about a plant's life cycle, including the role of seeds. (K-5)
- Understand the role of pollinators and observe pollination in the school garden. (K-5)

SUPPLIES

- For this lesson, we ask that **you supply** the following for dissection:
  - One or more flowers that clearly show reproductive parts. (Variety helps.)
    - Example: Lily, Tulip
  - One or more pieces of fruit or pods that clearly show seeds. (Variety helps.)
    - Examples: Tomato, Milkweed Pod
  - Put your flowers in a vase with water, or refrigerate, before lesson delivery to prevent wilting.

- Supplies to bring from the shed to the garden:
  - Laminates
    - *The Life Cycle of a Plant* (K-5th)
    - *Anatomy of a Flower* (K-5th)
    - *Flower to Fruit Process* (K-5th)
    - *Parts of a Plant* (K-3rd)
    - *Plants We Eat Reference List (2nd)*
    - *Plant Parts We Eat* (2nd-3rd and 5th)
    - *Plant Parts Title Cards* (2nd)
    - *How Seeds Travel* (4th)
  - Books
    - *What is Pollination?* (K-5th)
    - *What Do Roots Do?* (K-1st)
    - *The Vegetables We Eat* (2nd-3rd)
    - *Seeds Grow, Seeds Go* (4th)
    - *The Science Behind Plants* (5th)
  - 2 Cafeteria trays
  - Knife
  - Cutting Board
  - Magnifying lenses
  - Tweezers
  - Optional: Whiteboard and dry-erase marker

- Supplies to bring from classroom to garden - *arrange with the teacher ahead of time*:
  - Paper - one piece per student
  - Writing tools such as crayons, colored pencils, markers

PREPARATION

- Refer to the LiveWell Kids Volunteer Manual on the LiveWell Kids webpage for details about preparing for the lesson one week prior and the day of. The information can also be found on the inside of the shed door.
- Allow 30 minutes for set-up and preparation on the day of the lesson.
- Since this lesson includes searching for pollinators (e.g., bees), it is **important to check with the teacher about students with allergies**.

SET-UP INSTRUCTIONS

1. SET UP THE INTRODUCTION AREA:
   - Set out the laminate, *The Life Cycle of a Plant*.

2. SET UP THE FLOWER DISSECTION ACTIVITY:
   - Use the knife and cutting board to cut a flower exactly in half and set it on a tray.
   - If you have additional flowers, leave them whole and place them around it.
   - Cut the fruit/pod in half and set one of the halves on the tray.
   - Place the box of magnifying lenses, the tweezers and the laminates: *Flower to Fruit Process* and *Anatomy of a Flower*, next to the tray.

3. SET UP THE PLANT PARTS ACTIVITY:
   - All grades: Place the other half of the cut fruit/pod on the other tray.
   - In addition, place the following laminates and books next to the tray:
     - K-1st grades: (laminate) *Parts of a Plant;* (books) *What Do Roots Do?, What is Pollination?*
     - 2nd grade: (laminates) *Parts of a Plant*, *Parts We Eat*, *Plant Parts Title Cards, Plants We Eat Reference List;* (books) *The Vegetables We Eat, What is Pollination?*
     - 3rd grade: (laminates) *Parts of a Plant*, *Plant Parts We Eat;* (books) *The Vegetables We Eat, What is Pollination?*
     - 4th grade: (laminate) *How Seeds Travel;* (books) *Seeds Grow, Seeds Go, What is Pollination?*
     - 5th grade: (laminate) *Plant Parts We Eat;* (books) *The Science Behind Plants, What is Pollination?*

Optional: Use the whiteboard and dry-erase markers to aid you in teaching the topic.

INTRODUCTION & MINDFUL BREATHING (1 MINUTE)

- Introduce yourself and other volunteers.
- Guide students through a mindful breathing exercise.
- Explain: The purpose of this fourth lesson is to learn all about plants. We'll begin with the life cycle of a plant and then talk about the different plant parts – including parts we eat – and finish up with pollination. Plus, we'll get to enjoy some fun activities while we're in the garden today!

