Curriculum Goals

Our curriculum is designed to be co-taught by Garden Instructors and Classroom Teachers, with Garden Instructors preparing for and leading each lesson. Many lessons have several activities to choose from. Garden Instructors are encouraged to collaborate with teachers to decide the most appropriate activities to teach in each lesson, rather than teach them all at once. Many lessons can also be taught over several days of instruction to allow for scaffolding of concepts.

SCIENCE

Science is essential for understanding our world. Experimenting with the natural and unnatural world informs students and prepares them to be critical thinkers. We ask questions such as, how do we create an environment for safe risk taking?

ENVIRONMENT

External conditions and factors which affect organisms, both living and nonliving, constitute an environment. Students explore connections to their environment. We ask questions such as, what do living things need to survive and thrive?

HEALTH

We demonstrate how to care for ourselves by eating whole foods and connecting with how and where food grows. We ask questions such as, what can we eat and drink to stay healthy?

LANGUAGE

Students practice speaking, listening, and building knowledge by engaging with educators, each other, and their environment. We ask questions such as, how can we participate effectively with each other?

STUDENT ENGAGEMENT

The outdoor garden introduces competing distractions for student attentions. Whether it's a squirrel or a new flower budding, we practice harnessing these distractions as teachable moments. We ask questions such as, how can we connect this distraction to the content, allowing students to experience and observe, while still managing their urges and emotions.
## Curriculum Map

**PRESCHOOL THROUGH KINDERGARTEN**

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Introducing Dirt

Objectives/Assessment Targets
Students will:

- Use descriptive words to talk about soil.
- Practice handling dirt safely.
- Practice effective hand washing.

Activity Preparation
This introduction to the garden lesson is an opportunity to review tool safety, hand washing, and garden rules that you will be reinforcing throughout the year.

Materials
- Samples of soil and dirt in containers
- Drawing materials and Introducing Dirt worksheets in the student workbooks

Activity 1: Safe Play with Dirt
Welcome students to the kinder-garden. Review rules and safety practices. Take students on a guided tour of the garden. Invite students to touch the dirt and use descriptive words to describe what they observe.

Ask:

- What would you like to know about dirt?
- What role does dirt play in our garden?
- How will we handle dirt in the garden?

Explain that we have dirt in the garden. Dirt is what soil is made of. Soil also has other living things in it, like compost and bugs. Soil is essential for life. Plants need soil to grow, animals and insects make it their home, and children can have fun playing in it. There are safe ways to play outside, and touching the soil is not harmful.

Ask:

- What are some things in the dirt that are yucky?
- When we play outside, what parts of our bodies can get dirty? (Hands, face, shoes, clothes, etc.)
- After playing in the dirt, what do you do to get the dirt off? (Stomp-a-stomp, brush-a-brush, scrub-a-dub)
- What else can we do to make sure dirt stays outside? (Take off our shoes—if allowed)
Common Core State Standard SL.K.3
Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

Invite students to draw on the cover of their workbook. Prompt them to draw something that they wonder about or are excited to explore in the garden this year. Direct them to include what they learned about dirt and what they want to know more about dirt (dirt is the foundation of most early education lessons).

Activity 2: Singing “Be Alert in the Dirt”
Lead students in a song about playing safely and healthfully in the dirt:

“Be Alert in the Dirt”
By Tickle Tune Typhoon
After playing in the yard, the playground or the park
Give your hands a scrub-a-dub (echo) and leave the dirt outside
(Wash hands)
Give your hands a scrub-a-dub (echo)
(Wash hands)
Give your clothes a brush-a-brush (echo)
(Brush off clothes)
Give your shoes a stomp-a-stomp (echo) and leave the dirt outside
(Stomp feet)
CHORUS
Herbicides, pesticides, and toxics you don’t want inside
Precaution is the word and remember to not eat the dirt
Wash your fruit and vegetables so tasty and delectable
The garden’s where you grow ‘em, wear gloves when you dig ‘em and hoe ‘em
And remember to not eat the dirt
Oh bright colors of life filled with love sing and dance all around us to show that we care.
Yes the colors of all the children are circling round the green Earth that we share
Soil everywhere we can learn to be aware
For safety here and there be alert when you play in the dirt
CHORUS
Give your hands a scrub-a-dub (echo)
(Wash hands)
Give your clothes a brush-a-brush (echo)
(Brush off clothes)
Give your shoes a stomp-a-stomp (echo) and leave the dirt outside
(Stomp feet)
Scrub-a-dub (echo)
(Wash hands)
Brush-a-brush (echo)
(Brush off clothes)
Stomp-a-stomp (echo) and safely play outside
(Stomp feet)

**Activity 3: Cleaning Up Dirt**

Group students in a circle and read them the book, “Be Alert in the Dirt,” which is available in the school library. Follow discussion questions from the back of the book. Students share how they are alert in the dirt. Encourage students to agree that the boy needs to wash his hands.

**Common Core State Standard R1.K.1**
With prompting and support, ask and answer questions about key details in a text.

Show hand washing steps:

1. Wet hands with water.
2. Put soap on hands and make bubbles.
3. Rub hands together for 20 seconds. Try singing a song like the ABCs or counting to 20.
4. Wash off soap with water.
5. Dry hands with a towel or use an air dryer.

Teach children the parts of their hands they need to wash: palms, backs, between fingers, under nails, and wrists.

**CA Health Standard 1.1.P**
Identify effective personal hygiene practices.
CA Health Standard 7.2.P
Demonstrate ways to prevent the transmission of germs (e.g., washing hands, using tissues).

Student Reflection

We wash our hands after playing in the dirt. When else do we wash our hands?

English Language Learning (ELL) Focus: Synonyms

- Be alert
- Be careful
- Be aware

Additional Information

- “Gregory, the Terrible Eater” by Mitchell Sharmat
- “Scarlette Beane” by Karen Wallace
- “Be Alert in the Dirt” by Tickle Tune Typhoon
- “Wash Your Hands!” by Tony Ross
- “Dirt and Grime Like You've Never Seen!” by Vicki Cobb
- “Those Mean Nasty Dirty Downright Disgusting but . . . Invisible Germs!” by Judith Rice

Sources

“Be Alert in the Dirt,” by Tickle Tune Typhoon
What We Learned in the Garden

Objectives/Assessment Targets

Students will:

- Observe wind streamers and bubbles to identify direction and speed of the wind.
- Sort various animals according to their natural habitats.
- Describe various natural objects.

Activity Preparation

This lesson is a review of content. It can be used to check in with students about what they have learned thus far. Check in with students mid-way, or at the end of the year. This lesson can be used to better understand which lessons to dive deeper into, and which lessons may be more appropriate for each class of learners.

