

HOW DO WE KNOW SOMETHING IS LIVING?

BIG IDEA 14: ORGANIZATION AND DEVELOPMENT OF LIVING ORGANISMS

BENCHMARKS AND TASK ANALYSES

SC.1.L.14.3 Differentiate between living and nonliving things.

The student:

- observes that there are similarities and differences between living and nonliving things.
- investigates living and non-living things in their environment.
- explains the differences between living and nonliving things.

KEY QUESTION

How is a doll like me and different from me?

TEACHER BACKGROUND INFORMATION

Everything with which students come into contact can be classified as either living or nonliving. All these things exist and interact to make up the ecosystem. There are five basic processes of living things:

- Metabolism: getting and using food
- Respiration: releasing energy
- Elimination: removing waste
- Growth
- Reproduction

MATERIALS

Teacher

lifelike doll

Venn diagram (See Explore.)

A big book to discuss living/nonliving

Is It Alive? (Creative Teaching Press)

Per group

hula-hoop or jump rope

pictures of living and nonliving things

Per student

magnifying lens

plastic spoon/craft

stick for digging

SAFETY

Always follow OCPS science safety guidelines.

TEACHING TIPS

When taking the discovery walk and dropping the hula hoops be sure to use areas that will have things to observe. Carpet squares may be brought along for students to sit on during the observations.

ENGAGE

Display a lifelike doll and read the following poem to the class:

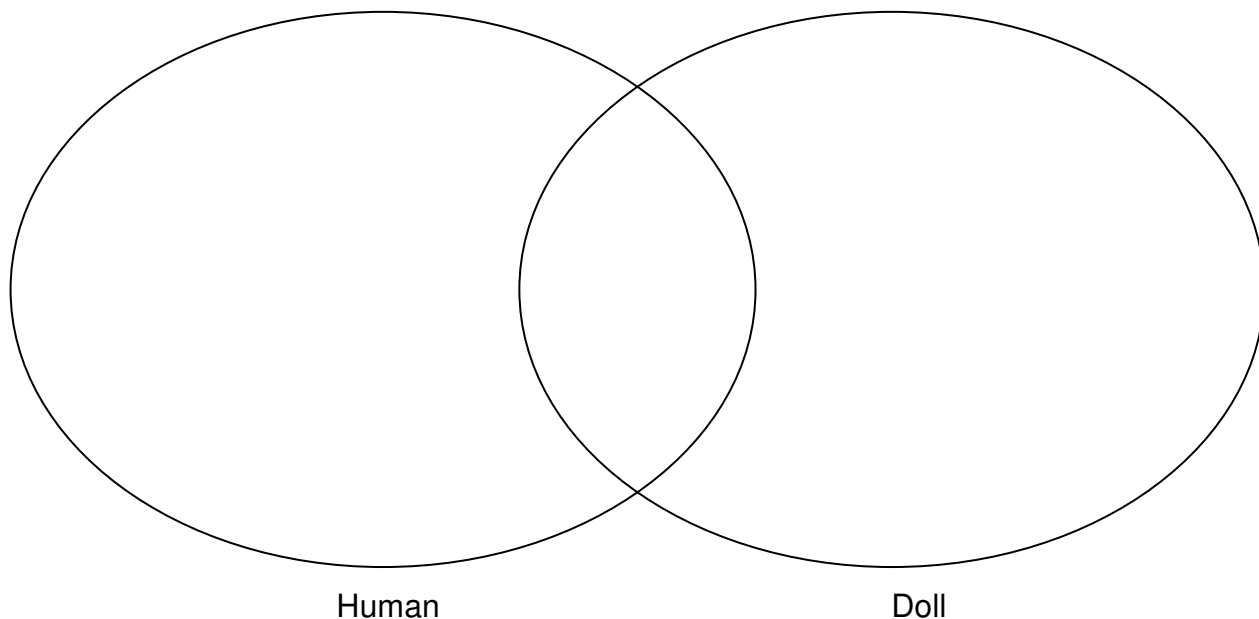
I have this doll and her name is Sue.

I have been told she looks like you.
But if you look closely, from her head to her shoe,
There are a many differences between the doll and you.

Tell students that they will be making observations about the similarities and differences between themselves and the doll.

