

New Plants

New Plants > Investigation 1: *Brassica Seeds* >

Part 1: *Introducing Recording*, page 8

Adopt a Plant

Boston Schoolyard Initiative Extension

When to Go Out

Following Part 1, take students outside to select a schoolyard plant that they will observe over the next few weeks.

Outdoor Objective

Students will observe plant growth, development, and change over time in new and mature plants found in the schoolyard. Students will discover that the plants they see growing outdoors have the same characteristics as the plants in the classroom.

Materials

For Each Student	Science notebook
	1 Clipboard
	1 Pencil
	1 Craft stick with name written in <i>permanent</i> marker
For the Teacher	Digital camera (optional)

Getting Ready

Time: 10–25 min.

Site: Weeds make wonderful plants for observation in addition to other plants (flowers, shrubs, trees) in the schoolyard. Alert the custodian and others of your plan so the plants are not cut down mid-observation.

Seasonal Tips: In the fall, students will see plants dying back, and changes in color, buds, cones, and fruit. In the winter, students can observe plants that have died, gone into dormancy, or are evergreen. Try digging under the snow for berries, buds, cones, or fruit. In the spring, students can mark off a patch of earth when it is bare and watch as new plants emerge.

Safety Note: Be aware of any harmful plants in your schoolyard, such as poison ivy or stinging nettle.

Guiding the Investigation

1. Tell students they will be learning about plants, outdoors as well as indoors. Ask, *What plants do we have in our schoolyard?*

Outdoor Activities At a Glance

Investigation 1

Adopt a Plant (BSI Extension)

Look for Roadside Brassica
(FOSS® Extension)

Investigation 2

Lawn Diversity (BSI Extension)

Plant Radish-Seed Gardens
(FOSS® Extension)

Grow Flowers from Seed
(FOSS® Extension)

Symmetry Walk (BSI Extension)

Investigation 3

Look for Plants Reproducing Vegetatively (BSI Extension)

Part 3: Spuds Outside

Investigation 4

Plant Flower Bulbs Outside
(BSI Extension)

Priority activities appear in **green**.

What You Might Find:

Students can become quite attached to their plants.

Some students will discover bugs on or near their plants, smells, maybe even sounds—a whole mini-world connected to their plant.

“It was great for students to see how the plants changed and grew. It is important for them to understand that the plant life cycle is a natural process, not something that only happens in small cups in the classroom! It was also great for the students to compare and contrast the different types of plants that they were observing. Some grew slower or faster than others.”

Erin Flynn
Science Specialist

How do you think they got there? Have you ever noticed them changing? What kinds of changes have you seen?

2. Tell students they will each get to select their own plant in the schoolyard to observe over time, and they will report on how it changes. Encourage them to choose a plant that interests them. Have students date their notebook pages and remind them how to label their drawings.
3. Take students outside and give them three minutes to select a plant within the area you define. After three minutes, students should be seated and drawing in their notebooks. Instruct students to draw a close up of one part of the plant as well as the whole plant.
4. After students have found their plants, help students put their craft sticks gently in the ground. If you can, take photographs of students with their plants.
5. Invite students to share their plant observations with the class.
6. Repeat the outdoor observations as often as you can (2–4 times) during the module. At the end of the module, display students’ drawings and notes on the changes they observed.

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Part 3: *Observing Brassica Growth*, page 23

Look for Roadside Brassica

FOSS® Extension, page 32

When to Go Out

Take students outside anytime after the brassica plants have gone through their entire life cycle to look for wild mustard, a brassica found throughout the U.S.

Outdoor Objective

Students will discover that the brassica plants they are studying have a wild counterpart, and compare the two.

Materials

For Each Student	Science notebook
	1 Clipboard
	1 Pencil

Getting Ready

Time: 10–25 min.

Site: Try to find wild brassica near the school before having the students hunt for it. Wild brassica may tolerate some shade, but is most likely to be found in direct sunlight.

Seasonal Tips: In the spring and fall, gather the seeds of the wild brassica and scatter them in the schoolyard.

Guiding the Investigation

1. Explain to students what wild brassica is and what it looks like. Each plant can produce up to 3500 seeds and seeds can remain dormant in the soil for up to 60 years.
2. Lead your students in the right direction, but let them locate and identify the plants on their own.
3. Wild brassica are larger than the brassica plants students have grown inside, but have many similar characteristics. Have students compare the indoor and outdoor plants and record their observations in their notebooks.

