Harvesting Knowledge:
Fall in the Garden

A Garden-Based Curriculum

Developed by the Southern Boone Learning Garden

ABOUT

During the fall of 2013, the Southern Boone Learning Garden (SBLG) was able to increase the amount students visited the garden threefold. After a successful summer school program, the SBLG team and teachers were eager to utilize the garden more than even before. Included are *stand-alone* (see our themed units for ideas on how to use the garden more frequently) lessons implemented during the fall targeting students in grades K-5th. Topics vary ranging from making maps to reviewing and practicing the scientific method. It's important to note that no lessons are season specific and the grade levels are simply suggestions.

HOW TO USE THIS UNIT

- The standards-based lessons are laid out in a template form with specific objectives and standards
- The last section, *Extension, Digging Deeper,* offers modifications for different grade levels and/or additional activities
- Use one, two, or all lessons when it fits into your instructional time—each was taught separately, so there is no 'correct' order.
- This is an example of what SBLG has done during the most recent fall. Alter and add what works best for your needs. We are constantly changing our units, so we encourage you to do the same!

Garden Scarecrows

Time & Description	45 min.- 1 hour Younger students experience teamwork & cooperation, practice motor skills, and learn about a scarecrows role as they construct their own for the garden.
Objective	To work together in piecing together all the parts that makes up a scarecrow.
Grade Level	K-2nd
Teaching Standards	**Common Core** • **Math.Content.K.CC.C.6:** Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group • **ELA-Literacy.RL.1.2:** Ask and answer questions about key details in a text. **MO State Grade Level Expectations** • **SS2 4.2**: Participate in democratic decision-making processes. • **SS2 4.2**: Demonstrate a peaceful resolution to a dispute.
Materials	❖ Donated/used clothes: pillow cases, overalls, pants, jeans, shirts, boots, shoes, gloves, and any other miscellaneous accessories you think a scarecrow might wear ❖ Straw bales and wheelbarrows ❖ Hammer, nails, twine, and wire ❖ Scissors ❖ Wooden frames, for the "skeleton" ❖ Name tags and permanent markers
Preparation	○ Set out materials ○ Obtain book: The Lonely Scarecrow by Tim Preston
Procedure	1. Question students about scarecrows: what's their purpose? 2. Divide students into three groups and explain which part of the scarecrow they're making: • Legs/feet: tie cuffs shut to keep straw in. • Head/face: use sharpie to draw the face, and then stuff with straw. • Arms/chest/hands: put on frame, tie bottom shut, and stuff with straw. 3. Within each group, they'll need to vote on choices: pants, shoes, hats, scarf, shirt, and gloves. 4. While stuffing, discuss parts of the body and how they are different or the same compared to ours. 5. Adults use nails, twine, and wire to attach the parts to frame. 6. While the scarecrow is being put together, another adult reads The Lonely Scarecrow by Tim Preston. 7. Once completely assembled, kids vote on a name and a location in the garden. When voting, count out loud and ask students which number is greatest to determine the "winner".
Extension, Digging Deeper!	❖ Visit the class scarecrow to observe how he/she has changed due to Earth's weathering ❖ Write a creative story or poem about the garden scarecrow!

