Lesson seven: What do plants need to grow?

“Seeds and Sprouts” from GOT VEGGIES?, Wisconsin Department of Health Services – Nutrition, Physical Activity and Obesity Program with support from University of Wisconsin Cooperative Extension

Besides people watching over them, what do plants need to grow? Students use simple props and role play how plants need sun, soil, water, and air in order to grow. They start journals or observation pages to observe and record how plants grow. The students discover that they need the same things that plants do in order to grow. They end up preparing and eating healthy snacks made by sun, soil, water, and air.

Content objectives: Identify what plants and people need to live and grow (sun, soil, water, and air). Identify and make a healthy food from a garden.

Life skill objectives: Communication, Leadership (teamwork), Citizenship, Healthy living

Core and STEM concepts and skills:
Science: Earth and space, Life science
Language Arts: Vocabulary, Inferring, Interpreting, Sequencing, Viewing, Speaking, Listening

Healthy snack: Peas and beans from lesson or Garden Spring Rolls from GOT VEGGIES?

Additional and supporting resources: Singing in Our Garden CD, “Sun, Soil, Water and Air” by the Banana Slug String Band from www.bananaslugstringband.com
LESSON PLANS FOR 2011-12 SCHOOL YEAR  Grade 2

BEFORE THE LESSON

1. Grade 2, Lesson 7:
   This document contains all the curriculum items and resources you need for this lesson. All lesson downloads are located on the www.peoplesgarden.wsu.edu Educational Toolkit.


3. Check materials list for complete description of items needed.

4. Assemble necessary ingredients and materials for the selected recipe.

5. Remember to set up a garden watering schedule.

THE LESSON

1. Seeds and Sprouts are can be taught in one day.

AFTER THE LESSON

Additional activities are suggested for recording weather, seed or garden information in the Garden Journal.

RECIPES

Serve a seed snack harvested from the garden or purchased from your local market—fresh green beans or peas make a great healthy snack. Other delicious seed and seeded fruit snacks from the garden include corn, sunflower seeds, grapes, cherry tomatoes and many varieties of berries such as raspberries and strawberries.

Option: Spring Garden Rolls with Chef Tory’s Dipping sauce (see next page)
Garden Spring Rolls

Ingredients:
- Rice noodles
- Rice Paper
- Chef Tony's Dipping Sauce (see below)
- Any veggies fresh from the garden - try onion, garlic, broccoli, red cabbage, kale, green or red bell peppers, basil, carrots or anything else that might be in season.
- Olive oil
- Salt

Harvest the vegetables from your garden and cut them into small pieces. Option One is to mix all of the vegetables in a bowl, sprinkle some salt and olive oil on top, and either sauté or bake them until they are warm and soft. Option Two is to keep all of the vegetables fresh and separate in different bowls. Both ways work great. In the meantime, cut the rice paper sheets in half, and soak them in a shallow dish or plate of water until soft (about 2 minutes). When the vegetables are ready, lay out the rice paper on plates or cutting boards, fill them with any of the fillings, roll them up, and they are ready to go!

Kids’ Garden Tips:
- When we run out of Chef Tony’s Dipping Sauce, we switch to balsamic vinegar and it tastes great.
- On days that we make pesto, we also put it in the spring rolls for extra flavor.
- Cooking the noodles early in the morning or the night before makes set up very easy. It is also easier when the noodles are cut up.
- Cutting the rolls in half makes for less waste.

Chef Tony’s Dipping Sauce

Ingredients:
- 1 tablespoon soy sauce
- 1 tablespoon water
- 1 teaspoon rice wine vinegar
- 1 teaspoon sesame seed oil
- Fresh grated ginger
- Chopped scallions
- Honey and hot sauce to taste
- Peanuts or peanut butter (optional)

Mix all ingredients and adjust for balance. Should taste deliciously sweet, spicy and tangy.

Lesson Overview

There are six main plant parts that people eat—seeds, roots, stems, leaves, flowers, and fruit. The following edible examples represent the six plant parts: bean (seed), carrot (root), asparagus (stem), spinach (leaf), broccoli (flower), and apple (fruit). This lesson is the first in a series of four Got Veggies? lessons that focus on the six main plant parts that we eat. It can be run in the garden or indoor classroom. This lesson also continues an ongoing investigation of the nutrient cycle that we began in Dirt Made Our Lunch. Guiding questions include: What do plants need to live and grow? How do plants help us live and grow? Where do nutrients come from and how do they get into our food? The answers to these questions can be found in explorations of plant development, the six plant parts we eat, and decomposition.

Objectives

Students will:

1. Identify what plants and people need to live and grow (Environmental Ed B.4.6; Nutrition Ed A.4.3; Science F.4.2, F.4.4)

2. Describe basic plant anatomy (Agricultural Ed D.4.1; Science F.4.3)

3. Understand connections between plants, people, and our natural environment (Science F.4.4)

4. Participate in a discussion (Lang Arts C.4.3)

5. Trace food from origin to table (Nutrition Ed B.4.4)
**Materials**

**Food:**
- A fresh seed snack from the garden (e.g., green beans, peas. See Tasting activity on page 23 for more suggestions)

**Supplies:**
- Spray bottle(s) with water
- A bucket filled with soil or brown paper towels (to represent soil)
- A paper fan, piece of cardboard, bellows, or something that can simulate wind

**Preparation**

1. Prepare a spray bottle filled with water, a bucket filled with soil, and a fan for the Plant Role Play activity.
2. Harvest or purchase—and wash—foods for the Tasting activity (e.g., green beans, peas. See Tasting activity on page 23 for more suggestions).