Prepare a large piece of cardboard for students to collectively create a collage that expresses the current season.

Materials

- Bins or other containers
- Animal and plant visual aids or models
- Drawing materials
- Wind streamers and/or bubbles
- Season chart (optional)

Activity 1: Reviewing Weather and Climate

Students use wind streamers and bubbles to observe the direction and speed of the wind. Prompt students to notice how fast the wind is going, whether it changes direction, and whether it is warm or cold.

Ask, What season is it and what is the wind like today?

NGSS Disciplinary Core Idea ESS2.A: Earth Materials and Systems

Wind and water can change the shape of the land.
NGSS Disciplinary Core Idea ESS2.D: Weather and Climate
Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.

Activity 2: Reviewing Animals (Preschool)
Gather model animals/insects and large bins, boxes, or baskets. Place the models in three piles on one side of the room. Place large bins on the other side of the room with labels of different places (homes) in the garden. In pairs, students run to a pile, choose an animal, and get it to its “home.”

NGSS Disciplinary Core Idea LS4.D: Biodiversity and Humans
There are many different kinds of living things in any area, and they exist in different places on land and in water.

Activity 3: Reviewing Nature
Demonstrate what a natural object is by showing examples found in the garden. Let students know that they will be asked to collect natural objects that they find in the garden. Explain that natural objects are produced by nature, like bark, leaves, and not man-made, like plastic or paper.

Prepare tubs for student to place their found objects and sort accordingly (pine cones, rocks, dried herbs, bugs). Students use their senses to describe what they have found. Invite pair sharing or group sharing. Prompt students to match what they have found with visual aids or examples of similar objects in the tubs.

NGSS Disciplinary Core Idea ESS3.C: Human Impacts on Earth Systems
Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.

Student Reflection
What is your favorite thing that you learned in the garden?
Additional Information

Prompt students to use their site words to describe objects. Check in with teachers to learn the site word for the week.

English Language Learning (ELL) Focus: Commonalities

- I like the garden because __________.
- My favorite thing about the garden is __________, because __________.

Sources

Preschool Plan It, PRESCHOOL-PLAN-IT.COM
Seed Sorting and Planting

Objectives/Assessment Targets

Students will:

- Plant seeds using measuring tools.
- Describe seeds using the five senses.
- Compare the color, shape, sound it makes when shook, and texture of a variety of seeds.
- Sort seeds according to likeness.

Activity Preparation

This lesson gets students to practice sorting, organizing, and making lists while in the natural environment. It introduces the idea that we eat seeds, and we also use them to make other plants, thus more seeds.

Prepare a basket of bean and seed samples (coconuts, beans, poppy seeds, etc.). Cut egg cartons in half (so there are six holes). Mark the sides of egg cartons (brown for wood, green for leaves, etc.).

Materials

Materials will vary depending on the activity you choose.

- Egg cartons with color coded egg shells, one for browns, greens, etc.
- Glue
- Seeds (coconuts, bean pods, 6 pack seed containers
- Bucket of soil and tarp or floor paper
- Rulers

Activity 1: Looking at Seeds

Prompt students to use all five senses to explore seeds. Students listen to the seeds while shaking them, feel their shapes and textures, and notice their colors and shapes. Prompt students to share what they have observed about the seeds in the basket.

NGSS Crosscutting Concept: Patterns

Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.
Read a book about seeds and germination. Emphasize that seeds, like us, need natural resources to grow.

**NGSS Disciplinary Core Idea LS2.A: Interdependent Relationships in Ecosystems**
Plants depend on water and light to grow.

**NGSS Disciplinary Core Idea LS2.A: Interdependent Relationships in Ecosystems**
Plants depend on animals for pollination or to move their seeds around.

**Activity 2: Planting Seeds**
Students line up to plant a seed in the soil. Demonstrate how to use a ruler to identify the distance between seeds and how deep to plant their seeds.

**Ask:**
- How far apart do we need to plant the seed?
- How deep in the soil do we need to plant the seed?
- What do seeds need to grow?
- What will happen to these seeds when you come out to the garden next time?

**NGSS Science/Engineering Practice 3: Planning and Carrying out Investigations**
Make predictions based on prior experiences.

**Activity 3: Sorting Seeds**
Distribute egg cartons for students to collect things that are brown, green, round, etc. Students identify the different shapes and colors of seeds or garden life and sort them in the right egg shells, according to the color or label (for kindergarten and above) on each.

**NGSS Crosscutting Concept: Structure and Function**
The shape and stability of structures of natural and designed objects are related to their function(s).
**Activity 4: Worm through the Apple (Optional physical activity if time allows)**

Students stand in a straight line with their feet apart. The child at the end is the “worm.” They crawl through the “apples” (other children spread their feet and legs so the “worm” can crawl through). When the “worm” reaches the front of the apple line, the next person in line becomes the “worm.”

Cut open four to five apples and count the number of seeds total.

**Ask:**
- Does each apple have the same amount of seeds?
- Which has more? Less?
- What part of the apple does the worm eat?

**NGSS Crosscutting Concept: Scale, Proportion, and Quantity**
Relative scales allow objects and events to be compared and described (e.g., bigger and smaller; hotter and colder; faster and slower).

Make a list of the different kinds of apples. Sing “Apples Up On Top.”

**Activity 5: Planting Seeds (Indoor activity)**

Show students the bin of amended soil. Invite them to feel it using their five senses. Demonstrate how to fill 6 plant start packs with soil, poke a hole in the center of each pack with a finger, place a seed in each hole, and then cover with more soil.

**Ask:**
- What is a seed?
- What is a seed used for?

**NGSS Disciplinary Core Idea LS1.B: Growth and Development of Organisms**
Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.

Take seed packs outside, if possible. Have students water the seeds with watering cans, allowing each to take a turn.

**Ask:**
- What will happen to your seed when you see it next?
• How will you take care of it so it grows up big and strong?

Student Reflection
What did you find today? What color was it? What shape was it?

English Language Learning (ELL) Focus: Adjective Placement
• I see brown seeds.
• I found red flowers.
• I saw long sticks.

Additional Information
“A Seed Is Sleepy,” by Dianna Hutts Aston

Sources
“Grow It Try It Like It,” by the USDA’s Team Nutrition
Tops and Bottoms: Edible and Inedible

Objectives/Assessment Targets
Students will:

● Identify different parts of plants as growing above or below ground and as edible or inedible.
● Identify the different functions of leaves, stems, and roots in supporting a plant.

Activity Preparation
This lesson introduces the plant parts, highlighting the parts that are edible and those that are not. It also informs students about how to safely and respectfully pick and taste plants growing in our gardens.

