Adopt-a-Plant

A Garden-Based Curriculum

Developed by the Southern Boone Learning Garden

ABOUT

At the beginning of a growing season, students are given a choice of seeds to plant and "adopt"—following and monitoring its growth and development over the course of the season. Students turn into scientists as they become invested and interested in the plants progress. With visits to the garden every other week (or more!), they'll have the opportunity to observe, measure, and create data tables & graphs using real-world experience and information. Additionally, this unit exposes students to plant science—learning about parts of a plant, how to maintain and keep it healthy, along with opportunities to taste nutritious foods.

Although, standards provided focus on primary aged student learning objectives, adopting a plant is also a great way to engage students with special needs in middle or high school—giving them ownership, building self-confidence, and providing an opportunity to succeed outside of the classroom.

HOW TO USE THIS UNIT

- The standards-based lessons are laid out in a template form with specific objectives and standards.
- The last lesson is optional, and can be used in case there is bad weather.
- The last section, *Extension, Digging Deeper,* offers modifications for different grade levels and/or additional activities to do after the lesson—consider older students receiving special education
- Get started as early in the growing season as possible! Use the lessons consecutively—building on topics learned from the previous lesson.
- If time allows, bring your class to the garden to simply water and check on plants. Return the following week for the full lesson and continue until harvest.
- This is an example of what SBLG has done in the past. Alter and add what works best for your needs. We are constantly changing our units, so we encourage you to do the same!

Garden Scavengers

Time & Description	45 min.-1 hour Students partner up to discover the different produce available in the garden. After describing their findings, they'll get to taste a few things in season.
Objective	To identify and learn about fruits and vegetables growing in the garden.
Teaching Standards	**Common Core** • **ELA-Literacy—K.L.5.c, 1.L.5.c, 2.L.5.a:** Identify real-life connections between words and their use. **Next Generation Science** • **K-LS1-1, 1-LS3-1, 2-PS1-3**: Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. • **K-ESS2-1, 1-LS1-2, 2-PS1-1**: Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. • **2-LS4-1**: Make observations of plants and animals to compare the diversity of life in different habitats.
Materials	❖ Chart paper ❖ Clipboards ❖ Pencils ❖ Scavenger hunt worksheet
Preparation	○ Create and print scavenger hunt worksheets
Procedure	1. Share a brief introduction of self and reiterate the gardens main purpose: to learn 2. Safe, Respectful, and Responsible chart: using student ideas, create a poster of rules that they will be expected to follow during each garden lesson 3. Explain how you will get the students' attention when needed. Practice a chant or callback together, e.g. Teacher: "I like veggies!" Students: "I do too!" 4. Scavenger hunt: in pairs or alone dismiss students to search the garden for fruits and vegetables listed on the worksheet 5. Taste test prep: while students complete the scavenger hunt, an instructor prepares a few fruits or vegetables that are ready for harvest 6. Regroup: students take turns sharing descriptive words for the fruits and/or vegetables found 7. Taste test: students taste the samples prepared and discuss how they taste 8. *If time,* explain the Adopt-a-Plant theme. Students will choose a plant to care for, observe, and collect data from seed to maturity 9. Each student "adopts" their plant choosing from four or five different crops. Be sure to mark down who chose what!
Extension, Digging Deeper!	❖ To help students decide which crop to choose allow time beforehand to research general information, maintenance, uses, etc. about their plant ❖ Record observations or write an entry using the descriptive words they came up with