K-5th Grades	**Life Cycle of a Plant[1,2]** Supplies: *The Life Cycle of a Plant*
Discussion	• Show the laminate, *The Life Cycle of a Plant*. • All plants start out as a tiny seed. • Once the seed is planted in the soil, given water, nutrients, and sun, it grows roots and sprouts. • The plant grows larger until it is ready to **reproduce** (make more plants.) • Then it makes flowers that, if pollinated, develop fruit or seed pods. • Add for 4th and 5th grades: ○ In general, plants fall into two categories.[3] ▪ **Annual plants** complete their life cycle in a single growing season. Once their fruit/pod or seed head is mature, it releases seeds to grow new plants, and the old plant dies. ▪ **Perennial plants** follow the same cycle but do not die after they disperse their seeds. These plants live two or more growing seasons. • Now let's investigate the different parts of a plant!

Divide Class into Two Groups

Split the students into two groups. Send one group with your co-volunteer/teacher to the *Plant Parts* discussion and activity while taking the other group with you to the *Flower Dissection* activity area. Both activities will run simultaneously. Switch groups after 12 to 18 minutes depending on the time allotted by your teacher.

FLOWER DISSECTION ACTIVITY (12 - 18 MINUTES, depending on grade)

Students will learn about the process of pollination and the development of fruits/pods and seeds in this three-part discussion activity.[4]

K-5th Grades	**Part 1: Anatomy of a Flower** Supplies – *Anatomy of a Flower* laminate
	All Grades • Inform the students that they will look at the different parts of a flower to understand how pollinators assist in pollination. • Start by showing the *Anatomy of a Flower* laminate and state that flowers have many parts. • Point out the parts: **anther** and **stigma**. • The anther is covered with a powdery substance called **pollen**, which pollinators move to the stigma. • Once the pollen is deposited there, the flower can make fruits or pods, which hold the seeds.
	Add for 2nd – 5th Grades • Point out the **style** and the **ovary** on the laminate. • Explain that when the pollen lands on the stigma, it travels down inside the tube-like structure, called a style, until it ends up inside the ovary. • Once it's in the ovary, it will grow a fruit or a pod which encases the seeds.
	Add for 4th – 5th Grades • On the laminate, point out the **ovule/s** and explain that this/these will become the seed/s as it develops. • Now point out the ovary on the laminate and explain that as the seed develops the ovary will surround it for protection, becoming a fruit or pod.

K-5th Grades	**Part 2: Looking Inside a Fresh Cut Flower** Supplies – (1) Fresh flower, (2) *Anatomy of a Flower* laminate
	All Grades • Now you're going to refer to the cut flower on the tray and point out the structures that you just talked about. • The parts of the flower are named on the laminate for your reference. • Pass the tray around so the students can get a close look at the fresh flower. ○ It is important that they just look at (not touch) the flower because it has been cut open and is very fragile. • If you have multiple flowers, you can leave some uncut so they can gently handle them and look for the structures that you discussed.

	• Have students find the anthers and stigma on the real flowers and imagine the pollinator moving inside that confined space, covering itself in pollen and spreading it around. • Ask the students if they see how the pollinators end up depositing pollen on the stigma because of its central location.
	Add for 2nd – 5th Grades • Using the cut flower, point out the stigma. • Show the students that the stigma is the tip of the style, which is like a bottle-neck, leading to the ovary at the base of the structure. • Ask the students if they could recognize these parts in the cut flower (or any other flowers that you have left whole.)
	Add for 4th – 5th Grades • Using the cut flower, point out the ovary, which is the base of the style. • Remind the students that the ovule/s inside will become one or more seeds after the pollen travels down the style to reach it/them. • Help them find the ovary that will grow into a fruit or pod, encasing the seeds.

K-5th Grades	**Part 3: Flower to Fruit** Supplies – Use above supplies plus (1) Cut piece of fruit, (2) *Flower to Fruit* laminate
	All Grades • Show the students the corresponding structures on the *Flower to Fruit Process* laminate and see if they can identify them in the fruit, as well as in the flowers. • Point out the ovary and explain that when a flower gets pollinated, its ovary will grow into a fruit/pod which contain the seeds inside. • Allow the students to examine the laminates, fruit, and flowers to compare structures, while pointing out the developmental stages that you see.
	Add for 2nd – 5th Grades • Identify which end was the 'stem end' and which end was the 'blossom end'.
	Add for 4th – 5th Grades • Point out that the **ovary** and **ovum** have grown into the fruit and seeds.