Prepare samples of different types of edible plant tops and bottoms (leaves and roots) that are washed and sliced for tasting. Including edible and inedible, preferably those found growing in the garden for matching activities, to show students the difference.

Materials

● Nature cards or CA Nutrition Network Fruit and Vegetable Cards for tops and bottoms relay
● Samples of plants with leafy tops and those with big roots
● Cutting board and knife for slicing tastings

Activity 1: Telling Stories about Plant Parts
Review plants that are growing in the garden, noting those that are ready to be harvested. Describe the parts of the plants, highlighting those that we can eat and those that we cannot. Pass around samples of plants, pointing out the parts that grow above ground and those that grow below ground. Show students the fruit and vegetable cards as examples of plant parts we eat and those we don’t eat. Read the stories “Tops and Bottoms” and “Growing Vegetable Soup.”

NGSS Disciplinary Core Idea LS1.A: Structure & Function
All organisms have external parts. Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

Ask:

● What is your favorite vegetable?
● Does it grow above or below ground?
• Does it have a part that we cannot eat?
• Which part do we eat?
• How do you prefer to eat it (cooked, raw, sliced, or dipped)?

Demonstrate how to plant vegetable starts with the roots (bottoms) embedded in the earth.

**Activity 2: Tops and Bottoms Relay**

Move students to the playground or open space where they may run freely. Explain that you will hold up a series of cards with pictures of foods that grow above the ground (tops) or below the ground (bottoms). As you hold up each food, the students will run (or walk, skip, jump) into the area of the yard, etc. marked as Tops or the area marked as Bottoms, depending on which part of the plant the food comes from. Demonstrate a few times with student volunteers as you hold up a picture and have them follow you to the correct area.

Once students understand the directions, begin the game.

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<td>Explain that nutritious food provides energy for physical activity.</td>
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**Student Reflection**

Where does your favorite fruit or vegetable grow? Is it found in our garden? Does it grow above or below ground?

**English Language Learning (ELL) Focus: Identifying and Lists**

• Sometimes we eat the **root** (such as beets, carrots, radishes)
• Sometimes we eat the **flower** (such as broccoli and cauliflower)
• Sometimes we eat the **leaf** (such as cabbage and lettuce)
• Sometimes we eat **stems** (such as asparagus and celery)
• Sometimes we eat the **fruit** (such as blueberries, cherries and apples)
• Sometimes we eat the **seed** (such as pomegranates and pumpkin seeds)

**Additional Information**

These books help young students relate and understand content through narratives. The ELL focus above is helpful to reference during and after reading these stories.

• “Eating the Alphabet,” by Elois Ehlerts
• “Tops and Bottoms,” by Janet Stevens
• “Oliver’s Vegetables,” by Vivial French
• “Roots, Stems, Leaves” song, by The Banana Slug String Band

**Sources**

Exploring Food Together, Share Our Strength’s Cooking Matters, July 2013
Harvest of the Month Curricula, Farm to Preschool, Urban and Environmental Policy Institute, Occidental College

Figure 1 Life Lab, Linking Science and Nutrition, California Healthy Kids Resource Center, Network for Healthy California
Nutrient Cycles

4Rs Relay Race

Objectives/Assessment Targets

Students will:

- Use hand gestures to review the 4Rs.
- Sort 4Rs materials.

Activity Preparation

This lesson introduces the concept of natural resources and the practice of taking care of our Earth by reducing, reusing, recycling, and composting.

Prepare a whiteboard with images of the 4Rs or print the labels below. Prepare sample materials for each of the 4Rs (cleaned garbage, plastic containers, paper, food scraps, etc.). Clean sorting bins. Add labels on the bins for recycling, trash, and compost.

Materials

- 4Rs signs and four bins with labels (Reduce, Reuse, Recycle, Rot)
- Samples of things that we throw in the trash, recycle, and compost placed in bags

Activity 1: Reduce, Reuse, Recycle, Rot

Students share where they think trash goes when placed in trash cans, where recycling goes, etc.

Ask:

- Where does trash go after we throw it in the trash can?
- What happens to food scraps when placed in the trash, the compost bins, or piles in the garden?

Write each R on the whiteboard. Demonstrate how to remember each R and practice by showing them the associated hand gestures.

- **Reduce** (one arrow pointing right, one pointing left): two hands moving from far apart to close together.
- **Reuse** (one arrow pointing left, one pointing right): hand moving from the right to the left and back, then hand moving from the left to the right and back.
- **Recycle** (two arrows in a circle): hands moving in a circle.
- **Rot (Recover)** (two arrows pointing down): hands moving down.
- The optional fifth R is **Refuse** (shaking your hand or finger back and forth).

Practice the hand gestures together with the full class.
Ask, How will you remember to reduce, reuse, recycle, or rot (compost)?

**CA Health Standard 1.5.P**

Identify practices that are good for the environment, such as turning off lights and water, recycling, and picking up trash.

**Activity 2: Sorting 4Rs**

Students sort materials according to each of the 4Rs. Hold up an example of an item under each category and engage students in identifying the appropriate action and then throwing it in the right bin. Each student takes a turn placing items in the right container.

Ask, What will we all do before we throw something away? (Think!)

**NGSS Disciplinary Core Idea ESS3.C: Human Impacts on Earth Systems**

Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.

**Activity 3: 4Rs Relay Race**

Students line up in four lines for a 4R sorting relay race. A sorting bag is placed at the beginning of each line. The first students in line grab an item from the bag, observe it and identify whether it is something to throw in the recycle, trash, or compost bin. They then race to the correct bin, throw the item in, race back to the line, and tag the next student, who with then repeat the process.

**CA Physical Education Standard 3.1**

Participate in physical activities that are enjoyable and challenging.

**Student Reflection**

Students will repeat, “Think Before You Throw!”

**English Language Learning (ELL) Focus: Preposition of Time**

- Think **before** you throw.

**Sources**

Do the Rot Thing
Green Schools Initiative
Stopwaste.org
Figure 2 BUSD Green Star Schools Signs, Green Schools Initiative
Introducing Worms

Objectives/Assessment Targets

Students will:

- Handle worms with care.
- Describe worms, including how they look, feel, etc.
- Collect material for composting and add to compost piles.

Activity Preparation

This lesson introduces students to worms, a big part of our compost cycle. The activities instruct students on how to respectfully handle living things, be brave when exploring the natural environment, and begin to closely observe and describe what they observe. This lesson can also be done inside with large sheets of butcher paper covering the floor for students to sit on and explore worms.