What a Plant Wants and Needs

Time & Description	20-25 minutes Students plant seeds of their choice and discuss the four main ingredients these seeds will need to grow.
Objective	To understand different components a plant requires to grow.
Teaching Standards	**Next Generation Science** • **K-LS1-1**: Plants need water and light to live and grow. • **1-LS1-1**: Plants (also) respond to some external inputs. • **2-LS2-1**: Plants depend on water and light to grow.
Materials	❖ Seeds ❖ Hand tools ❖ Paint stir sticks, or other device to use for labeling ❖ Permanent markers
Preparation	○ Gather and set out materials ○ Water and maintain plants as needed
Procedure	1. Labeling: each student writes his/her name, date, and seed type to be planted on a paint stir stick. 2. Explain and demonstrate planting procedures (e.g., loosen soil, plant depth, lightly cover up) 3. Each student plants his/her own seeds in an appropriately sized plot. Place stick in ground to mark where seeds were planted. 4. Circle up and have each student cup out their hands. Put a scoop of soil and splash of water in each. Tell the group that they are each holding all four ingredients that their seeds will need to grow. 5. Call on volunteers to share what the ingredients are. 6. Explain that all plants need sun, soil, water, and air to grow. If time permits, discuss the role of each ingredient. 7. Wrap up with the short song "Sun, Soil, Water, and Air," *see below*
Extension, Digging Deeper!	❖ Conduct an experiment to see how plants grow differently when they are deprived of one of these four ingredients. ❖ Journal: write/draw predictions in regards to what their seed will look like in two weeks.

**Inspired and altered from Life Lab's The Growing Classroom by Roberta Jaffee and Gary Appel*

Sun, Soil, Water, and Air

Students repeat:

Sun, soil, water, and air!
Sun, soil, water, and air!

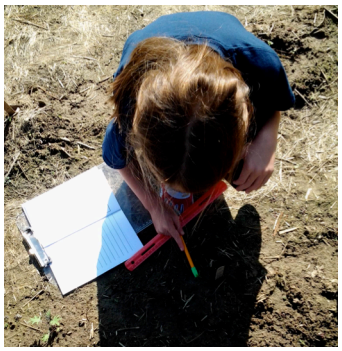
Everything you eat and everything you wear!
Everything you eat and everything you wear!

Comes from sun, soil, water, and air!
Comes from sun, soil, water, and air!

Secrets Inside of a Seed

Time & Description	20-25 minutes Students take a look inside of a bean seed and note any changes in their planted seed.
Objective	To understand the basic growth process that occurs inside of a seed once planted and to practice observation skills.
Teaching Standards	**Next Generation Science** • **K-LS1-1**: Use observations to describe patterns of what plants and animals (including humans) need to survive. • **K-LS1-1, 1-LS1-2, 2-PS1-1**: Patterns in the natural and human designed world can be observed [used to describe phenomena, and used as evidence]. • **1-ESS1-2, 2-LS4-1**: Make observations (firsthand or from media) to collect data, which can be used to make comparisons. • **K-2-ETS1-2**: The shape and stability of structures of natural and designed objects are related to their function(s).
Materials	❖ One soaked pinto bean for each student ❖ Tweezers ❖ Magnifying glasses ❖ Black construction paper (for contrast) ❖ Science journals ❖ Clipboard and writing utensil
Preparation	o Soak at least one seed for each student in water overnight o Water and maintain plants as needed
Procedure	1. Split into two groups: seed dissectors and observers 2. Seed dissectors: discuss the functions of seeds. Allow each student to dissect his or her own seed by splitting it in half lengthwise. See if they can identify the seed coat, the first leaves, the root system, and the food that will provide the embryo enough energy to grow until it can produce its own food. Did the seeds they planted have all of these parts? 3. Observers: find the location where they planted, record the date, and write two-three sentences of observations noticed e.g., color and height. Draw a picture and make a prediction. 4. *If time,* make a data table together to prepare for measuring on the next visit. 5. Switch, so each group experiences both activities
Extension, Digging Deeper!	❖ Conduct a seed experiment changing variables such as seed depth, light, or water.