PLANT PARTS (12 - 20 MINUTES, depending on grade)

Happening at the same time as the Flower Dissection activity.

K-1st Grades	**Parts of a Plant** Supplies: (1) Cut piece of fruit or pod, (2) *Parts of a Plant*, (3) Book – *What Do Roots Do?*
Discussion	• Every day, we eat foods that come from different parts of a plant.[5] • Show *Parts of a Plant* laminate and point out the various plant parts and their functions: ○ **Root** ▪ Grows underground. ▪ Holds the plant in place. ▪ Gets water and nutrients from the ground. ▪ Can store extra food for future use. ▪ Roots we eat: turnip, carrot, beet, radish and sweet potato. ○ **Stem** ▪ The stem develops above the roots in the ground to support the branches, leaves and flowers. ▪ Water, nutrients, and sugars travel to and from the various parts of the plant through the stem. ▪ Stems we eat: asparagus, bamboo shoots, rhubarb and potatoes. ➢ Potatoes are often mistaken for roots, but they are actually enlarged underground stems called tubers. ○ **Leaf** ▪ Is the flat part of a plant that grows from the stem or twigs. ▪ Uses energy from sunlight to make food for the plant (photosynthesis). ▪ Leaves we eat: lettuce, spinach, cabbage, mint, collards and parsley. Celery and rhubarb, commonly thought to be stems, are the part of a leaf called the leaf stalk or petiole. ○ **Flower** ▪ The shapes, colors, and scents of some flowers attract insect and animal pollinators (e.g., bees) so the plant can reproduce and make seeds for new plants. ▪ Makes fruit and seeds. ▪ Flowers we eat: broccoli, cauliflower and artichoke. ○ **Fruit** ▪ Develops from a plant's flower. ▪ Has seeds and flesh. Fruit grows around the seeds to protect them. ▪ Its inside is often sweet and juicy, but some fruits, including nuts, are dry. ▪ Fruits we eat: berries, grapes, apples oranges. Tomatoes, cucumbers, green peppers, eggplant and pumpkin are fruits (and not vegetables)! ○ **Seed** (Show cut piece of fruit and point out seeds.) ▪ A small part of a plant from which a new plant can grow. ▪ Some seeds grow on the outside of plants (e.g., strawberries), whereas others grow on the inside (e.g., apples). ▪ Seeds we eat: sesame, sunflower, peas, corn, wheat, peanuts and beans.

	*****Not all roots, stems, leaves, flowers, fruits, and seeds are safe to eat! They can be harmful to people if eaten. Do not eat parts of wild plants unless a trusted adult is confident that the plant parts are safe to eat.**
Activity	I'm a Plant! [6] • Game description: Today we will show what we learned about flowering plant parts by acting out each part of a plant! • Guide the students to do the following: o **Roots:** Sit on the ground and pretend to attach yourself in place just like roots do when holding a plant in place. Make sucking noises to represent the water and nutrients being absorbed from the soil. o **Stems:** Stand up straight to represent a stem supporting leaves, flowers, and fruit. Move your arms up your body from your feet to your head. This represents water and nutrients moving through the stem. o **Leaves:** Hold hands high in the air to represent leaves receiving energy from the sun to make food for the plant. o **Flowers:** Make fancy poses to represent a flower attracting pollinators. o **Fruit:** Pretend to hold a baby to represent the fruit protecting the seeds. o **Seeds:** Roll into a ball on the ground and then slowly begin to stand up to represent a seed sprouting and growing into a new plant.