Add worms, rocks of different sizes, wood chips, and plant debris to the bucket so all students can find something. Provide a piece of butcher paper for the floor or tables, damp and dry paper towels for holding the worms, compost, and microscopes. Draw a chart that has a column for “Friends of the Garden” and a column for “Foes of the Garden.” Add rows below for students to add pictures identifying friends and foes.

Materials

- Worm anatomy visual aid
- Wet and dry paper towels and butcher paper, if working inside
- A bucket of amended soil with added materials
- Magnifying lens
- Red Wriggler worms (found at Berkeley Bait and Tackle Shop, 2221 San Pablo Ave.)

Activity 1: Exploring Worms

Describe the five senses that students will use to make observations (touch, sight, smell, etc.).

CA Health Standard 1.6.G
Name and describe the five senses.
Initiate the gentle handling of the worms by placing several of them on the back of your hand. Show students how the worms tickle, rather than hurt! Provide student pairs or small groups with worms on damp paper towels. Spread the wigglers out so that the students can handle and observe them, using magnifying lens to investigate.

**Activity 2: Building Worm Habitats**

Students collect leaves and other brown and green items and add them to the compost pile. Students use shovels to mix the compost pile, adding air to help the compost turn into a good “soil helper” for worms.

**NGSS Disciplinary Core Idea ESS3.A: Natural Resources**

Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.

**Ask:**

- Why do we compost?
- What can we compost?
- What role do the worms play in our compost pile?

**Activity 3: How Long Is A Worm? (A physical activity)**

Draw a large chalk worm on the ground. Guide students to walk along the edges of the outline. Instruct them to think about how it takes them to get from one end to the other. Next, line students up to race from one end of the worm to the other.

**Ask:**

- How long is our playground worm?
- How long is a real worm?
**Common Core State Standard K.MD.A.1**  
Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

**Student Reflection**  
How did it feel to handle worms?

**English Language Learning (ELL) Focus: Clarifying Meaning**
- What does a worm **look** like?
- What does a worm **like**?

**Additional Information**
- “Wonderful Worms” by Linda Glaser

**Sources**
The Worm Café, Mid-Scale Vermicomposting of Lunchroom Wastes, by Binet Payne
What Is Soil Made Of?

Objectives/Assessment Targets

Students will:

- Observe and describe soil samples.
- Describe functions of soil, stating why it is important for plants.

Preparation

This lesson invites students to get more comfortable handling soil and understand the difference between soil and dirt. It also makes the connections between the different plant parts and role that soil plays in helping them.

Prepare buckets of amended soil samples (add rocks of different sizes, wood chips, plants, and worms to the bucket so students can find items). Prepare a glass jar with amended soil, add a plant with roots, and press the roots up against the glass so students can observe the components and structure.

Materials

- Glass jar with soil and plants and roots placed inside it (Make sure the roots are pressed up against the glass so students can observe the structure and function.)
- Small containers of amended soil

Activity 1: Looking Closely at Soil

Show students a clear jar of soil and roots pressed up against the glass. Review past lessons on worms and tops and bottoms, highlighting that both plants and worms rely on soil.

Demonstrate that soil helps the roots to hold the plant upright. The soil absorbs water and food for the plants to suck up through its roots to the leaves.

Ask, Which senses can you use to describe what is in this container? (sight, smell, hear, touch)

Help students shovel out scoops of amended soil from a bucket and place them on mats or piles in front of them. Instruct students to pull out items they find, identify them, and talk.
about why they are in soil and why they are important to soil. Direct them to look closely at
the soil; smell it, rub it between their fingers, and listen for any sounds that may make.

**Ask**, What word would you use to describe it the best?

**NGSS Science/Engineering Practice 3: Planning and Carrying out Investigations**
Make observations (firsthand or from media) to collect data that can be used to make
comparisons.

Students pair-share what they see in their piles of soil. Guide them as they draw the
different components of soil in their workbooks.

**Ask**, What soil is made of? (Minerals, organic material, air, water, living things)

**NGSS Science/Engineering Practice 4: Analyzing and Interpreting Data**
Use and share pictures, drawings, and/or writings of observations.

Ask:
- How many rocks, insects, plant parts, wood chips, etc., did you find in your pile?
- What is similar/like each other and why?
- What is dissimilar/different from each other and why?

**NGSS Science/Engineering Practice 5: Using Mathematics and Computational Thinking**
Use counting and numbers to identify and describe patterns in the natural and designed
world(s).

**Student Reflection**
What did you find in the soil? Why does it live in the soil?

**English Language Learning (ELL) Focus: Prepositions**
- Creatures live **in** the soil.
- Creature like the soil **because** __________ .

**Sources**
Life Lab, The Growing Classroom, “Sensory Soil”
Growing Vegetable Soup

Objectives/Assessment Targets

Students will:

- Plant seeds in soil.
- Water plants.
- Weed plants.

Activity Preparation

This lesson invites students to gain ownership of their garden by choosing what they would like to plant, help grow, harvest, and taste. This lesson also introduces nutrition concepts and the importance of eating fresh vegetables.

Consider teaching this lesson in the early fall or spring, when planting certain seeds in the soil is best. Prepare bowls of soil, egg cartons, and seeds for students.

Materials

- Egg cartons
- Seed packets (a variety of vegetables for students to choose)
- Soil
- Watering cans and water spray bottles

Activity 1: Planting Vegetables

Prompt students to think about what is growing in the garden. Read the book, “Growing Vegetable Soup.”

Ask:

- What season is it right now?
- What is growing in the garden?

Tell students that they will now make their own vegetable soup by planting seeds in the garden. Show students the seed packets. Direct them to choose the seeds that they would like to add to their vegetable soup once they grow into plants.

Ask, What should we add from our garden to this soup recipe?

Students fill the egg carton cups with soil, plant a seed, and then spritz the seed start with water from a water spray bottle. Explain that soil needs to be mixed around to allow for air and moisture to get in. Students use their shovels to mix the soil in all of the boxes.
**NGSS Science/Engineering Practice 1: Asking Questions and Defining Problems**
Ask and/or identify questions that can be answered by an investigation.

**NGSS Disciplinary Core Idea LS2.A: Interdependent Relationships in Ecosystems**
Plants depend on water and light to grow.

**Ask:**
- What do you think will happen to the seed starts over time?
- What will you see tomorrow, the day after, and in a week?

**Activity 2: Weeding and Watering Plants**
Tell students that we need to care for the seeds we just planted in the garden. All living things need sunlight, water, and good nutrition. Refer back to the story, “Growing Vegetable Soup,” describing that seeds and plants, like us, need food to grow. Divide students into groups. One group will water and one group will weed.