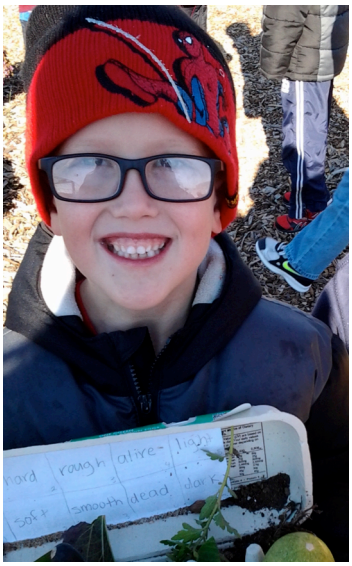
Garden vs. Farm:
Compare and Contrast

Time & Description	45 min- 1 hour Learn about the differences and similarities between farm and garden life through discussion and hands-on garden chores.
Objective	To compare and contrast garden and farm jobs.
Grade Level	K-2nd
Teaching Standards	**Common Core** • **Literacy.SL.K.1**: Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups • **Literacy.SL.1.1**: Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups • **Literacy.SL.2.1**: Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups
Materials	❖ Whiteboard or poster paper ❖ Newspaper- for each student to have 1 sheet ❖ 5-10 canned food items ❖ Seeds ❖ Potting soil ❖ Optional books about farm life
Preparation	○ Obtain materials and set out
Procedure	1. Discuss farm life in the classroom or read students books about farms. 2. Students will brainstorm in small groups or as whole class farm jobs/chores and teacher writes on whiteboard. 3. Students decide which of those jobs overlap with garden jobs. They can take a brief amount of time to explore the garden to see if it is necessary to do the jobs listed and to see if they can think of any different jobs. 4. Regroup and have a discussion-comparing farm to garden (can include types of crops planted, yield, etc. in addition to work responsibilities). 5. Students perform a task that farmers and gardeners both do- planting seeds. Using newspaper and canned goods make newspaper plant starters and have students plant some indoor starts. Alternatively, use plastic starters. 6. Discuss how this kind of planting is different than the way a farmer plants.
Extension, Digging Deeper!	❖ Students can write a comparison piece about the farm and garden or write a "how-to" instruction list of how to plant a seed in a newspaper starter pot.

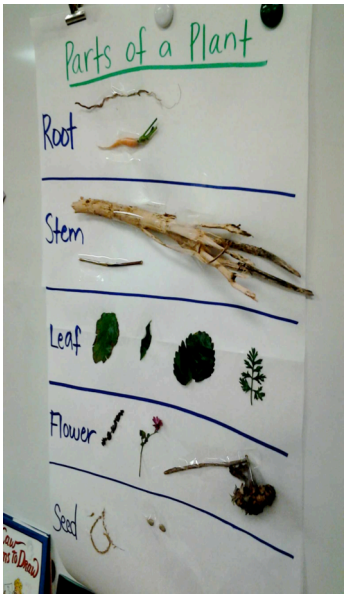
The Four Seasons

Time & Description	45 minutes-1 hour The class has fun outside as they search for signs of the four seasons.
Objective	To learn about the Earth's seasonal patterns using observation skills.
Grade Level	K-2nd
Teaching Standards	**Next Generation Science** • **1-ESS1-1, 1-ESS1-2, K-ESS2-1**: Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. • **K-ESS3-3, 2-PS1-4**: Events have causes that generate observable patterns.
Materials	❖ Pictures of items representing one of the four seasons: e.g. snowflake, hibernating animal, budding tree, children swimming, etc. ❖ Large white boards and markers ❖ Half sheets of paper ❖ Clipboards ❖ Writing utensils and colored pencils ❖ Tape
Preparation	○ Hide seasonal pictures around the garden ○ Draw four columns, each labeled a season on the whiteboards
Procedure	1. Briefly discuss the current season along with the ones that follow in a cycle year round. 2. Dismiss students to go around the garden looking for hidden seasonal pictures. Each student will collect *one* picture and hold onto it. Those who find theirs quickly can help classmates. 3. Regroup: in small groups, students take turns sharing the picture found and explain which season it best represents. 4. As students reach an agreement, they will stick their picture on the white board under the appropriate season. 5. Debrief findings and predict what the garden looks like in each season. How does knowing the season cycles help a gardener? 6. Students choose one thing in the garden to observe and draw. 7. On the opposite side, they will predict and draw what the same thing will look like in the next season.
Extension, Digging Deeper!	❖ Use this activity in the fall to kick off a seasonal observation journal. Have the students take 10-15 minutes at the end of the lesson to draw and/or write about their fall observations in the garden. Repeat this exercise once each season in the same journal so students can recall the change over time. ❖ Go on another scavenger hunt looking for natural signs of seasons in the garden. For instance, provide students with a checklist of fall-like things to find and track how many of each they see.

