

# Plant Life Cycles

## Key Concepts:

- Seeds grow into new plants
- Seeds are a lunchbox for the new plant (they are a source of energy for the new plant)
- Seeds need water and warm temperatures to sprout
- Roots grow first followed by the stem and leaves

## Activity: Seed Viewers

**Overview:** Plant bean seeds in clear plastic cups to allow students to watch seeds sprout.

## Materials:

- Plastic cups (can be washed and reused)
- Construction paper
- Paper towels
- Soup bean seeds
- Water

## Instructions:

*Prep Work: Cut pieces of construction paper into rectangular strips to fit inside the plastic cups.*

1. Help students place a piece of construction paper inside a plastic cup so that it lines the side of the cup.
2. Ball up a few pieces of paper towels and place them inside the construction paper liner until the cup is full.
3. Let students pick out 3 to 4 beans from the dry soup bean mix (avoid using any beans that are split) and place them in the cup between the side of the cup and the construction paper liner.
4. Gently water the paper towels until saturated.
5. Place the cups on a shelf or windowsill and watch them grow. First you will notice the seed coat expanding (wrinkling) as the seed absorbs water and then the root will start to grow in 2 to 3 days. Water as necessary to keep the paper towel and seeds continually moist. Seed germination can be impacted if the temperatures are too cold (if you are comfortable, most likely your seeds will be too).
6. After the roots emerge, the stem and leaves will begin to appear. You can continue to grow your plant as long as you want for observation, however generally seeds that have been sprouted this way do not transplant well out into the garden and they will not be able to go grow to maturity in the cup.



### Activity Extension:

You can extend your lesson by experimenting with temperature and water availability. Try placing a couple of the seed viewers in a refrigerator and also see what happens if you do not add water. You can use this as a way to talk to students about the conditions seeds need to grow.

Additionally, you may want to pair this activity with seed planting outdoors so you can watch plants go fully from seed to seed.

### Discovery Station Ideas:

- Set up a bin of dry soup beans for kids to explore on their own. Add measuring cups, spoons and other containers to allow them to measure and sort them. Encourage them to compare textures, colors, sizes and shapes. You can also chart your findings.
- Make bean art. Allow students to make bean mosaics using dry soup beans, glue and paper.

### Related Books:

*Pumpkin Circle* by George Levenson

*Jack and the Beanstalk* (many versions available)

*Sunflower House* by Eve Bunting

*A Seed is Sleepy* by Dianna Aston

### Additional Resources:

For information on how gardening activities align with Head Start Program Performance Standards and the Early Learning Outcomes Framework, download the National Farm to School Network's excellent resource - Growing Head Start Success with Farm to Early Care and Education available at:

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# Flowers & Pollinators

## Key Concepts:

- Flowers are important because they make fruit and seeds
- Some flowers need help from animals called pollinators to make their seeds
- Pollination is when pollen from one flower is moved to another flower
- Pollinators are very important to us and to all living things

**Activity:** Make a Flower

**Overview:** Use craft items to make your own flowers and learn about pollinators.

## Materials:

- Short plastic cups (can be washed and reused)
- Construction paper (can cut out petals ahead of time or let the kids do it)
- Clay or play dough
- Pipe cleaners/chenille sticks
- Pompoms
- Tape
- Scissors



## Instructions:

*Prep Work:* Depending on the skill level or your students, you may want to pre-cut flower petals from construction paper for this activity. You can also have them make their own.

1. Show students the common parts of a flower using a real flower, an artificial flower, or a sketch of a flower. You can find a sketch of a flower at: <https://kidsgardening.org/lesson-plans-petal-attraction/>. Point out the pistil that contains the future seeds, the stamens that hold the pollen, and the petals. Explain to students that the pollen needs to move to the pistil of one flower to the pistil of another in order to make seeds and many times it needs help getting there from pollinators.
2. Give each student a cup, 6 pipe cleaners, 5 pompoms and petals (or construction paper if they are making their own) and tell them you are going to create your own flower.
3. First make the stamens and pistil. Wrap a pompom on the top of 5 of the pipe cleaners. Leave one pipe cleaner without a pompom to represent the pistil. For the pistil, craft a loop at the top.
4. Place a ball of clay or play dough into the bottom of the cup. Stick your anthers and pistil into the cup.
5. Next add the petals. Either use pre-cut petals or make petals and then attach them to the sides of the cup using tape. If you want, the kids can decorate their petals.

6. Finally, students can pretend to be pollinators and move their 'pollen' (the pompoms) from plant to plant. They can drop the pompoms through the hoop of the pistil (miniature flower basketball).