Describe what a weed is and what a helpful garden plant is. Demonstrate how to pull out weeds without pulling out the helpful soil. Show students how to identify what a weed is. Prompt students to guess how much water the plants need.

**NGSS Disciplinary Core Idea LS4.D: Biodiversity and Humans**
There are many different kinds of living things in any area, and they exist in different places on land and in water.

**Student Reflection**
What plants did you plant today? Are you looking forward to eating them? Have you tried eating them before? What did you like or dislike about them?

**English Language Learning (ELL) Focus: Nouns to Verbs**
- Plants, planting
- Weeds, weeding
- Water, watering

**Sources**
“Growing Vegetable Soup,” by Lois Ehlert
Changing Seasons

Objectives/Assessment Targets

Students will:

● Name the four seasons.
● Identify and describe the current season.
● Collect objects from the garden that reflect the current season.

Activity Preparation

This is a great indoor activity that can be taught during rainy days. Draw symbols of each of the four seasons on the whiteboard (winter: rain, spring: seedlings, summer: sun, fall: changing leaves falling to the ground).

Materials

● Four index cards, labeled 1. Spring, 2. Summer, 3. Fall, and 4. Winter
● A picture of the sun
● A globe (usually found in the classroom)
● Samples of different models, drawings or natural objects representing the season.

Activity 1: Looking at the Seasons in the Garden

Review the Earth's cycle and the resulting seasons using the four-season symbols. Model how the Earth rotates around the sun, so the amount of sunlight hitting each part of the Earth changes as it moves.

NGSS Disciplinary Core Idea ESS1.A: The Universe and its Stars
Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.

NGSS Disciplinary Core Idea ESS1.B: Earth and the Solar System
Seasonal patterns of sunrise and sunset can be observed, described, and predicted.

Invite a student to hold a sun, invite another to hold a globe. Direct the globe to circle around the sun. Different weather is caused by different positions of the Earth (globe) around the sun. Weather is the results in combinations of sunlight, air, temperature, and moisture in a particular place during a certain time of the year.
Ask:

- Is it sunny out today?
- What season is it?
- What happens to plants in the garden during spring, summer, fall, and winter?
- Why is it important for gardeners to know what happens in each season?

**NGSS Disciplinary Core Idea ESS2.D: Weather and Climate**
Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.

Students pair up to collect objects in the garden (if done outside) that represent the current season. Students share the objects they found and describe why they represent a particular season.

**Student Reflection**
What’s your favorite season?

**English Language Learning (ELL) Focus: Concrete Descriptive Adjectives**
Use color, size, number, and sensory adjectives to describe how things look and feel.

**Sources**
Collectors Corner, The Growing Classroom, Life Lab

### Changing Seasons Chart

<table>
<thead>
<tr>
<th>FALL</th>
<th>SUMMER</th>
</tr>
</thead>
<tbody>
<tr>
<td>WINTER</td>
<td>SPRING</td>
</tr>
</tbody>
</table>


Weather

Objectives/Assessment Targets

Students will:

- Name attributes of weather.
- Use observational vocabulary to describe the different seasons and associated weather.

Activity Preparation

This lesson can be taught before or after the lesson, “Changing Seasons.” Both lessons introduce students to the concept of weather and ask them to use their senses to observe and describe different weather characteristics. The activities help them recall seasons and measure the associated weather characteristics, so teaching this lesson on a day with more extreme weather may be most useful.

Materials

- Rain gauge
- Worksheets with blank pages in student workbooks
- Glue sticks and tape

Activity 1: What Is Weather?

Ask:

- What do you know about the weather today?
- What was it like yesterday?
- Was it different from what it was like at the beginning of school?

Weather changes day to day. Weather has different characteristics, such as rainy, sunny, etc. Read “Maisy’s Wonderful Weather Book,” by Lucy Cousins. Tell students that they will try and measure the current weather characteristics. Prompt students to think about the following:

1. Weather changes from day to day.
2. Weather includes clouds, rain, temperature, and wind.
3. Wind is air in motion. We measure the wind with special tools. Two factors are necessary to specify wind: speed and direction.
NGSS Disciplinary Core Idea ESS2.D: Weather and Climate

Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.

Show students the rain gauge. Demonstrate how to read it so we can measure the amount of rain our garden has received over the last week. Invite students to measure the wetness of the soil by sticking their finger into the ground and seeing how deep their finger has to go before they feel dry soil.

Direct students to use their worksheet, Weather, on page 10 in their workbooks to make a collage or picture with the natural objects they found in the garden. Prompt them to use objects that represent the current weather characteristics. Show students examples of natural objects found in the garden that represent the current weather. Direct them to collect similar objects and come back to the group. Provide them with tape of glue and instruct them to fasten their objects to their worksheet to make a picture.

NGSS Disciplinary Core Idea ESS2.A: Earth Materials and Systems

Wind and water can change the shape of the land.

Student Reflection

How does weather affect decisions you make about the clothing you wear and the activities you do? How does the weather help or harm our garden?

English Language Learning (ELL) Focus: Routine Questions

- What's the weather like today?
- What's the weather outside?
- How's the weather?
Watering the Garden

Objectives/Assessment Targets
Students will:

● Identify at least three ways plants get the water they need to grow.
● Test soil moisture and repeat how we know when plants need watering.

Activity Preparation
This lesson may be best for warmer days when you plan on doing a lot of watering. This lesson provides a structure for kids to use watering cans to water the garden. Fill up a wheelbarrow with water and place small watering cans inside it for kids to easily grab and refill. Identify plants in the garden that need watering and place a marker next to them so kids know where to test soil for moisture in the activities below.

Materials

● Watering cans
● Workbooks and clipboards with pencils for each student
● Dry soil and dry plants

Activity 1: Searching for Water
Review that plants need water, sun, and soil to live. Ask students to repeat this.

Plants depend on water and light to grow.

Ask:
● How do we know when a plant needs water?
● Where do we get water for our plants?

Review lessons on seasonality and weather. Highlight the season we’re in now and the different weather characteristics of that season.

Ask, Has it rained lately?

Activity 2: Watering the Garden
Prompt students to think about ways gardeners water their plants when it doesn’t rain (irrigation, hoses, sprinklers, etc.). Show students what dry soil and dry plants look like. Guide them on a tour in the garden, noting the dry spots that need water. Demonstrate how
to use your finger to test for soil moisture. Invite students to model your demonstration a couple times. Hand out watering cans to each pair of students and assist them in watering the garden.

**NGSS Disciplinary Core Idea ESS3.C: Human Impacts on Earth Systems**
Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.

Prompt students to:

1. Find something that is wet and something that is dry.
2. Stick your fingers in the soil and think about how wet it is.