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Part 2: *Mowing the Lawn*, page 15

Lawn Diversity

Boston Schoolyard Initiative Extension

When to Go Out

Following Part 2, take students outside to observe an actual lawn.

Outdoor Objective

Students will make a connection between the lawns they are growing in class with the lawn in the schoolyard, and will observe the diversity of plants in an ordinary lawn.

Materials

For Each Student	Science notebook
	1 Clipboard
	1 Pencil
	1 Lawn in a cup
For Each Pair	1/4 of a transparency (cut each transparency into four rectangles)

Getting Ready

Time: 15–25 min.

Site: Many students may not know what a lawn is, so take the time to show them.

Advance Preparation for Outdoor Activities

For the planting activities, you will need to plan ahead to

- find a class garden area.
- find a local gardener to help, if needed.
- assemble tools.
- obtain plant material and soil amendments (local nurseries may be happy to donate).
- show students how they will continue caring for their garden

What You Might Find:

Students will not notice much at first, but they will begin to make more observations after a few minutes. If groups are sitting close together, encourage them to share their findings with each other. When one pair finds an ant, others will quickly find one too.

Seasonal Tips: In the winter, you can still see a diversity of plants.

Safety Note: Remind students to avoid broken glass or other dangerous items.

Guiding the Investigation

1. Ask students, *What is a lawn? Is there anything other than grass in a lawn?*
2. Tell students they will go outside to observe the schoolyard lawn and record what they find in their notebooks.
3. Show students the transparency rectangles. Tell them they will work with a partner to lay the transparency on a section of the schoolyard lawn, observe, and draw what they see under it. Distribute the transparencies to students. Have students trace the rectangle into their notebooks and title the page “What’s in our Lawn?”
4. Bring students out to a grassy area of the schoolyard and have them sit down with their notebooks and transparencies to begin their observations. Remind students not to move the transparency once they select their spot.
5. Gather students together to share observations and compare the outside lawns to their lawns in a cup. Ask students to report on the living and nonliving things they saw. Collect all transparencies so that you can use them again.

New Plants > Investigation 2: *Grass and Grain Seeds*

Plant Radish-Seed Gardens

FOSS® Extension, page 30

When to Go Out

Take students outside anytime during Investigation 2 to plant radish seeds.

Outdoor Objective

Students will observe that seeds are living and grow into new plants. Students will learn that some of these plants produce food for humans.

Materials

For the Class

Gardening tools (trowels, watering cans, craft sticks, string)

Soil amendments (lime, peat moss, sand)

Getting Ready

Time: 10–25 min. Return outdoors to care for and observe plants over time.

Site: Use existing planting beds, or install raised beds, buckets, or pots in a sunny protected area, near a water source.

Caution: Avoid giving students the idea that the seeds they plant are *theirs*. They will be very disappointed if their seeds don't come up. Instead, focus on the *class* garden.

Guiding the Investigation

1. Check the soil to see if amendments are needed. This will increase the likelihood of plants thriving. Loosen soil if needed by turning it over before students dig in.
2. Ask students to think about what plants need to help select the best planting location. Mark off the area with string and post signs to let the school community know it is a class garden.
3. Take students outside to plant. Try planting in various locations (both inside and outside), at varying depths, or with varying amounts of water. Ask, *How are these seeds dispersed and “planted” in the wild?*
4. Schedule watering, weeding, and care of the garden. A few students could rotate responsibility outside of, or during class.

New Plants > Investigation 2: *Grass and Grain Seeds*

Grow Flowers from Seed

FOSS® Extension, page 31

When to Go Out

Take students outside anytime during Investigation 2 to plant flower seeds.

Outdoor Objective

Students will observe that seeds are living and growing into new plants that develop in a sequence called a life cycle.

Materials

For the Class	Gardening tools (trowels, watering cans, craft sticks, string)
	Soil amendments (lime, peat moss, sand)

What You Might Find:

Planting outside takes a lot of time and commitment, but is also extraordinarily rewarding.

“It is truly possible to have a garden in a small space. I was skeptical but have been amazed at how many types of plants we were able to squeeze into a miniature plot. I have also been surprised by the pride our second graders feel for the garden. They check those plants every day, during recess or whenever they get a chance.”

