

My First Garden

Rodale Institute's Guide to teaching children where their food comes from and starting a school garden

Lesson 2: How does a seed grow?

Objective: Teach children the life cycle of a seed and what it needs to grow into a plant.

Activity 1: Being a seed: (Activity adapted from *How's it Growing: A How to Guide for Starting a Farm to Preschool Program*)

Materials: Spray bottle with water, raisins.

Guided activity where children become the seeds: germinate, grow, fruit and drop seeds again. Teachers will use the following instructions to guide students through the act of "being a seed." Students will have the chance to pretend they are a seed and go through the life cycle of that seed.

Begin the activity by having students imagine that they are a seed: what seed would they be and why? Next, have students find a comfortable space on the floor to "plant" themselves and then begin by reading the following out loud while the students act out the directions:

- Plant yourself in a comfortable spot. What kind of seed are you?
- It's fall and seeds are getting ready for a long winter's rest (*curl up into a tiny seed*).
- Each seed has its own supply of food inside to help start to grow in the spring (*have students hold one hand out and place raisins (food) in their palm - don't eat yet! Hold on to your food tight!*).
- In order to survive the long, cold winter, the seed must save its food until spring arrives once again.
- Winter has come (*turn off classroom lights*).
- The seed is tucked safely below the ground and snow, resting for the winter (*have a quiet moment*).
- Finally, the days are starting to get longer and warmer and now its spring! The soil is getting warmer and the seeds are *slowly* starting to wake up (*begin to wiggle your toes and fingers, gently rock your body back and forth, but don't get up yet!*)
- The warm spring rains are starting to fall which makes the seeds very happy (*walk around and gently squirt each student with the squirt bottle. Once sprayed, students can poke out a little root (their leg or arm) to soak up the water and show a big smile*)
- The days are getting warmer and warmer. The soil is getting warmer and the seeds get to use their food that they have been holding on to all winter long. (*students can uncurl and eat their raisins*).
- Now the seeds have the energy to sprout and grow from the ground (*on the count of three, students can stretch their arms upward. Turn on the lights*)
- The seeds have turned into baby plants and are starting to grow taller and taller each day (*students can slowly rise to a standing position*).
- Your leaves are stretching out to gather the sunlight, you begin to gently sway in the breeze and enjoy the sunlight (*students can slowly rock back and forth, swaying in the breeze*).

- The seasons have changed again, and it is finally summer! The plants begin to form flowers (*students can make a circle above their heads and show off their flowers*).
- The flowers need to be pollinated by bees and other insects (*teacher will buzz around to each student and pretend to pollinate their flowers*).
- Where there was a flower, a fruit begins to grow (*students can widen their arms to show their fruit growing bigger and bigger*).
- The seasons are changing yet again, and summer is coming to an end. Fall is in the air now - it is getting cooler. The leaves on the trees are changing and now the leaves on your plant are starting to fall off (*students can flutter their arms to show their leaves falling to the ground*).
- Your fruit also falls to the ground and breaks open (*students can fall to the ground with a “plop”*).
- What do we find inside your broken fruit? Seeds! What will happen to your seeds? They will get ready for a long winter’s rest and the cycle will start again.

Read: The Carrot Seed by Ruth Krauss

Activity 2: Starting Seeds

Objective: Children understand how to plant a seed and care for plants.

Materials: 6 packs (or other recycled containers), tray, domes, seeds, soil (pro-mix), spray bottle, popsicle sticks, crayons, glue sticks, pictures of vegetables.

Activities:

- 1) **Seed Starting:** Cold weather: lettuce, peas, radishes, spinach, kale, pac choy, cilantro, other herbs or edible flowers.
Summer: tomatoes, cucumbers, pole beans, zucchini, carrots, sunflowers, pumpkin.

If using 6-packs, make groups of six children. If using individual recycled containers (yogurt cups, paper cups, etc.) make sure to poke a pencil-sized diameter hole in the bottom first for drainage. Fill containers with soil mix; it's ok to fill it to the top since the mix will settle over time and with watering. Each student should choose their seeds; bigger seeds like peas, beans or squash are easier to handle for little hands. Recommendation: give each group or table 2 to 3 choices only to facilitate the activity.

Children should poke a hole in the soil for planting the seed. The standard rule of thumb is that the hole should only be as deep as twice the size of the seed. So a large bean seed might be $\frac{1}{2}$ " - 1" deep, but a tiny lettuce or kale seed would be only just under the surface.

Cover up the seed with soil. Use a spray bottle to water. This will avoid spills and make it easier for young children to care for their plants.

Create labels with popsicle sticks immediately. Glue small pictures of vegetables to popsicle sticks and decorate using crayons.

- 2) **Let's Sprout!** Growing sprouts is fun and tasty, and children can see the different stages of seed germination.

Materials: Quart size mason Jars (2); screw on screen lids (usually available at health food stores); organic sprout seeds (alfalfa, clover, sunflower, broccoli, kale, all work well); tray for drainage; access to water daily.

Pour seeds into bottom of mason jar, just enough to cover the bottom (they expand to hundreds of times their size!) Fill jar with water and screw on screen top. Let it sit overnight. In the morning, drain the water through the screen top into a sink. Then fill up with water again and immediately drain. Prop jar in drainage tray on a 2-3" tall block so it rests at a 45-degree angle and excess water drains into tray. Continue to rinse 1 -2 times a day (morning and late afternoon). Jar and tray can be set in full or partial sun.