If inside direct students use their worksheet, Watering the Garden, in their workbooks to answer the following questions:

- How Do Plants Get Water
- Find something that is wet. What is it?
- Find something that is dry. What is it?

Prompt them to consider water cans, rain, hose, etc. Students consider the time of year the garden needs more water, adding additional lists or drawings about this if there's time.

**NGSS Disciplinary Core Idea ESS2.C: The Roles of Water in Earth’s Surface Processes**
Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.

**Student Reflection**
Which season brings the garden the most rain? Do we need to water the garden then?

**English Language Learning (ELL) Focus: Adjective Placement**

- The **wet soil** does not need more water.
- The **dry soil** needs more water.

**Sources**
Ocean Literacy, Oregon Coast Aquarium, Newport
Shadows

Objectives/Assessment Targets

Students will:

- Draw each other's shadows by tracing their outline on the ground.
- Model how the position of the sun affects the shape and location of shadows.

Activity Preparation

This lesson is best taught in the spring of fall, when the sun is at an angle, and during the day when there's enough light casting shadows. The activities dive deeper into topics about weather and seasons.

Identify a place in the garden or yard that has enough space and a hard surface for chalk drawing. This could also be done on a large white paper placed on the ground with markers.

Draw a chart on the whiteboard with two categories. Use the titles “What we know about shadows” and “What we want to know about shadows.” You can use this list for reference throughout the year, revisiting the list of all the things students wanted to know at the end of the year.

Materials

- Chalk or markers
- Large white paper (optional)
- Storybooks about shadows and seasons (listed in Additional Information)
- Small globe for modeling the Earth’s position around the sun

Activity 1: The Earth and the Sun

Review past lessons about weather and seasons. Prompt students to talk about what they know about the sun and shadows.

Ask:

- What do you know about shadows? (They are made from the sun)
- How do you know it? (I can see the shadows reflected from the trees or myself)
- What do you want to know about shadows?
NGSS Science/Engineering Practice 1: Asking Questions and Defining Problems
Ask questions based on observations to find more information about the natural and/or designed world(s).

Model how the Earth rotates, or spins. Define sunrise, day, noon, sunset, and night as the Earth spins. Position students so they can act out the Earth’s rotation:

- 1 student stands in the center of the room. They are the sun.
- 1 student holds the globe and rotates around the sun. They stop at each season to adjust their tilt.

![Diagram of Earth's rotation](http://www.physicalgeography.net/fundamentals/6a.html)

**NGSS Disciplinary Core Idea ESS1.A: The Universe and its Stars**
Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.
Activity 2: Drawing Shadows

Fill in the chart "What We Know," and "What We Want to Know." Read one of the storybooks in the Additional Information section.

Sunshine is the source of shadows. (Emphasize that people should never look at the sun directly because their eyes can get damaged.) Review the following points:

1. If there is sunshine, there will be shadows.
2. Without the sun, we would not have shadows.
3. If the sun is shining behind us, we will see our shadows in front of us.
4. Shadows are present when an object (or a person) gets between the sun and the surface of the Earth.

Demonstrate how to draw a shadow by following these steps:

1. Note the position of the sun in the sky.
2. Identify a connection between the direction of the shadow and the location of the sun.

NGSS Crosscutting Concept: Cause and Effect
Events have causes that generate observable patterns.

Students partner up and receive chalk before they go into the yard to trace their partner's shadow, following these steps:

1. Partner 1 positions themselves to make shadows.
2. Partner 2 uses the chalk to trace the outline of their partner’s shoes.
3. Switch partners and repeat.

Ask:

- Did anything change in your tracings? What looks different?
- How many of your shadows moved?
- What do you think made the shadows move?

Student Reflection

Ask, How does the sun and shadows affect the plants in our garden?

English Language Learning (ELL) Focus: Location

- in front of us
- behind us
- to the side of us
- high in the sky
- low in the sky
Additional Information

The solar system is not simply a collection of stationary planets, moons, and other bodies around the sun. Each planet rotates, or spins, on its axis.

The rotation of the Earth on its axis causes day and night. As the Earth rotates, only one-half of the Earth faces the sun at any given time. The half facing the sun is light (day) and the half facing away from the sun is dark (night). The animation below shows the Earth’s rotation. Additional reading with your students:

- “The Sun: Our Very Own Star,” by Jeanne Bendick
- “What Makes Day and Night,” by Franklyn M. Branley

Sources

“What Makes Day and Night: The Earth’s Rotation,” by Eye on The Sky

Plant Behavior, Science 2.0, UC Berkeley educators and scientists at the Center for Science Education @ SSL in partnership with classroom teachers.
### Objectives/Assessment Targets

Students will:

- Describe the *similarities and differences* between animals and/or plants found in the garden.
- Model different *ways* animals and/or plants adapt to their environment over time.

### Activity Preparation

This lesson introduces the concept that all living things adapt to their environment over time. It also introduces students to bees as pollinators, connecting the concept that plants adapt (color, shape, size, etc.) to enable pollinators to extract pollen from them to take to other plants.

Collect pictures or examples of plants and animals that have adapted to their environment.

### Materials

- Pictures of different animals and plants
- Flower and pollinator cards
- Cotton swabs or paint brushes to model pollination
- Examples of different flowers growing in the garden

### Activity 1: Pollinators and Flowers Adapt to Each Other

Explain that all living things change according to their environments. For example, insects and animals have adapted to certain pollinating flowers so they can pollinate them better. Plants have also adapted to their pollinators, making it easier for them to get to their pollen and spread it around to other plants. Some plants and animals also adapt to their weather.

*NGSS Disciplinary Core Idea LS2.A: Interdependent Relationships in Ecosystems*

Plants depend on animals for pollination or to move their seeds around.
Tell students that today we will be bee pollinators. Bees can only see the colors green, yellow, orange, blue, violet, and purple, so they prefer flowers with these colors.

**NGSS Disciplinary Core Idea PS4.B: Electromagnetic Radiation**
Objects can be seen if light is available to illuminate them or if they give off their own light.

Show students where some of these colors are. Demonstrate how students will model bee pollinators by gently using cotton swabs to transfer pollen from one flower to the next. Distribute paint brushes or cotton swabs.

**NGSS Science/Engineering Practice 2: Developing and Using Models**
Develop and/or use a model to represent amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s).

**Ask:**
- How have the flowers adapted to help their pollinator?
- Has the pollinator adapted to the flower?

**NGSS Disciplinary Core Idea LS1.B: Growth and Development of Organisms**
Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.