### Discovery Station Ideas:

- Gather an assortment of artificial flowers for student to play with and explore. They can practice sorting them by color and size, set up their own flower shop, or use them to decorate the room.
- Out in the schoolyard, lead kids in a flower scavenger hunt. Look for flowers in different colors, shapes, and sizes. Look for flowers that have pollinators visiting them.

### Related Books:

*The Reason for a Flower* by Ruth Heller

*Plant a Rainbow* by Lois Ehlert

*Bea's Bees* by Katherine Pryor

*Flower Garden* by Eve Bunting

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# Plant Needs

## Key Concepts:

- **Just like people, plants have things they need to live and grow**
- **Plants need:**
  - Light
  - Air
  - Nutrients
  - Water
  - A place to live
- **Plants are FUN!**

## Activity: Plant Pal

**Overview:** Using pantyhose, soil and grass seed, make your own Plant Pal to care for at home (a homemade chia pet).

## Materials:

- Potting soil
- Grass seed
- Panty hose
- Googly eyes
- Craft glue
- Bowls
- Other craft items (optional)

## Instructions:

*Prep Work:* Cut a 6 to 8 inch long piece of panty hose (any color will work). If your piece does not include a toe, then knot one end of the hose and turn it inside out. It will end up looking like a little pantyhose bag.

1. Working in pairs so that one child holds the pantyhose bag and one scoops into the bag, have students scoop 2 to 3 teaspoons of grass seed into the closed end.
2. Next, fill the rest of the hose with potting mix. Have an adult help tie the hose closed.
3. Use your hands to gently shape the ball into a head shape.
4. Place the head in a shallow dish with the grass seed side on top. Use craft pieces such as wiggle eyes, buttons, pom-pom balls, felt and chenille sticks to make eyes, a nose, mouth and arms. Attach with craft glue.
5. After glue has dried completely, carefully water your new plant person until the soil is thoroughly moist and place in a warm location. Check on it daily to make sure soil stays moist (if it seems to



dry out quickly you can keep a reservoir of water in your dish), and within 3 to 5 days your new plant person will begin to grow “hair.”

6. Once the hair is established, you can give him/her a hair cut or just let it grow and see how long it will get. If you have time and supplies, they can make more than one to create a whole family of plant people.

### Discovery Station Ideas:

- Young children LOVE to water. Set up a container garden or reserve a garden bed (both with good drainage) for kids to water. Use appropriately sized watering cans or containers and make sure if your station is located indoors to find a way to catch any excess run off water.

### Related Books:

*Jack's Garden* by Henry Cole

*The Curious Garden* by Peter Brown

*We are the Gardeners* by Joanna Gaines

*Lola Plants a Garden* by Anna McQuinn

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# Soil Investigations

## Key Concepts:

- Soil is important for plants and animals
- Most plant roots grow in soil
- Soil provides plants with water, air, and nutrients
- There are many animals that live in soil like earthworms, ants, and pill bugs

## Activity: Soil Art

**Overview:** People have been using soil to make art for as long as people have been making art (for pottery, paintings, to dye cloth, etc.). Soil can be found in a wide range of colors dependent on the parent materials from which it is made. Explore soil art with your young gardeners by making your own paint from soil.

## Materials:

- Soil (if possible find samples in a diversity of colors)
- A surface to dry your soil
- Tools to crush soil (like a rubber mallet)
- A sieve and/or panty hose to sift soil
- Glue
- Water
- Cups and plates
- Watercolor paper
- Paintbrushes of any size

## Instructions:

1. Artists have used soil to provide color and texture in their art for as long as people have been making art. Begin your soil art exploration by checking out examples of art made from soil created by the Cornell University Soil Health Lab at: <http://soilhealth.cals.cornell.edu/about/soil-painting-2/>. On this page you will also find a collection of great videos of the artists working on their masterpieces.
2. Gather soil samples from your yard or schoolyard. The amount you collect will be determined by the size and quantity of paintings you want to complete.
3. Remove any large particles, matter, and soil life you find and return them to their home outdoors.
4. Dry soil completely on an old baking sheet or on plates.
5. Once dry, crush the soil to make it as fine as possible. You can begin by using a large tool like a



hammer or mallet. Then follow that up by sorting it with a sieve or even use something like panty hose to get the smallest particles possible.

6. Mix your soil with glue and water until you get a consistency that resembles paint or a runny paste (add just a little bit at a time so that it does not become too runny).
7. Let the painting begin! Watercolor paper works well for your earthy paint.

### Discovery Station Ideas:

- Set up a bin of soil in the classroom or allow students to freely dig in an unplanted garden bed. Use shovels, spoons and other scooping instruments to allow them to move the soil. Include a couple of magnifying glasses for close up observations.