2nd Grade	**Plants We Eat** Supplies: (1) Cut piece of fruit or pod, (2) *Parts of a Plant*, (3) *Plant Parts We Eat*, (4) *Plant Parts Title Cards*, (5) *Plants We Eat Reference List,* (6) Book – *The Vegetables We Eat*
Discussion	Use the book, *The Vegetables We Eat* (pages 3 - 19), to help illustrate the discussion. • Every day, we eat foods that come from different parts of plants. o We get a mixture of nutrients by eating a variety of plant parts. • Ask: Can anyone name the 6 main parts of a plant? o Review the *Parts of a Plant* laminate. (Reference K-1st grades, see above.) • Ask: Do you know that every day we eat plant parts as food? o In fact, we get a whole bunch of healthy nutrients by eating a variety of plant parts. • Ask: Can you help me name some of the plant parts we eat? o Give students time to name a few foods and corresponding plant parts before showing them the *Plant Parts We Eat* laminate. • Show *Plant Parts We Eat* laminate and highlight the different foods under each plant part, including discussion about edible roots, stems, leaves, flowers, fruits and seeds. o Show cut piece of fruit/pod when mentioning fruit and seeds. o Point out that some foods listed under fruits may be surprising. • Ask: Do you know the difference between a fruit and vegetable?[7] • The answer can be different depending on whether you are a plant scientist or if you work in a food market.

	• When you go to a grocery store, you'll usually see tomatoes, cucumbers, avocados, and peppers in the vegetable section. This is because in our culture the grocer labels them as vegetables.
	• However, botanically speaking, these are all fruits!
	• A **fruit** develops from a plant's flower and has a seed(s).
	  o For example, an avocado is a fruit even though you may see it with vegetables at the grocery store.
	  o An avocado plant has flowers. A bee comes along and pollinates (fertilizes) the plant's flower. Then the flower develops into a fruit with a seed inside.
	  ▪ Add for a more complex answer: A fruit is the ripe ovary or ovaries of a flower from a seed-bearing plant.
	• **Vegetables** are the other parts of a plant that you could eat.
	  o These include roots (carrots), leaves (lettuce), stems (asparagus), flowers (broccoli) and seeds (corn).
	• Do you know…?
	  o Mushrooms aren't plants. They are a fungus. [8]
	  o A coconut is a seed, a nut, and a fruit all in one. [9]

Activity	<u>Plant Part Pairing</u> (You will need the *Plant Parts Title Cards* and *Plants We Eat Reference List*.)
	
	• Game description: Today we are going to practice our plant parts knowledge by playing a game called, "Plant Part Pairing."
	• Place the 6 *Plant Parts Title Cards* on the ground as bases.
	• Provide ample space between the bases so that the students don't run into each other.
	• Organize students into groups of 2, 3 or 4 depending on group size.
	  o Groups will take turns playing the game.
	• Have the playing group stand at an appropriate distance from the six bases. This will be their starting line.
	  o Other groups will follow with their turn.
	• Each group will have a turn running (or hopping, skipping, etc.) to the Plant Part base that matches the food item you tell them.
	  o Each student in the group will be told a different food. Refer to the *Plants We Eat Reference List*.
	  o For example, if you tell them "tomato," then they should tag the "fruit" base.
	• Once they tag the base matching their food, they should run back to the starting line. Then it's the next group's turn.
	• Continue as time permits.

3rd Grade	**Plants We Eat** Supplies: (1) Cut piece of fruit or pod, (2) *Parts of a Plant*, (3) *Plant Parts We Eat*, (4) Book – *The Vegetables We Eat*

Discussion	Use the book, *The Vegetables We Eat* (pages 3 - 19), to help illustrate the discussion.
	