Opposites in the Garden

Time & Description	45 min- 1 hour Students practice categorizing and enhance word knowledge through a hands-on scavenger hunt.
Objective	To demonstrate understanding of vocabulary by relating them to their opposites
Grade Level	K-2nd
Teaching Standards	**Common Core** • **L.K.5a**: Sort common objects into categories to gain a sense of the concepts the categories represent • **L.K.5b**: Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites • **L.K.5c, L.1.5c, L.2.5a** Identify real-life connections between words and their use
Materials	❖ Enough one-dozen egg cartons for each pair or trio of students to have one.
Preparation	○ Collect egg cartons ○ Label each set of egg wells with a pair of opposite words that can easily be represented by garden items, such as wet/dry, rough/smooth, soft/hard, alive/dead, dark/light, etc.
Procedure 	1. Discuss "opposite" words with class. Explain that they will be going on a scavenger hunt through the garden to collect items that represent different pairs of opposites. 2. Assign students in groups of two or three and give them their egg carton. Explain how to read which well to put each of their samples in. 3. Go over collection rules: Only pick an item if there is more than ten of it. We wouldn't pick a flower if there were only five of that type in that bed. We can pick parts of objects instead of the whole object; e.g. if we want something "colorful" we could pick one petal or a part of a petal instead of the whole flower. 4. Supervise students during their scavenger hunt and give assistance when needed. 5. Regroup and have class share the objects they found with opposite qualities.
Extension, Digging Deeper!	❖ Use more advanced words depending on the age group. Older students can do the same activity with words like biotic/abiotic, symmetrical/asymmetrical, etc. ❖ Have students think of synonyms for the given words and distinguish between shades of meaning. Or allow them to come up with other adjectives that describe the items they collected.

Collecting the Parts of a Plant

Time & Description	45 minutes – 1 hour This lesson teaches students about the basic structure and function of plants using a hands-on and visual activity.
Objective	Students will be able to identify parts of a plant (seed, root, stem, leaf, flower) and describe the basic function of each part.
Grade Level	K-2nd
Teaching Standards	**Next Generation Science** • **1-LS1-1**: All organisms have external parts. Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.
Materials	❖ Various plants from the garden that can be taste tested ❖ Cutting board and knife ❖ Chart paper for class ❖ Packing tape ❖ Hand lenses ❖ Pictures of vegetables that represent different plant parts
Preparation	○ Collect vegetables for taste test from the garden ○ Divide poster board into six sections and label each with one of the main plant parts: roots, stems, leaves, flowers, fruits, seeds.
Procedure 	1. Discuss the six main parts of a plant and their locations (and/or functions) with students. 2. Class will visit the garden to collect specimens of each of these plant parts. Each student may collect only one sample of something that is abundant in the garden. 3. Back in the classroom, students will decide which of these plant parts their sample falls under. They will tape their sample in the appropriate box on the poster paper. The class can keep this poster up throughout the whole plant unit or even until spring, so students can add to it throughout the year. 4. Talk about what parts of a plant we can eat. Do an informal survey by asking students to raise their hand if they think they have ever eaten a root, a stem, and so on down the list. 5. If students cannot come up with examples on their own, show them pictures and guide them to the realization that they can eat all parts of a plant. 6. Sample different parts of a plant that come from the garden! In warm weather you will be able to try a bigger variety of plant parts, but around wintertime you can still do a taste comparison of different kinds of roots and leaves.
Extension, Digging Deeper!	❖ Cut open and observe the parts up close with magnifying lenses. Discuss the important role that part plays. ❖ To better understand the function, assign students a plant part. Play charades taking turns acting out the job and guessing which part of the plant it is.

Cardinal Directions Treasure Hunt

Time & Description	45 min.-1 hour Students will follow a series of directions to orient themselves in the garden and find a hidden treasure. Then, they will make their own maps of the garden.
Objective	To understand cardinal directions and practice making maps.
Grade Level	3rd-5th
Teaching Standards	**MO State Grade Level Expectations** • **SS5 1.5, 1.6, 1.8**: Read, construct, and interpret maps. • **SS5 1.4, 1.5, 1.10**: Locate and describe real places, using absolute and relative location.
Materials	❖ Treasures to hide in garden ❖ Written directions to clues and treasure ❖ Chart paper ❖ Markers
Preparation	○ Write clues with cardinal and general directions, which students will use to find the treasure. ○ Place them in the correct spot and sequence ultimately leading them to the hidden treasure ○ Obtain and hide treasure. For example, use Chinese take out boxes to pack produce from the garden inside! ○ Draw two-three key landmarks of the garden on each groups chart paper
Procedure	1. Review: cardinal directions by turning to face each direction together including northeast, northwest, etc. 2. Divide students into four-five small groups 3. Each group receives their first clue, which will tell them where to start and instruct them where to walk *See examples on next two pages* 4. Allow students to work together to navigate through the garden to find their treasure. 5. Once everyone is finished, the group will construct their own map of the garden on chart paper, trying to be as detailed as possible and maintain scale relations.
Extension, Digging Deeper!	❖ Students take turns hiding an object somewhere in the garden. Once hidden, they will mark where they hid it on their map with an X. The rest of the group must use their map skills to locate and find the hidden object! ❖ Have students create new clues for next years class

Cardinal Direction Clues

Triangle Group: ▲
Clue #1) Start directly underneath the sign in the entryway. Go **west** for 23 feet to the main tunnel; then go **south** for 5 feet. Your first clue is hidden among the tall and beautiful sunflowers!