**Procedure**

**Introduction:** In order to introduce students to the connection between plants, people, and the environment, briefly discuss how plants help people by providing something healthy for us to eat. Our bodies are healthy when we eat nutritious foods. Then discuss how people—through farming and gardening—help plants to grow and be healthy. What can we do to help plants grow and produce food? We often begin by planting a seed. We can help that seed sprout and grow by helping it get the things it needs (e.g., water, nutrient-rich soil). Nature provides the basic things plants need to grow, as students learn in the following activity.
Plant Role-Play: Students become plants in order to learn what it is that plants need to grow and be healthy. We tell students that there are elements of nature that help plants grow and that they will discover what those elements are through a dramatic play activity.

Plants start as seeds, so ask students to crouch down and become a seed. Ask students to close their eyes, or turn off the lights if in the classroom, to simulate a seed that is buried in the ground. First, give students a small handful of soil, a piece of brown paper towel, or something else to represent soil. They should hold the soil as they crouch. Next, go around with a spray bottle and give all “seeds” a light misting of water. After receiving the water, encourage students to raise a hand in the air to simulate a seed sprouting through the soil. Following the water, have students open their eyes (or turn on the lights in the classroom) to receive sunlight. Tell students to rise a bit from the ground to demonstrate that they are growing. Finally, use a small paper fan (or some other representation of wind) to blow air on students, after which they can stand up to represent a full-grown and healthy plant.

Follow up by asking students what they needed to grow from a seed to a mature, healthy plant.

Answer: Sun, Soil, Water, and Air.

Chant: To reinforce what students learned in the role-play, they chant together, “Sun, Soil, Water, and Air! Everything we eat, and everything we wear, comes from Sun, Soil, Water and Air!” Begin chanting slowly and gradually pick up the tempo. Finish by slowing down and lowering voices to a whisper.
**Tasting:** Remember to have students wash or sanitize their hands. Serve a seed snack harvested from the garden or purchased from your local market—fresh green beans or peas make a great healthy snack. Other delicious seed and seeded fruit snacks from the garden include corn, sunflower seeds, grapes, cherry tomatoes, and many varieties of berries such as raspberries and strawberries. Roasted pumpkin seeds, homegrown popcorn, and fennel seeds are favorite fall treats!

**Additional Activities**

Document the growth of a tomato, squash, or bean plant by using garden journals or taking photos: This is a fun way to follow the development of plants from seed to fruit. See Keeping a Garden Journal activity on page 38 in the À La Carte section.

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**planting**

We invite students to choose and plant from our seedling supply. Seedlings include basil, peppers, tomatoes, kale, cabbage, kohlrabi, onion, broccoli, fennel, flowers, parsley, and lavender. With a trowel in hand, kids plant their seedlings in garden beds. Many times kids help ready the garden beds for planting by pulling weeds, raking the soil, and adding compost by wheelbarrow.

We teach students to gently pull the seedling from its tray and spread, or pull apart, the compacted roots. Often, kids will teach one another this process as new planters join the station. Digging a hole large enough to accommodate the plant’s roots, and spaced far enough away from neighboring plants, kids give the seedlings new homes. They gently fill in the hole, adding a bit of compost and a loving wish for good growth.

We are not done yet! The next step is to mulch the area around the seedling with hay, creating a small nest. The hay provides cool shade for the soil, keeps soil moist longer, and prevents weed growth.

— Hannah Lavold, Garden Educator, Community GroundWorks at Troy Gardens
Keeping a Garden Journal

Keeping a garden journal is a great way for students to reflect on their experiences in the garden. Students will use their observation and creative writing skills to create a daily account of changes in the garden throughout the growing season.

**Supplies:** Students can purchase a journal or notebook to record their observations, or they can create a journal using loose paper and twine. To construct a journal you will need loose leaf paper, printer paper, or colorful construction paper as well as a hole-punch, twine, pen/pencil, and scissors.

**Directions:** Gather together the desired number of loose sheets of paper. If the paper does not already have holes, use the hole-punch to create 2-3 holes on one edge. Cut 2-3 small pieces of twine and use them to bind the paper together through each of the holes. Have students decorate the front cover of their garden journal however they choose. Students can separate their garden journal into sections either by date or by topic such as weather (Science), phenology (Science), how much produce they have harvested (Math), and notes about how the garden is growing (English/Language Arts). Students will need a pen or a pencil for recording their observations.

**Weather**

Have students record the weather on a daily basis so that they gain an understanding of how it affects the growth and health of plants in your garden. Weather station tools such as a rain gauge, thermometer, and wind vane provide a fun way for students to observe and measure weather-related changes in the garden.

**Phenology**

Have students observe and record the life cycle of both plants and animals in the garden and how they relate to the changing seasons. For example, record the day you first see a robin, seed sprout, squash blossom, ripe tomato, and frost damage on garden plants. Then have students compare these events with weather patterns to gain a better understanding of the changing seasons.

**Garden Notes**

Have students record general observations from the garden in a variety of creative formats. They may write poems about the spicy flavor of a radish, short fiction stories about animals in the garden, or simply how they feel in that moment sitting in the garden. Students will form a stronger connection with the garden by looking deeper into the many changes and experiences they have while they are there.