**Activity 2: Matching Pollinators with Plants**
This activity is an alternative to the one above and can be done inside on rainy days. Show examples of adaptations using the flower and pollinator cards. These cards have either a pollinator or a plant or flower picture on it. Invite students to match the pollinator with the flower and explain why they match.

**NGSS Science/Engineering Practice 7: Engaging in Argument from Evidence**
Construct an argument with evidence to support a claim.

**Student Reflection**
What features do you have that help you adapt to your environment?

**English Language Learning (ELL) Focus: Possessives**
A pollinator has ___________.
A flower has ___________.

Additional Information

These are examples of flowers commonly found in our gardens that attract bees:

- Bee balm (Monarda sp.)
- Blackeyed Susan (Rudbeckia hirta)
- Stonecrop (Sedum spp.)
- Goldenrod (Solidago spp.)
- Butterfly Bush – (Buddleja davidii)
- Purple coneflower (Echinacea purpurea)
- Joe-pye weed (Eutrochium purpureum)
- Lavender (Lavandula angustifolia)

Sources

Science and Health Education Partnership, University of San Francisco
Compost Critters

Objectives/Assessment Targets

Students will:

- Identify living things in the soil.
- Sorting living and nonliving things.
- Handle insects and worms carefully.

Activity Preparation

This lesson introduces compost and the FBI that help make compost. The activities can be taught independently of the lesson, Introducing Worms, though scaffolding the two to scale up content may work best.

Prepare containers of amended soil and non-amended soil samples (add rocks of different sizes, wood chips, plants, and some worms).

Materials

- Compost Critter worksheet on page 14 of student workbooks
- Buckets of amended soil and non-amended soil

Activity 1: Digging for Compost

Discuss why worms are so important (their role in decomposition, water/air, burrows or tunnels, and mixing soil). Students shovel out scoops of amended soil from a bucket, pull out items they find.

NGSS Disciplinary Core Idea ESS2.E: Biology

Plants and animals can change their environment.

Students identify living things found in the soil and count how many they find in their workbooks.

Ask:

- What did you find?
- What is it called?
- How many do you see?
- Can you find it on your Compost Critter worksheet? (circle it, if so)
**Student Reflection**

What did you find in the soil? Is it alive or not alive?

**English Language Learning (ELL) Focus: Science Verbs**

- Sorting
- Examining

**Sources**


Kids Grow CA

**Color and Count Critters Found in Soil**
Where Do Animals Live?

Objectives/Assessment Targets

Students will:

- Identify that animals, like all living things, need food, sun, air, and water to live, but they also need shelter.
- Make animal habitats.

Activity Preparation

In previous lessons students learned that all living things need sunlight, air, water, and food. This lesson introduces a new concept that many living things also need shelter. Activity 2 and 3 reference the lesson, Adaptations, and considers that many animals have had to adapt to our urban school garden environments to find shelter.

Gather found natural objects for students to use for making small animal habitats and/or birdfeeders that can be placed in the garden. Students can also gather their own during the lesson.

Materials:

- Found objects from nature for birdfeeders
- Glue
- pinecones
- Birdseed

Activity 1: Who Lives Here?

Prompt students to think about what animals are in the garden, what they like to eat, and where they like to live.

Ask:

- What are the names of the animals that live in our garden?
- Where do they live and sleep in the garden and why?

Students pair up to find various objects in the garden that they think animals would be attracted to. Prompt them to think about the type of animal that would be attracted to these objects and how the animal would use the objects.

Ask:

- Would they use a pine cone for shelter?
Would they eat the dried leaves?

**NGSS Disciplinary Core Idea ESS3.A: Natural Resources**
Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.

**Activity 2: Making Birdfeeders**

Review the lesson, Adaptations. Animals and plants have adapted to growing and living in our urban environment. Provide examples of ways animals have adapted (scavenging for food in dumpsters, eating urban garden seeds, etc.) and how plants have adapted (growing between sidewalk cracks where there is a small bit of sun and water).

**Ask**, How can we make it easier for other animals to get food in our urban environment?

Demonstrate how to make bird feeders out of found objects:

- Pine cones
- Leaves
- Bark
- Birdseed
- Butter
- String

Students affix bird seeds with butter to these found objects. Use string to display the bird feeders in places where students can observe birds in nature, such as on tree branches.

**NGSS Disciplinary Core Idea ESS3.C: Human Impacts on Earth Systems**
Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.

**Activity 3: Ladybug habitat**

This is an extension activity that lets students release ladybugs you may have ordered for your garden. Spring is a great time to order ladybugs from the local garden shop. Show students the ladybug larvae and describe how they will hatch into ladybugs. Tape ladybug larvae release starts onto trees and guide students to set them free.

**NGSS Disciplinary Core Idea LS3.A: Inheritance of Traits**
Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents.
Students count how many ladybugs there are and hypothesize how far they will travel. Throughout the week, students observe the ladybugs, identifying where they land, where they may live, and where they may get food.

**NGSS Science/Engineering Practice 3: Planning and Carrying out Investigations**
Make observations (firsthand or from media) to collect data that can be used to make comparisons.

**Student Reflection**
How do these insects help the garden and how do they hurt the garden?

**English Language Learning (ELL) Focus: Auxiliary Verbs**
- The ladybugs **might** ________.
- **Maybe** the ladybugs will __________.

**Additional Information**
You can order ladybug larvae online at insectlore.com/ladybug-larvae-refill.

**Sources**
Shelburne Farms Early Childhood Development
Shapes in Nature

Objectives/Assessment Targets

Students will:

- Create leaf or bark rubbings or pressings to reveal the features of tree bark and leaves.
- Compare and contrast various shapes, sizes, and textures.
- Observe and describe with all five senses.

Activity Preparation

This lesson can be used for indoor or outdoor instruction. If taught inside, prepare baskets full of collected leaves, flowers, etc. for students to use for rubbings or pressings. This lesson can be used as a culmination or reflective lesson. The activities could also be used for making celebratory cards for family and friends.

Materials

- Butcher paper
- Clipboards to create a hard surface for students to use underneath their worksheets
- Tape
- Crayons
- Double-sided sticky paper
- Small cups for students to collect natural materials

Activity 1: Making Bark Rubs

Assist students as they wrap butcher paper around the trunk of a tree. Distribute crayons and instruct students to rub the butcher paper with their crayons to reveal the sizes, shapes, and textures of the bark. Prompt students to walk around the tree to see what others have done.

*NGSS Science/Engineering Practice 4: Analyzing and Interpreting Data*

Use and share pictures, drawings, and/or writings of observations.