Clue #2) Follow the stepping stones around to the **southwest** corner of the triangle bed in which you found Clue #1. From the **southwest** corner of this bed, go **west** for 56 feet. This will take you between the two tunnels to a tall and green friend. You will find your second clue being gently guarded by one of these green giants.

Clue #3) From the tree where you found Clue # 2, go **north** for 50 feet (through the cement benches) to a friendly scarecrow. Walk **east** for 17 feet to the **southwest** corner of the red shed. Your third clue is hiding underneath a tool we use to carry things in the garden.

Clue #4) Go 5 feet **south** to the **westernmos**t picnic table. Then go **east** for 22 feet towards tomatoes growing in a tire! From here, take 2 steps **north**. Walk 14 feet to the **east**. Your prize will be hidden among the grasses in the rectangle bed!

Square Group: ■
Clue #1) Start at the picnic tables. Your first clue is at the **northwest** corner of the **westernmost** picnic table…right under your nose!

Clue #2) From the **westernmost** picnic table, go along the **west** side of the red shed for 23 feet. Your second clue is hidden under the pile of wood.

Clue #3) Go to the **northeast** corner of the red shed. From there, head **southeast** for 57 feet. Your third clue is in the **northeas**t corner of the asparagus bed.

Clue #4) From the **southwest** corner of the asparagus bed, head **south** across the garden for 70 feet! Use the stepping-stone to walk through the square bed along the way. Walk **west** 25 feet. Your prize is hiding like a needle in a haystack!

Cardinal Direction Clues

Circle Group: ●

Clue #1) Start at the **west** end of the main tunnel. Go **east** for 14 feet through the tunnel. Stop, then turn **south**. Look up to find your first clue!

Clue #2) From the **west** end of the main tunnel, go 20 feet **northwest** to the picnic tables, using the stepping stones to go through the triangle bed. Your second clue is NOT under the western table; it is NOT under the eastern table…but rather it is somewhere between the two!

Clue #3) From the **southeast** corner of the middle picnic table, go **east** for 19 feet to the cold frame with flowers growing in it next to the round table. Your third clue is along the **north** side of this cold frame.

Clue #4) From the cold frame, go **southwest** for 47 feet and stop before the scarecrow. Then go **west** for 14 feet and step onto the grass. Now, go **southwest** for 30 feet. Find your prize quickly before it decomposes and becomes compost!

Star Group: ★

Clue #1) Start directly underneath the sign at the entryway. Go **west** for 60 feet to the **northeast** corner of the main tunnel. The friendly scarecrow girl is gently guarding your first clue!

Clue #2) From the **northeast** corner of the tunnel, go **west** (along the **northern** edge of the tunnel) for 41 feet, through the circle of cement benches. Your second clue is hiding near a bird's nest!

Clue #3) Walk to the stones in the middle of the circle of cement benches. Go **northeast** 25 feet towards the rain barrel. Then turn **east** and walk 21 feet. Look **north** to find another way we get water in the garden and you will see your next clue.

Clue #4) From the middle of the hose walk directly **north** 63 feet. Look into the field to find a row of tomato teepees. Your prize will be hiding by the **westernmost** tomato plant!