	• Every day, we eat foods that come from different parts of plants.
	  o We get a mixture of nutrients by eating a variety of plant parts.
	• Ask: Can anyone name the 6 main parts of a plant?
	  o Review the *Parts of a Plant* laminate. (Reference K-1st grades above.)
	• Ask: Do you know that every day we eat plant parts as food?
	  o In fact, we get a whole bunch of healthy nutrients by eating a variety of plant parts.
	• Ask: Can you help me name some of the plant parts we eat?
	  o Give students time to name a few foods and corresponding plant parts before showing them the *Plant Parts We Eat* laminate.
	• Show *Plant Parts We Eat* laminate and highlight the different foods under each plant part, including discussion about edible roots, stems, leaves, flowers, fruits and seeds.
	• Many foods you eat begin as plants but look nothing like a plant after the food is processed and ends up on your plate.
	  o Pizza is a great example!
	• I would like your help in mapping the production history of pizza.
	• Let's see how all the ingredients begin as a plant and end up as a pizza.[10]
	  o *Crust:* Pizza crust is made from wheat which begins as tiny wheat seeds in the ground. Wheat looks like grass when it comes out of the soil. The wheat is then shipped to a mill where it is cleaned. Then machines turn the wheat into flour.
	  o *Sauce*: Pizza sauce is made from tomatoes. Once the tomatoes ripen at the farm, they are sent to canneries where they are processed for sauces or ketchup. Herbs like garlic, basil and oregano may be added to the tomatoes to flavor the sauce.
	  o *Cheese*: Cheese is made from milk. Cheese on pizza often comes from dairy cows. Cows eat plants to have the energy needed to produce the milk.
	  o *Toppings*: Some people like onions, peppers, mushrooms or pineapple on their pizza. These are all parts of a plant!

Activity	Guess My Plant Part Meal
	
	• Game description: Today we're going to play a guessing game called *Guess My Plant Part Meal*.
	  o While in teams, the students will come up with a meal that is described using parts of a plant.
	  o Remind students about the different parts of a plant that people eat: roots, stems, leaves, flowers, fruits and seeds.
	  o They can use colors, shapes and sizes to describe the food. However, instead of naming the actual food, they will name its plant part.
	• The volunteer will start with an example:
	  o Tell the class that you had a delicious breakfast of plant parts.
	  o Name the plant parts and ask the students to figure out what you ate for breakfast.

	○ "I ate a bowl of oval, flat seeds and dried, brown wrinkled fruit with scented, crushed bark sprinkled on top." ▪ Answer: a bowl of oatmeal with raisins and cinnamon ○ "I drank a cup of dried leaves soaked in water and a slice of yellow fruit." ▪ Answer: a cup of tea with a slice of lemon • Then ask students to get in pairs or groups and have them do this activity amongst themselves, where they come up with creative, plant-part food combinations. • If time allows, they can share their meals with the class and have the other students try to figure out the meal they are describing.

4th Grade	**Seeds** Supplies: (1) Cut piece of fruit or pod, (2) *How Seeds Travel*, (3) Book – *Seeds Grow, Seeds Go*
Discussion	• Ask: What do you see inside this piece of fruit/pod? (Show the cut piece of fruit/pod.) ○ Answer: Seeds – Some grow on the outside of plants (e.g., strawberries), whereas others grow on the inside (e.g., apples.) • Ask: Where do you think seeds come from? ○ Answer: All seeds, whether in a fruit or seed pod, formed from a flower that was pollinated. (We'll discuss more about pollination shortly.) • Ask: Why do plants have seeds? ○ Answer: A seed is a small part of a plant from which a new plant can grow. ○ (Show cut piece of fruit.) When the fruit or pod is mature, it will release the seeds so that they will make new plants. ○ Seeds have all the needed nutrients for a plant to grow healthy and strong. Think of a seed as a tiny package of nutrition. • Ask: Can we eat seeds? ○ Answer: Yes! Seeds have lots of good-for-you nutrients.[11] ▪ Some seeds you eat because they are in or on fruit that you're eating, such as strawberry, cucumber, grapes, zucchini, and snap pea pods. ▪ Other seeds are the food item itself, such as: ➢ Walnuts, almonds, pecans, cashews, peanuts, pistachios ➢ Pumpkin seeds, sesame seeds, sunflower seeds, poppy seeds ➢ Beans, wheat oats, corn, the peas from a pod
Activity	Charades (You will need the laminate, *How Seeds Travel*. The book, *Seeds Grow, Seeds Go*, has pictures representing the scenarios below that can supplement your lesson.) • Game description: Today we are going to play charades to learn more about how seeds move from one place to another. This movement is called "seed dispersal." • Through seed dispersal, plants get spread around the world giving us a large variety of vegetation. • There are many ways that seeds end up where they do. Sometimes people help out and other times nature is in charge. Sometimes seeds end up close to the plant and other times they end up far away. How does this happen?