Ask:

- What shapes do you see?
- What textures do you feel?
- What sounds do the rubbings make?
Activity 2: Outlining Shapes in Nature

Students pair up and search for leaves of different shapes and sizes. Distribute crayons and butcher paper to each group. Guide student as they make leaf prints by placing leaves under the worksheets, Shapes in Nature, on page 15 and use the crayons to rub outlines of the leaves.

Students observe the differences and similarities. Prompt students to describe the features of the leaves (smooth or rough, long or short, stems or no stems, etc.).

Common Core State Standard K.MD.A.2
Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.

NGSS Crosscutting Concept: Patterns
Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

Ask:
- What do you notice about the shapes of the leaves?
- What can the shapes of the leaves tell us about the type of tree or plants?
- Why would gardeners want to know the shapes of the leaves?

Activity 3: Flower Press Art

This activity is great for making Mother’s or Father’s Day cards. Students pair up to pick flowers and colorful leaves for flower pressing art. Distribute double-sided sticky paper and demonstrate how to press flowers onto the paper, cover the paper with the sticky side, and then press.

Activity 4: Eye Spy in Nature

This is an extension activity is students need to refocus with additional activities for small groups. Prompt students to play Eye Spy in Nature, an outdoor game that asks students to use their senses to observe their surroundings. Students use their eyes to identify clouds, trees, leaves, and soil according to prompts; use your nose to smell flowers, use your fingers to feel bark, and use your taste buds to try fruit.
**CA Health Standard 1.6.G**

Name and describe the five senses.

**Student Reflection**

What natural objects did you collect? How did you use them to make art? What did you observe, or notice about them?

**English Language Learning (ELL) Focus: Concrete Descriptive Adjectives**

Use adjectives for color, size, and the senses to describe how objects look, feel, and sound.
Eat a Rainbow

Objectives/Assessment Targets

Students will:

- Name at least two health benefits of fruits and vegetables.
- Taste different fruits and vegetables.
- Assemble different fruits and vegetables to make an edible design.

Activity Preparation

This nutrition lesson can be taught indoors or outside. The lesson introduces students to the importance of eating many different types of whole fruits and vegetables. It invites students to try new things that they grew themselves and sets the stage for future lessons about fiber, vitamins, and minerals.

Set up workstations with collage materials and the salad recipe below for small groups.

Materials

- Rainbow salad recipe
- Fruit and veggie cards (Harvest of the Month)
- Large butcher paper
- Pencils
- Scissors
- Colored construction paper
- Samples of fruits and veggies of different colors (sliced for tasting)
- Small bowls for tasting and large bowls for mixing the salad

Activity 1: Making a Fruit and Veggie Rainbow

Ask, Have you ever eaten a rainbow?

Show students the fruit and veggie cards (or samples of colorful fruits and vegetables). Demonstrate how to describe the colors and shapes of each fruit and veggie. Share the sliced veggies and invite students to taste each color.


All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.
Review the benefits of each color below, using hand gestures for each. Students repeat your movements:

- Red helps my heart.
- Orange and yellow help my eyes.
- Green helps my eyes, my teeth, and my bones.
- Purple and blue help my brain.
- White helps my heart.

**CA Physical Education Standard 4.3**
Explain that nutritious food provides energy for physical activity.

**CA Health Standard 6.1.N**
Make a plan to choose healthy foods and beverages.

Tell students that they will now make their own rainbows. Students use their worksheet, Eat A Rainbow, on page 16 to arrange the fruits and veggies (seeds are a fun addition). Demonstrate how to make a fruit and veggie rainbow or design by placing the sliced foods. Describe what each fruit and veggie does for our health and what part of our body it supports most.

**Student Reflection**
What colors of the rainbow did we should eat?

**English Language Learning (ELL) Focus:**
Descriptive words using senses

- Sight, color, shape, size
- Touch, texture
- Sound, rattle, shake
- Smell, sweet, earthy

**Sources**
“Grow It, Try It, Like It,” Team Nutrition

Figure 7 Fruit and veggie design at an Early Child Education Center School Garden
Plants for Breakfast

Objectives/Assessment Targets

Students will:

- Identify different plant parts (roots, stems, leaves, flowers, fruits, seeds).
- Identify different shapes
- Try a seasonal fruit or veggie.

Activity Preparation

This lesson scales up the first nutrition lesson, Eat a Rainbow. It encourages students to eat whole fruits and vegetables and reinforces the importance of choosing these foods over processed foods with added sugars.

Materials

- Samples of plants with leaf, stem, root, flower, and seed for each student
- Seasonal fruit or veggie for tasting
- Plants for Breakfast worksheet and coloring materials

Activity 1: Trying and Describing New Fruits/Veggies

Ask:

- What did you have for breakfast this morning?
- Have you ever eaten plants for breakfast?

Remind students that many common breakfast foods are made from plants. The muffin you ate is made from wheat seeds and the raisins in your cereal are fruits.

Review the seasonal fruit or veggie you brought. A Fruit is a Suitcase for Seeds.

Create a 2 column chart, one column to describe the “outside” of the ___ and one to describe the “inside.”

Ask, Can you describe the outside of the ___ size, color, shape, texture, smell, etc.?

Record their observations in the “outside” column.

Cut one ___ in half horizontally to make a round (circle) shape. Pass the ___ around.

Ask, Can you describe the inside of the ___: size, color, shape, texture, smell, etc.?

Record their observations in the “inside” column.

Ask:
Can you find the seeds? (They are the little black things in the middle.)
Do we eat the seeds? (Yes! They are so small it’s ok to eat them.)

Explain that ___ grow from seeds and the seeds come from inside the fruit. The plant will grow flowers and then the ___ will grow where the flowers were.

Cut another ___ in half vertically to make an oval shape. Display the two shapes made.

Ask, Can you name the shapes?

Cut each ___ into quarter shapes; give each student a piece of fruit/veggie to taste. Challenge students to try new things.

Ask:
- Did you like this ___ (name the seasonal fruit or veggie)?
- What did you like/not like about it?
  Have students put a sticker on either the “I Like This” or “I Don’t Like This Yet” columns of the taste test sheet, or have them write or initial their name if they are able to do so.

**NGSS Disciplinary Core Idea LS1.A: Structure & Function**
All organisms have external parts. Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

**NGSS Crosscutting Concept: Systems and System Models**
Objects and organisms can be described in terms of their parts.

**Student Reflection**
What breakfast choices come from plants? What is your favorite breakfast plant part?

**English Language Learning (ELL) Focus: Routine Questions**
- What did you have for breakfast?
- What did you have for lunch?
- What did you have for dinner?

**Sources**
Farm to Preschool, Harvest of the Month Curriculum, Urban and Environmental Policy Institute, Occidental College, 2012