Sundials

Time & Description	45 min- 1hour Discover the many ways the environment and humans benefit from the sun and depend on it for survival by creating a sundial. Use this lesson indoors when there is bad weather.
Objective	To understand the importance of the sun.
Grade Level	3rd-5th
Teaching Standards	**Next Generation Science** • **3.PS2.4**: Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. **MO State Grade Level Expectations** • 2.C.a-1: Identify the Sun as the primary source of light and food energy on Earth
Materials	❖ Paper plates ❖ Straws ❖ Pencils and markers ❖ Tape ❖ Model of sun, moon, and earth
Preparation	○ Collect materials ○ Pre-cut straws
Procedure	1. Have students brainstorm ways that people, animals, and plants use the sun (getting warm, light, drying things, solar energy, making art, etc.) 2. Explain to students that one of the earliest scientific uses for the sun was to tell time. History of sundials: Egypt and Babylonia used 3,500 years ago. They became very common during Renaissance about 1600. 3. Discuss how the sun moves across the sky due to the rotation of the earth: motion exercise where students pretend their head is the earth and feel what parts receive solar radiation and what parts don't as they turn their bodies in a slow circle. This represents the cycle of night and day. 4. Have each student make a sundial: • Find the center of paper plate and mark with a dot • Draw four registration marks along edge. Make one longer than the others. These help students reposition their sundials for taking measurements • Make 4 ½-inch cuts on one end of the straw. • Flare out the cut portion of the straw and tape it onto the center of the plate. 5. Give each student a copy of the Sundial Questions worksheet (see on next page) to complete in class or as an extra project at home. 6. Time permitting, split students into groups of three and have each of them take a turn acting as the sun, the moon, and the earth. See if they can figure out how to show the movement with their bodies.
Extension, Digging Deeper!	❖ Have students track the shadows on their sundial at different seasons in the year. Discuss why the shadows are different from season to season.

Name: _____

Directions: Place your sundial in a sunny place on the pavement or sidewalk. Use chalk to mark the pavement at the sundial's reference lines. Make sure to make one line an arrow so you know where to reposition your sundial. Visit the sundial at 4-5 different hours throughout the day. Trace and color in the shadow that is cast on the sundial and label what time it is. It should look like the example on the right.

1. What did you observe? What did the shadows do?

2. When was the shadow the longest? Where was the Sun at this time?

3. When was the shadow the shortest? Where was the Sun at this time?

4. Why do you think the shadows change length? How can you explain what you are observing?

5. How could you use a shadow to tell the time of day?

All About Animal Adaptations!

Time & Description	45min.-1 hour In this lesson, students partake in two activities allowing them to better understand and think deeper about how animals must adapt to their surroundings in order to survive.
Objective	Students will be able to explain how insects and animals in the garden adapt for survival by using prior class knowledge and applying it to a real-world setting.
Grade Level	3rd-5th
Teaching Standards	**Next Generation Science** • **3-LS4-3**: For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. **MO State Grade Level Expectations** • **C, b-2**: Identify specialized structures and senses and describe how they help animals survive in their environment (e.g., antennae, body covering, teeth, beaks, whiskers, appendages). • **E, e-1**: Identify plants or animals using simple dichotomous keys.
Materials	❖ Pieces of colored paper (red, green, yellow, and blue) ❖ Clipboards ❖ Writing utensils ❖ Magnifying glasses ❖ Adaptations worksheet
Preparation	○ Obtain, cut, and place papers scattered in field ○ Set out other materials
Procedure	1. Share examples of animal adaptations. Define adaptation together: special trait(s) that help animals survive in their habitat. They can be physical or behavioral. 2. Camouflage game: class lines up on one side of the field. Colored pieces of paper are scattered on the grass. As students walk to the other side, they should try to pick up as many pieces of paper as possible. They cannot stop, but must continue walking as they pick up the pieces. 3. Count how many pieces they have of each color. They *should* have more blue, red, and yellow pieces of paper and fewer green ones. 4. Discuss: if you were predators and the paper were the prey, which kind of prey did you catch most frequently? 5. This illustrates the adaptation trait: camouflage. Briefly talk about other animals that blend into the environment. 6. In pairs, students use a worksheet (see example on next page) to find insects/animals in the garden and identify traits that help them to live. 7. To help get them started, ask: where will you look for garden animals? (under leaves, around plants with holds, around flowers) 8. Regroup: share findings
Extension, Digging Deeper!	❖ Add discussions or activities including inherited or learned traits. ❖ Revisit the garden again, searching for insects that live underground to highlight similarities and differences of survival traits in both habitats (above and under).

Walk around in search of all the different animals that live in our garden. Write its name and as many traits you can think of that helps it survive and **explain why**.