Observe with children as root starts to sprout and eventually first small leaves. When first 2 leaves have emerged, sprouts are ready to eat! Remove from jar and place in bowl. Let soak in water briefly and gently agitate in water to remove seeds. Remove sprouts from water to drain in colander. Serve on toast or wraps with cream cheese!

Read: Up, Down and Around by Katherine Ayers

Taste: Seedy snack. Sunflower seeds, pumpkin seeds, hummus dip with peas and green beans.

Sample Recipes:

Easy Hummus Recipe

PREP 10 mins

TOTAL 10 mins

Makes 6 servings or about 1 1/2 cups

YOU WILL NEED

1 (15-ounce) can chickpeas or 1 1/2 cups (250 grams) cooked chickpeas

1/4 cup (60 ml) fresh lemon juice (1 large lemon)

1/4 cup (60 ml) well-stirred tahini

1 small garlic clove, minced

2 tablespoons (30 ml) extra-virgin olive oil, plus more for serving

1/2 teaspoon ground cumin

Salt to taste

2 to 3 tablespoons (30 to 45 ml) water

Dash ground paprika, for serving

Food Processor

DIRECTIONS:

- In the bowl of a food processor, combine the tahini and lemon juice and process for 1 minute, scrape the sides and bottom of the bowl then process for 30 seconds more. This extra time helps "whip" or "cream" the tahini, making the hummus smooth and creamy.
- Add the olive oil, minced garlic, cumin, and a 1/2 teaspoon of salt to the whipped tahini and lemon juice. Process for 30 seconds, scrape the sides and bottom of the bowl then process another 30 seconds or until well blended.
- Open, drain, and rinse the chickpeas. Add half of the chickpeas to the food processor and process for 1 minute. Scrape sides and bottom of the bowl, then add remaining chickpeas and process until thick and quite smooth; 1 to 2 minutes.

- Most likely the hummus will be too thick or still have tiny bits of chickpea. To fix this, with the food processor turned on, slowly add 2 to 3 tablespoons of water until you reach the perfect consistency.
- Taste for salt and adjust as needed. Serve hummus with a drizzle of olive oil and dash of paprika. Store homemade hummus in an airtight container and refrigerate up to one week.

NUTRITION PER SERVING: Serving Size 1/4 cup / Calories 190 / Protein 6 g / Carbohydrate 18 g / Dietary Fiber 5 g / Total Sugars 3 g / Total Fat 11 g / Saturated Fat 2 g / Cholesterol 0 mg

Sunflower Seed Brittle (could also use pumpkin seeds!)

Servings: approx. 50 pieces

Ingredients

- 3 tablespoons unsalted butter
- 1/2 teaspoon salt
- 1/2 teaspoon cinnamon
- 1 teaspoon vanilla
- 2 cups salted dry roasted shelled sunflower seeds
- 2 cups sugar

Directions:

- Generously spray or butter a large baking sheet and set aside. Or, place a silpat mat in a large baking sheet--no buttering required.
- In 1.5 or 2 quart saucepan, melt butter on low heat; add salt, cinnamon, vanilla and sunflower seeds and stir to evenly coat seeds with butter mixture. Keep stove at lowest setting, stirring occasionally so that all of the seeds remain warm but don't scorch on bottom of pan.
- Add sugar to large (12 inch) heavy skillet over medium heat. Stir the sugar constantly. As you stir, you will see the sugar begin to melt and form clumps. Gradually, the clumps will start to melt and stir into a smooth, amber brown syrup.
- As soon as the last lumps melt into the syrup (this takes approx. 10-15 min.), add the warm nut mixture and stir to combine. Work quickly so the mixture doesn't burn. Immediately, pour onto prepared baking sheet. Use a silicone or wooden spatula to quickly spread the mixture into a thin, even layer.
- Let cool completely and break into pieces. Store in airtight container.

Follow up:

- Create a rotating chart where children can take turns watering their plants every day.
- Each child can create a Plant Journal to encourage their observation and involvement in the project. They should visit the plants each day and draw pictures of what they see, measure size, or make other notes.

Complete Materials Guide

Note that books can also be borrowed from the library to cut costs and that prices are estimations and may vary depending upon region.

Lesson 2: Starting Seeds

| Material | Quantity | Source | Approx. cost* |
|---|---------------------------------|---|-------------------|
| *Seed trays: 6 packs with under tray and dome lid | Enough to start up to 50 plants | Garden store/ Hardware store/ Walmart | \$10.00 - \$15.00 |
| Organic seed starter mix | 1 bag | Garden store/ Walmart | \$10 - \$15.00 |
| Organic vegetable seeds | 3-5 varieties | Burpee (Walmart); Johnny's Selected Seeds http://www.johnnyseeds.com/ ; High Mowing Seeds https://www.hightmowingseeds.com/ | \$10.00 - \$20.00 |
| Popsicle/craft sticks | 1 pack | Walmart/Dollar Store | \$2.50 - \$5.00 |
| Quart size Mason Jars | 2 | Grocery Store | \$2.00 - \$6.00 |
| Sprouting Screen lids for jars | 2 | High Mowing Seeds; Health Food Stores | \$5.00 - \$10.00 |
| Sprouting Seeds | 2 varieties; 3 - 4 oz packets | High Mowing Seeds | \$5.00 - \$10.00 |
| Book: <i>Up, Down and Around</i> | 1 | Amazon | \$6.00 - \$9.00 |
| Seedy Snack | See recipes | Grocery Store | \$10.00 - \$15.00 |

* Seed trays can also be crafted out of recycled materials such as milk cartons, juice bottles, Clementine crates, etc.