EXPLORE

1. Draw a Venn diagram or a Double Bubble Map on the board or chart paper.



2. Ask students to brainstorm characteristics of themselves and the doll. If the characteristic is one that is unique to them (living things), write it in the circle labeled "human". If it is a characteristic unique to the doll, (a nonliving thing), write it in the circle labeled "doll". If both possess the characteristic, write the characteristic in the overlapping portion of the circles.
3. Ask: *How can you tell when something is living?*
4. Ask: *What do living things need?*
5. Give each group several pictures of living and nonliving things. Have students classify the pictures as living or nonliving things.
6. Read the big book to the class (e.g., *Who's In the Shed?*)
7. Ask: *What's living? What's not?*

EXPLAIN

1. Ask: *How are you like the doll?*
2. Ask: *How are you different?*
3. Ask: *How can we tell when something is living?*
4. Ask: *How can we tell when something is nonliving?*
5. Tell students to look at the pictures of living things. Living things have certain needs that nonliving things do not. Ask: *What do living things need?*
6. Make a list of students' responses.

EXTEND AND APPLY

1. Go on a discovery walk. Take the class outside to find living and nonliving things. Have students name something they see that's living and something that's non living (e.g., *I see the principal wearing glasses*). Make a list of living and nonliving things. Discuss what they found: Ask them to tell how they knew it was living or nonliving.
2. Field Study: Use a hula-hoop or a jump rope to make a circle on the ground. This becomes the area of study for a small group. Use tools: magnifying lenses, craft sticks, spoons, etc. to explore the area for living and nonliving objects. Have students fold a paper in half – one side labeled “living” (or L) and one side labeled “nonliving” (or N). Ask them to draw pictures of what they found during the field study in the correct column (e.g., an ant on the living side, a rock on the nonliving side).
3. Read *Is It Alive?*
4. Make a class book of living and nonliving things using real pictures. Have a student stand by something at your school. Take a picture of the student and the object (e.g., stuffed animal, person, picture, computer, wooden animal, plant, tree, car). Glue pictures in book with caption (e.g., Are the pictures behind Jamie living or nonliving?). On the back of the page, write the answer. A good time to take pictures is during your living and nonliving walk.

ASSESSMENT

Give the students pictures of living and nonliving objects (e.g., cat, dog, person, rock, toy car, book). Have the students:

- Sort the pictures as to whether they are living or nonliving things.
- Ask them to explain how they know the object is living or nonliving.

WHAT ARE THE NEEDS OF LIVING THINGS?

BIG IDEA 14: ORGANIZATION AND DEVELOPMENT OF LIVING ORGANISMS

BENCHMARKS AND TASK ANALYSES

SC.1.L.14.1 Make observations of living things and their environment using the five senses.

The student:

- records short and long term observations of living things and their environment.
- discusses which sense was used to make each observation.

SC.1.L.14.3 Differentiate between living and nonliving things.

The student:

- observes that there are similarities and differences between living and nonliving things.
- investigates living and nonliving things in their environment.
- explains the differences between living and nonliving things.

SC.1.N.1.2 Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.

The student:

- uses the five senses as tools to:
 - make careful observations.
 - describe objects in terms of number, shape, texture, size, weight, color, and motion.
 - compare own observations with observations of others.

KEY QUESTION

What are the needs of living things?

TEACHER BACKGROUND INFORMATION

Everything with which students come into contact can be classified as either living or nonliving. All these things exist and interact to make up the ecosystem. There are five basic processes of living things:

- Metabolism: getting and using food
- Respiration: releasing energy
- Elimination: removing waste
- Growth
- Reproduction

MATERIALS

Teacher/Class

All About Worms chart

What Do Pets Need (Benchmark Education Co.)

variety of gummy worms

earthworms

Per group

magazines

scissors

glue

SAFETY

Always follow OCPS science safety guidelines.

TEACHING TIPS

none

ENGAGE

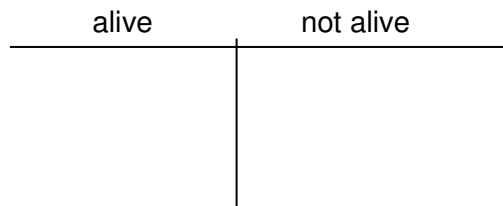
1. On the board or on chart paper, complete the *All About Worms* charts to review the characteristics of earthworms and gummy worms. Stress the needs of living things during the discussion.

All About Worms	
Earthworms	Gummy Worms

2. Ask: *How could you tell that the earthworms were living?*
3. Ask: *Do the earthworms need water?*
4. Ask: *How do you know? What sense did you use to make that observation?* (Moisture in the soil)
5. Ask: *What other things, besides water, does the earthworm need in order to survive?* (Food, appropriate habitat, adequate space, etc.)
6. Ask: *What would happen to the earthworm if it did not have any of these things it needs to live?*
7. Ask: *What do you need in order to survive?*

EXPLORE

Have students cut out pictures of living and nonliving things. Students should then glue the pictures on the corresponding side of the *Alive or Not Alive* chart.