### Related Books:

*Diary of a Worm* by Doreen Cronin

*Compost Stew* by Mary McKenna Siddals

*Up in the Garden and Down in the Dirt* by Kate Messner

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# Plant Parts

## Key Concepts:

- Plants look very different, but they all have the same parts
- Plants parts include roots, stems, leaves, flowers, fruit and seeds

**Activity:** Fruit and Vegetable Art

**Overview:** Make eating fruits and vegetables fun by guiding students to turn their plate into a consumable work of art while also learning about different plant parts.

## Materials:

- A variety of fruits and vegetables cut into various size pieces and representing different plant parts. A list of ideas can be found below in Step 2.
- 2 or more plates (one for cutting and one for eating for each child)
- Cutting utensils (optional)
- Toothpicks (optional)
- Dips such as ranch or yogurt (optional)



## Instructions:

*Prep Work: Collect a variety of fruits and vegetables to eat representing all the different plant parts. They can be cooked or raw and fresh, canned or frozen depending on availability and age of your students.*

1. Introduce students to the different parts of the plant. Go on a scavenger hunt to look at plants and locate the different parts. Point out how the plant parts come in different shapes and sizes. Explain how each part has its own job:
  - Roots - Hold the plant in place and drink up water and nutrients from the soil
  - Stems - Help move water and nutrients into the leaves and keep the plant off the ground
  - Leaves - Make the plant's food
  - Flowers - Make the plant's seeds
  - Fruit - Provides a package for the plant's seeds
  - Seeds - Contain new baby plants
2. Share that we eat different parts of different plants. Show kids different plant parts we eat using real fruits and vegetables or pictures of common fruits and vegetables. Play a plant part game and have them sort your examples by different part. Here are some ideas for your game:
  - Roots - beet, carrot, radish, sweet potato, turnip
  - Stems - asparagus, garlic, white potato

Leaves - cabbage, lettuce, parsley, spinach

Flowers - broccoli, cauliflower

Fruit - apples, avocados, cucumbers, green beans, peppers, squash, tomatoes

Seeds - corn, peas, rice, sunflower seeds

Make sure to also mention to students that not all plants and not all plant parts should be eaten. Explain that some can make us very sick, so we want to make sure that we only eat plant parts that are grown to be food.

3. If fresh, wash and dry the produce you collected for your fruit and vegetable art snack and then cut them into bit-sized pieces and place in a bowl or on a plate. Prepare frozen or canned fruits and vegetables as needed (cook, thaw and/or drain and rinse). Depending on the age and skill level, allow children to help with prep as appropriate. Plastic knives may work well for many items and can be safe for young children. You can use small cookie cutters in the shapes of circles, stars, etc. or a melon baller for additional options.
4. Give each child a second plate to serve as a workspace and then set them loose to create a 3-D picture or mini sculpture using the fruits and vegetables provided. Depending on their age, you can also give them toothpicks to help their creation take form. They can complement their art work with dip or dressing.

If your kids need some inspiration, author Saxton Freymann has a collection of books at <https://www.eeboo.com/collections/saxton-freymann> featuring creatively carved fruits and vegetables you may want to check out.

5. Once complete, snap a photo of each creation to document their art. Once you have a collection of photos, the children may even want to create a storybook showing off their fruit and veggie creations.
6. Have them take one last look to enjoy the beauty of the creations and then start eating!

**Activity Extension:** You can extend your lesson by also talking about eating a rainbow of fruits and vegetables. Fruits and vegetables come in a wide variety of colors. Eating a Rainbow (<https://www.kidsgardening.org/lesson-plans-eat-a-rainbow/>) is not only fun, but it also provides a health boost since the pigments in the fruits and vegetables responsible for the color are also indicators of some of the nutrients available. Instead of focusing on displaying all the plant parts in your artwork, you can create plates showing off the full rainbow.

### Discovery Station Ideas:

- Set up a station where the kids can continue to sort fruits and vegetables by plant part into different baskets or buckets. You can use real examples, artificial/play food or laminated pictures of different fruits and vegetables.
- Make a collection of seed viewers. You can make simple seed viewers using dried beans, plastic cups and paper towels that allow kids to see roots, stems and leaves of the plant as they start to grow. Instructions can be found at: <https://www.kidsgardening.org/garden-activities-seed-viewer/>. Start a couple of different seed viewers each day for a week and then bring them in and let the kids sort them by stage.

### Related Books:

*Oliver's Vegetables* by Vivian French

*Tops and Bottoms* by Janet Stevens

*What do Roots Do?* by Kathleen Kudlinski

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