	• While playing charades, you will take turns acting out different seed dispersal scenarios.
	  ○ Volunteer note: Depending on group size, invite 1 or more students at a time to come to the front and act out one of the scenarios below.
	  ○ Quietly describe to the "actors" the seed dispersal mechanism so they can perform it for the class.
	  ○ The remaining students will guess what they are doing.
	• Scenarios:
	  1) Plants drop their seeds and new plants grow right under the old plant.
	  2) People take the seeds and plant them where they want.
	  3) Wind - Some seeds have parachutes, or feathery structures, to catch the wind and sail through the air.
	  4) Animals – Some seeds have stickers that get them stuck in an animal's fur or our clothing.
	  5) Animals - Lots of seeds are surrounded by fruit to get eaten by animals, who will deposit (poop) them wherever they travel.
	  6) Water - Some seeds are designed to float in water.
	  7) Bursting - Some seeds explode open like a confetti popper, sending seeds scattering around the area.
	• At the end of the game, show the laminate, *How Seeds Travel*, and review the different ways seeds spread near and far.

5th Grade	**Seeds** Supplies: (1) Cut piece of fruit or pod, (2) *Plant Parts We Eat*, (3) Book – *The Science Behind Plants*

Discussion	• Ask: What do you see inside this piece of fruit/pod? (Show the cut piece of fruit/pod.)
	  ○ Answer: Seeds – Some grow on the outside of plants (e.g., strawberries), whereas others grow on the inside (e.g., apples).
	• Ask: Where do you think seeds come from?
	• Answer: All seeds, whether in a fruit or seed pod, formed from a flower that was pollinated. (We'll discuss more about pollination shortly.)
	• Ask: Why do plants have seeds?
	  ○ Answer: A seed is a small part of a plant from which a new plant can grow.
	  ○ (Show cut piece of fruit.) When the fruit or pod is mature, it will release the seeds so that they will make new plants.
	  ○ Seeds have all the needed nutrients for a plant to grow. Think of a seed as a tiny package of nutrition.
	• Show page 13 in the book, *The Science Behind Plants*, and identify the seed parts.
	  ○ Seeds come in different shapes and sizes, but they all have three main parts.[12]
	  ▪ The <u>seed coat</u> is on the outside of a seed. It is hard and protects the inside of the seed.
	  ▪ The <u>embryo</u> is the part of a seed that grows into a plant.
	  ▪ The <u>endosperm</u> is the remainder of the seed. It's the food that the plant will need to grow.

	• Ask: Can we eat seeds?
	  ○ Answer: Yes!
	  ▪ Some seeds you eat because they are in or on fruit that you're eating, such as strawberry, cucumber, grapes, zucchini, and snap pea pods.
	  ▪ Other seeds are the food item itself, such as
	  ➢ Walnuts, almonds, pecans, cashews, peanuts, pistachios
	  ➢ Pumpkin seeds, sesame seeds, sunflower seeds, poppy seeds
	  ➢ Beans, wheat oats, corn, the peas from a pod
	  ▪ Seeds have lots of nutrients that are good for people.
	• Fun fact: Do you know that all grains are seeds?
	• Seeds have lots of nutrients that are good for people.
	  ○ In addition to vitamins and minerals, other nutrients found in seeds include protein, fats, and carbohydrates.
	• Protein is a nutrient that is found in plants and animals.[13]
	  ○ Your muscles and organs are made up mostly of protein.[14]
	  ○ Eating protein can help build strong muscles, give you energy and help you focus in school.
	  ○ Protein can also help your body fight infection.[15]
	• Carbohydrates are your body's main source of energy.[16]
	  ○ Protein and fat can't do their jobs unless we have enough carbohydrates.
	  ○ Fiber, a type of carbohydrate found in plant-based foods, has many health benefits, such as helping your digestive system work well.[17]
	• Fat is an important part of a healthy diet.[18]
	  ○ It is used in your body as insulation to keep you warm, protect your organs (e.g., kidneys and lungs), keep your skin and hair healthy and help you feel full after eating.
	  ○ Fat also gives you energy.
	  ▪ During exercise your body uses carbohydrates for energy for about 20 minutes. After that, your body relies on fat as an energy source to keep you going.
	  ○ Some fats are healthier than others.
	  ○ Healthy fats mostly come from plant sources, like nuts, seeds and fatty fruits like avocados and olives.