EXPLAIN

1. Discuss the chart and have students tell why they placed their pictures on a particular side of the chart.
2. Ask students to consider the pictures in each section and think about how they are alike. Generate a list of common characteristics of the pictures on each side. Focus on the idea that living things can do certain things (breathe, grow, etc.) that nonliving things cannot do, and

living things have certain needs (air, water, food, adequate space, etc.) that nonliving things do not have.

EXTEND AND APPLY

1. Make up several riddles of living and nonliving things, such as:
I drink milk.
I am a pet.
I make a purring sound.
What am I?
Am I living or nonliving?
How do you know?
2. Read and discuss *What Do Pets Need?*

ASSESSMENT

Have the students draw a picture of a living thing and include what it needs to survive.

WHAT PLANTS ARE IN OUR COMMUNITY?

BIG IDEA 14: ORGANIZATION AND DEVELOPMENT OF LIVING ORGANISMS

BENCHMARKS AND TASK ANALYSES

SC.1.L.14.1 Make observations of living things and their environment using the five senses.

The student:

- records short and long term observations of living things and their environment.
- discusses which sense was used to make each observation.

SC.1.L.14.2 Identify major parts of plants, including stem, roots, leaves, and flowers.

- uses various senses to make observations of different plants.
- draws pictures of the plants observed.
- discusses similarities and differences in the parts drawn in the pictures.
- identifies the stems, roots, leaves, and flowers.

SC.1.N.1.2 Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.

The student:

- uses the five senses as tools to:
 - make careful observations.
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 - compare own observations with observations of others.

SC.1.N.1.3 Keep records as appropriate - such as pictorial and written records - of investigations conducted.

The student:

- keeps records, such as student-drawn illustrations, science notebooks, or digital media, of investigations conducted.

KEY QUESTION

What plants are found in our community?

What can we learn from observing plants in our community?

TEACHER BACKGROUND INFORMATION

In order for students to understand the needs of plants, they must be able to first identify plants. A plant is an organism that contains a stem, leaf, root and sometimes a flower. The flower produces seeds. The stem supports the plant and carries food and water to the other parts. The leaf makes food for the plant. The roots hold the plant in the ground and absorb water and minerals from the ground.

Plants need air, water, light and space in order for them to be healthy and grow properly. If a plant is deprived of one of its essential needs its growth may be stunted or it will die. Some, not all, plants need soil.

MATERIALS

Teacher/Class

camera (highly recommended but students may draw pictures if one is not available)

plant

Per student

science notebook

SAFETY

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TEACHING TIPS

The time of the year needs to be considered for this lesson. The lesson can be taught at any time as long as seasonal factors are considered and discussed with students. It might be best to do this lesson once each season, making it an on-going inquiry based lesson.

Prior to the lesson, the teacher should take a walk, without students, to observe the plants on the school grounds. The teacher should take pictures for the Engage section of lesson and to identify the plants.

ENGAGE

1. Show students pictures from the walk (see Teaching Tips) and discuss plants that are present on the school grounds. Ask students to identify plants they remember seeing at school and describe them.
2. Ask: *What senses can we use to make observations of different plants on our school grounds?*

EXPLORE

1. The class should take a plant walk around the playground or school campus.
2. Have students write/draw in their science notebooks the different plants they observed while on the walk.
3. Discuss the environment in which these plants were observed.
4. Take pictures of the plants that are discussed on your walk. Save these pictures. They will be used in a later lesson.
5. Have students identify different plants they know: trees, bushes, flowers, and grass.
6. Point out and discuss plant parts: root, stem, flower, and leaf.
7. Reschedule for inclement weather as this unit does not have the same impact when done from a written text.

EXPLAIN

1. Lead students in a discussion of the key questions and their observations. Ask:
 - *How do you know this is plant?*
 - *What senses did you use to observe the plant?*
 - *How is a rock different from a plant?*
 - *How is a person the same as a plant?*
 - *Where can you find plants growing? (gardens, pots, soil, ground)*
 - *Do they only grow in soil? (water plants)*
 - *Can you find plants in ponds? Creeks? Oceans? Aquariums?*
 - *Can plants grow in trees? (vines in trees)....in concrete?(plants grow in cracks of driveways)*
2. Hold up the plant and have students identify the leaves, roots, flowers, and stems.

EXTEND AND APPLY

1. Have student pairs compare their drawings and discuss the similarities and differences in the parts they drew in their pictures.
2. Ask students pairs to report out their findings.
3. Take another plant walk and this time look for plants growing in trees, in cracks of the sidewalk or drive, and in creeks or water areas.