Measuring Plant Growth

Time & Description	20-25 minutes As sprouts continue to grow taller, students practice measurement skills by tracking the height of their plant.
Objective	To measure and record plant growth.
Teaching Standards 	**Common Core** • **Math.Content.K.MD.A.1:** Describe measureable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. • **Math.Content.1.MD.A.1:** Order three objects by length; compare the lengths of two objects indirectly by using a third object. • **Math.Content.2.MD.A.1:** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
Materials	❖ Science journals ❖ Clipboards and pencils ❖ Rulers
Preparation	○ Set out materials ○ Water and maintain plants as needed
Procedure	1. Write the date and draw a data table on the next blank page in science journals 2. Briefly review how to use a ruler through demonstration • Place a finger right on top of the plant lining it up with the closest number on the ruler 3. Allow students to find their plant, measure, and record the height in data table 4. Make observations, draw a picture labeling parts, and predict how much it will grow by next visit 5. If time, water/weed
Extension, Digging Deeper!	❖ Spend time measuring with different units of measurement and compare them ❖ Compare the height of their plant to other things in the garden or to each other's plants ❖ **Repeat this lesson until *at least* three measurements are recorded, and then transfer data into a bar graph**

Harvest, Hoorah!

Time & Description	30 min. On the last day students will harvest and cleanup any remaining greens/weeds in their area. After all their hard work, they get to taste test anything ready to eat!
Objective	To eat and describe the taste of garden vegetables.
Teaching Standards	**Common Core** • **ELA-Literacy.SL.K.6:** Speak audibly and express thoughts, feelings, and ideas clearly. • **ELA-Literacy.SL.1.4:** Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly. • **ELA-Literacy.SL.2.2:** Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
Materials	❖ Bucket ❖ Cutting board and knives ❖ Science journals and pencils
Preparation	○ Set out materials ○ Water and maintain plants as needed
Procedure	1. Demonstrate how to pull a plant out from the ground, trying to get the entire root with it 2. Students take time to 'cleanup' their area, including their plant(s), even if it hasn't matured fully 3. Place the inedible greens/weeds in a bucket to be composted 4. Check each students' section to either give them the okay to be done or to keep weeding 5. Wash and taste test any produce harvested 6. Encourage students to at least try it. If they don't like it they can throw it into the bucket 7. As they taste test, call on students to describe *how* it tastes or *what* it tastes like 8. *If time,* take a few moments and journal one thing they learned and one thing they'd like to do in the spring
Extension, Digging Deeper!	❖ Write poems using the words to describe the taste tested foods ❖ Create presentations sharing all they learned about their plant ❖ Combine data making one 'class graph' of plant growth ❖ Make a salad together with all the harvested crops

Labeling the Parts of a Plant

Time & Description	30 min. Use this indoor activity when there's bad weather. It's a simple, fun, and rewarding lesson to help review the parts of a plant.
Objective	To identify the parts of a plant.
Teaching Standards	**Common Core** • **ELA-Literacy.W.2.8**: Recall information from experiences or gather information from provided sources to answer a question. **Next Generation Science** • **K-ESS3-1**: Use a model to represent relationships in the natural world. • **1-LS1-1**: Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.
Materials	❖ Science journals ❖ Example of labeled diagram ❖ Markers and pencils ❖ Glue and tape ❖ Seeds ❖ Printed pictures (diagrams) of vegetables planted ❖ Selection of books
Preparation	○ Make copies and cut diagrams to fit in science journals ○ Water and maintain plants as needed
Procedure 	1. Ask for volunteers to name one part of a plant. Continue until all have been said. (seed, root, stem, leaves, flower, and fruit) 2. Distribute plant diagrams accordingly 3. Students draw an arrow or line pointing to the roots, stem, and leaves in addition to labeling it 4. Paste the diagram in science journal 5. Color in the diagram 6. Check student work and tape their vegetable seed on the diagram 7. Label this last part! 8. As students finish, they can share available books to read
Extension, Digging Deeper!	❖ Cut open and observe the parts up close with magnifying lenses. Discuss the important role that part plays. ❖ Students can observe and draw their plant, then label the parts of their own drawing.