Name of Animal	List a trait(s) that helps it live

Classification

Time & Description	45 min.-1 hour Students find and classify contrasting objects in the garden.
Objective	To practice classifying and sorting real-world objects.
Grade Level	2nd-4th
Teaching Standards 	**Next Generation Science** • **2.PS1.1**: Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. • **5.PS1.3**: Make observations and measurements to identify materials based on their properties. **Common Core** • **ELA.4.SL.1:** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teach-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
Materials	❖ Egg cartons or plant cell packs
Preparation	○ Collect egg cartons/plant cell packs
Procedure	1. Discuss what it means to classify objects with an example, for instance, odor vs. no odor 2. Talk about why scientists and everyday people classify objects into groups 3. Students find a partner 4. Each partnership privately decides how they are going to classify the natural materials the collect in the garden. 5. Once they come up with their classifications, partners explore the garden picking and placing the objects in the appropriate spot of their egg carton/plant cell pack, e.g. one row contains objects that have an odor and the other things that don't. 6. As soon as partners finish collecting items, they will match up with another partnership and attempt to guess how they classified their materials. 7. Continue until all partnerships have had a chance to guess each other's materials. 8. Regroup: share strategies groups used for identifying the other group's classification.
Extension, Digging Deeper!	❖ With younger students, practice opposites by doing a similar activity. Write opposite words under each well of an egg carton such as wet/dry, dark/light, rough/smooth, etc. In small groups, they work together to collect natural materials that fall under these opposite categories. ❖ Combine all the materials from the entire class and try to classify them into two groups

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

Soil Space Travelers

Time & Description	1 hour Students work in small groups to investigate the composition of soil. Afterwards, they create experimental questions.
Objective	To practice using the scientific method using inquiry-based skills.
Grade Level	3rd-5th
Teaching Standards	**Next Generation Science**: • **3-PS2-3**: Ask questions that can be investigated based on patterns such as cause and effect relationships. • **4-PS3-3**: Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. • **3-5-ETS1-3**: Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
Materials	❖ Hand tools ❖ Egg cartons, one for each group ❖ Hand lenses, two per group ❖ Tweezers ❖ Newspaper ❖ Science journals/paper ❖ Worksheets ❖ Writing utensils
Preparation	○ Print worksheets (*Planet Zog's Mission* and *Question Styles for Experiments*)
Procedure	1. Have students close their eyes and read the background story about Planet Zog's mission, *see on next page.* 2. Divide students into groups of five-six. 3. Dismiss them to explore soil in different areas of the garden. 4. Each group collects a sample of soil with a hand tool and places it in the folded newspaper. 5. Two-three students dissect the soil, identify each substance found, and place them in the separate egg carton compartments. 6. The other student(s) records all the soil ingredients. 7. Regroup: ask teams to share ingredients found one at a time, until they start repeating. 8. Challenge each team to use the raw ingredients to make soil. 9. When the frustration level of students is reached, stop and talk about their experience. Why weren't they successful? How is it made? 10. Encourage groups to write down any questions they now have about soil. 11. Pass out a *Question Styles for Experiments* worksheet to each group. Students decide on one to test through an experiment. Complete the backside writing hypotheses and procedure steps. 12. **If time,** share questions and hypotheses.
Extension, Digging Deeper!	❖ Conduct the experiments, track and record data, and present to the class ❖ Use all senses to explore the different soil types: write one word to describe each and create a poem or short skit using the words ❖ Compare and contrast soil in which plants grow versus soil in which nothing is growing. Use student questions to create a different experiment!

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Planet Zog's Mission

Imagine that we are scientists from the planet Zog, journeying to the planet Earth on the Star Ship Zogma. We have been chosen to make an important journey. The people of Zog are growing tired of raiding other planets for food, and want to find out how to grow our own food. Our astronomers have detected a faraway planet called Earth, which appears to be covered in green plants. Our computers have analyzed the reason for this and it appears to be a combination of sun, water, air, and a brownish-gray substance called "soil." On Zog we have plenty of sun, water, and air, but no soil covering the rocky ground.

Our mission as scientists is to find this material called "soil", dissect it, and record each and every ingredient for our computer. This will allow us to learn the secret of this material so we can make soil back on planet Zog. Upon landing we will break into groups of three-four scientists, with soil dissectors and data recorders in each team. Remember: it is crucial to the success of our mission that each and every substance found in the soil be recorded. Good luck to all of you. Long Live Planet Zog!

Question Styles for Experiments

How will _____ affect _____?
experimental variable **measureable outcome**

Example: How will planting depth affect the germination rate of carrot seeds?

How will _____ change in response to _____?
measureable outcome **experimental variable**

Example: How will the direction in which my worms move change in response to the presence of different types of fruit?

Which _____ is the most effective for _____?
experimental variable **measureable outcome**

Example: Which type of barrier is the most effective for keeping snails off of lettuce plants?

Hypothesis:

_____
_____
_____
_____
_____

Procedure:

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.