4. Have children make a list of different places they found plants growing. Students will draw in their notebooks an unusual place in which they found plants growing.
5. Ask: *How are plants able to survive in these unusual environments?*
6. Extend this lesson and observe through four seasons, comparing the changes in plants and environment.
7. Invite local nurseryman or horticulturist to speak with students concerning local plants. Extension agents or Master Gardeners associated with the Extension Center may be helpful.

ASSESSMENT

Evaluate notebook entries, drawings, observations.

Rubric:

The following three-point rubric may be adapted to your county's grading scale to evaluate students' work during these lessons.

- **3 points:** Students were highly engaged in class discussions; were able to demonstrate a clear understanding of the vocabulary and give correct examples appropriate to the lesson
- **2 points:** Students participated in class discussions; were able to demonstrate a basic understanding of the vocabulary and give mostly correct examples; drew pictures that were somewhat appropriate to the lesson.
- **1 point:** Students participated minimally in class discussions; were unable to demonstrate a basic understanding of the vocabulary and could not give examples of lesson. Pictures were incomplete and/or did not clearly identify lesson objectives.

EXPLORING LEAVES

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BENCHMARKS AND TASK ANALYSES

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The student:

- keeps records, such as student-drawn illustrations, science notebooks, or digital media, of investigations conducted.

KEY QUESTION

What is the function of leaves?

TEACHER BACKGROUND INFORMATION

Leaves come in many varieties. Some are large, small, slender, or wide. Leaves can be prickly, hairy, soft, or hard. Some leaves are smooth, toothed or lobed. Leaves can be classified as simple or compound. Most leaves have two parts, the blade and the petiole. The broad, flat part of a leaf is called the blade. The petiole is the stem-like part of the leaf that joins the blade to the stem.

But all leaves change sunlight into energy through photosynthesis. The leaves are the primary food-making part of the plant. The leaves absorb carbon dioxide from the air and with water that comes through the roots of the plant, combines these elements and releases oxygen into the air. Oxygen is necessary for all living things.

Many leaves are edible such as lettuce, spinach, field greens, parsley, and cabbage.

MATERIALS

Teacher

variety of leaves

Leaf Me Alone poem written on chart paper

Per student

My Very Own Special Leaf recording sheet

crayons

pencil

magnifier

paper clips

centimeter tape

SAFETY

Always follow OCPS science safety guidelines.

TEACHING TIPS

1. Photosynthesis is too difficult for first grade students to understand and will be explored in middle school. However, first grade students can observe a leaf, record their observations, and discuss the purpose of leaves.
2. If this activity cannot be completed in one day, keep the leaves from drying out by placing them in a solution of 1 part glycerin to 2 parts water. Layer the leaves in a shallow pan, cover with the solution, and soak for 24 hours. Remove the leaves from the solution and press them between newspapers for 3 days.
3. Include some leaves, such as spinach and lettuce that are edible in your display.
4. Write the *Leaf Me Alone* poem on chart paper or poster board for display.

ENGAGE

1. Place a leaf in a bag and have students play *Twenty Questions* to determine what is in the bag.
2. If possible, take the students on a nature walk and have them pick up a leaf that will be their own. If not, display a variety of leaves and have each student choose one.
3. Allow students time to look at and discuss the leaves. Discuss differences they observe (e.g., color, size, shape).
4. Display and read poem, *Leaf Me Alone*. Discuss what the poem tells us about plants.
5. Ask: *What is the poem telling us is an important part of a plant?* (leaves)
6. Ask: *What do leaves make for a plant?* (food)
7. Ask: *What helps the leaf make food for the plant?* (the sun)
8. Ask: *What travels to the tip of the leaf?* (water)

LEAF ME ALONE

Please don't pull, cut or tear me,
for a plant to live, I'm necessary.
Whether I'm a bean, apple or pear,
put me in the sun for proper care.
In order to make food for a plant to grow,
I spread my face for the sun to glow.
My fine delicate veins do not rip,
for the water must go to my very tip.
If all these steps you do take,
a healthy, beautiful plant I will make.

By Dianne Billen

EXPLORE

1. Have the students observe their leaf and draw it on the activity sheet.
2. Tell the students to look at their leaf through a magnifier and add details to their drawing.
3. Have the students measure the length of their leaf using paper clips, then measure in centimeters, and record their measurements on the activity sheet.
4. Tell the students to use their senses of smell and touch and record on the activity sheet.
5. Have students share their observations and measurements.