Erin Flynn
Science Specialist

“Planting flower seeds really helped my students understand the conditions that plants need to survive. They were very excited about planting.”

Michelle Teleau
Science Specialist

Guiding the Investigation

Refer to the FOSS Teacher Guide to have students grow flowers inside, under the lights with the brassica plants. If the season allows, try planting some flowers outside using these steps.

1. Select a planting bed. Make and post signs to let the school community know it is a class garden.
2. Prepare soil as needed before taking students outside, or with students if time allows. Plant seeds and water. Try spreading wildflower seeds or sunflower seeds.
3. Schedule watering, weeding, and care of the garden.
4. Invite students to continue to observe their garden throughout the module and beyond. Harvest seeds from the dried flowers in the fall and plant them.

New Plants > Investigation 2: *Grass and Grain Seeds*

Symmetry Walk

Boston Schoolyard Initiative Extension

When to Go Out

Take students outside during Investigation 2 to look for symmetry in leaves and flowers.

Outdoor Objective

Students will observe that symmetry occurs frequently in nature.

Materials

For Each Student	Science notebook
	1 Clipboard
	1 Pencil

Getting Ready

Time: 10–20 min.

Seasonal Tips: In the winter, look for symmetry in the way buds are positioned on tree twigs—alternating, parallel, etc. Look for leaf scars on the twigs from last year’s leaves.

Guiding the Investigation

1. Tell students they will go on a “Symmetry Walk” to look for plant symmetry in nature. Ask, *Where do you think we might see examples of symmetry in the schoolyard?*

2. Have students divide their notebook pages into fourths. Ask them to draw 2–4 plant parts they think are symmetrical. Model one example on the board and divide it along the line of symmetry.
3. Bring students outside, define the boundaries, and allow students to search and sketch several examples in their notebooks.
4. Gather students together and invite them to show what they found. Consider creating an indoor display of students' drawings.

New Plants > Investigation 3: *Stems* >

Part 2: *New Plants from Cuttings*, page 14

Look for Plants Reproducing Vegetatively

Boston Schoolyard Initiative Extension

When to Go Out

Take students outside after completing Part 2.

Outdoor Objective

Students will observe reproducing outdoor plants and will understand that this is another way nature creates new plants.

Materials

For the Class 25 cm of brightly colored marking tape
 Scissors

Getting Ready

Time: 25–45 min.

Site: Look in your schoolyard for ivy, mint, thyme, oregano, crab grass, purslane, chickweed, strawberries, geraniums, squash, or rhododendrons.

Seasonal Tip: To keep plants available for winter study by preventing them from freezing, mulch over the plants you plan to use in the fall.

Guiding the Investigation

1. Take students outside to look for plants that creep across the ground. Have students check to see if these plants have put down roots along their stems. When you find a stem from a mother plant that has rooted itself into the ground, make sure every student has a chance to observe it.

2. Carefully snip the stem between the two plants and tie the marking tape around the plant, so that you can find it again. Make it clear to students that you are not harming the plant; in fact you are helping to make a new plant.
3. After several weeks (and some rain or watering), observe the plant again. Students should see that there are now two thriving plants.

New Plants > Investigation 3: *Stems* >

Part 3: *Spuds*, page 19

Spuds Outside

When to Go Out

Take students outside after completing Part 3. Refer to the FOSS Teacher Guide for complete instructions.

Outdoor Objective

Students will observe that potato eyes will grow into new plants that make more potatoes.

Getting Ready

Time: 10–25 min. Return outdoors to care for and observe plants over time.

Site: Use existing planting beds, or install raised beds, buckets, or pots in a sunny protected area, near a water source.

New Plants > Investigation 4: *Bulbs and Roots* >

Part 1: *Bulbs*, page 7

Plant Flower Bulbs Outside

Boston Schoolyard Initiative Extension

When to Go Out

Following Part 1, take students outside during the fall or early winter. Refer to the “Plant Radish-Seed Gardens” activity on pages 4–5 for a complete list of materials and instructions.

Outdoor Objective

Students will discover another way to grow a new plant when they plant bulbs in their schoolyard.

Getting Ready

Time: 10–25 min. Return outdoors to care for and observe plants over time.