Activity	Let's Get Creative! (You will need *Plant Parts We Eat*.)
	
	• Volunteer choice! Ask the students to get in pairs or groups and have them do one, two or all of the following activities:
	  1) Have a **poetry slam** where the students, or "poets," create an original poem that incorporates plant parts and/or plant-part foods.
	  2) Ask the students, or "advertising team," to make up a **jingle** about plant-part foods that could be used for an advertisement.
	  3) Assign the students, or "chefs," to come up with a nutritious plant-part **recipe** that includes protein, fat and carbohydrates.
	• Show the laminate, *Plant Parts We Eat*, to assist the students. You could also share any of the books listed in this lesson for the students to use as reference.
	• If time allows, the students can present their creations to the class.

Gather Class Together

POLLINATION (4 - 7 MINUTES, depending on grade)

K-5th Grades	Pollination[19] Supplies: (1) *Anatomy of a Flower*, (2) Book – *What is Pollination?*

Discussion	• Once a plant is ready to reproduce, it begins the process of **pollination,** or making new seeds, by putting out flowers to attract pollinators.
	• Most plants need pollinators to move the pollen from an anther to the stigma.
	• Examples of pollinators are (you can ask students here to share examples) bees, butterflies, bats, hummingbirds, moths and even flies.
	• Pollinators are responsible for pollinating most of the plants in the world.
	• They have a very important job because without them most plants wouldn't be able to make seeds – and seeds make new plants!
	• How it works:
	  ○ When a pollinator meets a flower, it is looking for nectar to drink.
	  ○ Nectar is a liquid made by a plant's flower.
	  ○ While looking for the nectar, the pollinator accidentally rubs against the powdery pollen (on the anthers), which sticks to its body.
	  ○ The pollen rubs off on the flower's stigma (or on the stigma of the next flower it visits) as the pollinator moves from flower to flower.

K-5th Grades	Observing Pollination
Part 1: Observation	Explain how to be safe around pollinators. 1. Emphasize to the students that since they are going to be up close to some insects that can sting, it is very important that they observe with just their eyes, not touching any of the pollinators. 2. Let them know that if a stinging pollinator comes near them, they should be still, or step away slowly and calmly. 3. Don't wave your arms around, as this scares them and gives them a reason to sting!
Part 2: Observation	Walk through the garden and observe pollination. 1. Tell the students that they're now going to walk through the garden and see if they can mindfully observe pollination in action. 2. This is an activity that they are going to do ALONE. They are "observing," so they'll be paying attention and not talking. It should be very quiet. 3. Since they are going to get up close to insects, they need to move slowly and quietly. 4. Once they see a pollinator that they want to watch, be still, and don't get too close.

	5. They can watch to see if they can observe the insect drinking nectar, getting covered in pollen, and moving from flower to flower. 6. When an insect lands on a flower, have them try to see if it rubbed against the stigma. 7. Have them pay attention to the sounds that the pollinators make; some are noisy, and some are silent. 8. Also, have them notice if the flowers they found with a pollinator have a strong smell or not. *If there are no pollinators, discuss different types of pollinators such as butterflies, bees, hummingbirds, and wasps, and how they pollinate flowers. Ask students to be mindful when they are outside to see if they can spot them in the future.

CLOSING (1 MINUTE)

- Bring students together to close the lesson and thank the students, teacher and other volunteers.
- If time allows, have students participate in the optional activity, "Observing Pollination." (See below)
  - If you do not have time for this optional activity, then encourage the students to observe flowering plants around them and look for pollinators.
- Recap what students learned in the lesson.
- If time allows, have students draw/write a "Reflection Page" after the lesson, either in the garden or with the teacher when they return to class. If you see any that you'd like to share with BCHD, take photos of their work and email them to Mishell.Balzer@bchd.org.
- Thank the students for joining you today and dismiss them.

***Don't forget to report your lesson as delivered with the online form!**

Scan this QR code with your phone for scheduling and reporting lessons as delivered:

From the computer, click the link that was emailed to you by your Lead Volunteer:

LWK Tracking Links 2023-24

Resources

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