EXPLAIN

Ask:

- *Were all of the leaves the same color?*
- *Does your leaf look the same on both sides? If not, how are they different?*
- *What was the measurement of the shortest leaf?*
- *What was the measurement of the longest leaf?*
- *Can you find a leaf that is longer than yours? Can you find a leaf that is shorter than yours?*

- *Can you find a leaf that is the same length as yours?*
- Discuss the functions of leaves. Tell the students that the leaves make food for the plant.
- *What are the uses of leaves?* (e.g., beauty, mulch, animal habitat, eaten by insects, food)
- *Name some leaves that we eat.*

EXTEND AND APPLY

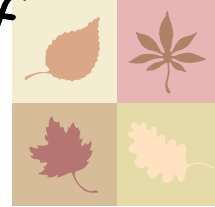
1. Play *Show Me a Leaf*:
 - Show Me a Leaf that has more than one blade.
 - Show Me a Leaf that has spots on it.
 - Show Me a Leaf that feels smooth, etc.
2. Create a Venn diagram with hula hoops or yarn: green, not green; scalloped edges, not scalloped edges, etc.
3. Make a leaf chain – My leaf is different from (or like) yours because...

ASSESSMENT

- Student notebook entries
- Student responses to discussion
- Teacher observation



My Very Own Special Leaf



My leaf looks like this:



The color of my leaf is _____ .

My leaf is _____ paper clips long.

My leaf is _____ centimeters long.

My leaf smells like _____ .

My leaf feels like _____ .

I found my leaf _____ .

Leaves are for _____ .

_____ .

ROOT FOR THE PLANTS

BIG IDEA 14: ORGANIZATION AND DEVELOPMENT OF LIVING ORGANISMS

BENCHMARKS AND TASK ANALYSES

SC.1.L.14.2 Identify the major parts of plants, including stem, roots, leaves, and flowers.

The student:

- uses various senses to make observations of different plants.
- draws pictures of the plants observed.
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SC.1.N.1.3 Keep records as appropriate - such as pictorial and written records - of investigations conducted.

The student:

- keeps records, such as student-drawn illustrations, science notebooks, or digital media, of investigations conducted.

KEY QUESTION

What is the function of a root?

TEACHER BACKGROUND INFORMATION

Roots serve two main purposes: they anchor the plant to the ground and help to keep it upright, and they absorb and store raw materials, such as water, minerals, and nutrients. The tiny hairs growing on the root absorb water. (Do not share this information with students – they will draw conclusions about root function during this activity.)

The root is one of the first parts of a plant that starts to grow. No matter which way you plant a seed; it responds to gravity – it always manages to grow roots downward and the stem up towards the sun.

MATERIALS

Teacher

waterproof glue
scissors
Tops and Bottoms by Janet Stevens

Per student

2-liter bottle
potting soil
pebbles
2 or 3 plants (weeds are fine)
clear plastic wrap
rubber band
science journal

Per group

seeds (pea, bean, radish, mung bean)
weed or small potted plant
newspaper
milk carton root view box (see **Teaching**

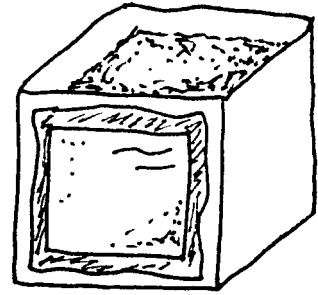
Tips

potting soil
measuring tape
one piece of plastic wrap
dark cloth or paper
piece of pre-cut acetate (transparency film)
clipboard or stiff cardboard for writing
outdoors

magnifier
pencil

SAFETY

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TEACHING TIPS

- Well before doing this activity, tell students to bring in an empty, clean, 2-liter soda bottle.
- Cut the top from the bottle about 3 or 4 inches from the top.
- Prepare a milk carton root view box for each group:
 - Cut the top from a half-gallon milk carton.
 - Cut out a window area from one side, leaving about 2 cm of carton around the edges. Cut a piece of acetate (transparency film) to fit tightly into the window area. Use waterproof glue for a tight seal.
 - Cut material (dark paper or cloth) to cover each viewing window. Velcro or tape material over window.
- The top of the soil should be moistened as needed.
- The roots will be easier to see if the view box is kept at a slant so the roots grow against the window.
- The box should also be covered with a dark cloth or paper to simulate the darkness most roots require for growth.
- Locate an area on the playground where students can pull weeds. If this is not possible, purchase a small potted plant and allow the class to work together.

ENGAGE

1. Take a walk and find some weeds on the playground. Have students observe and sketch the plant parts that are visible above the ground.
2. Next have them think about what the rest of the plant looks like underground. Allow time for students to sketch what they think the underground part of the plant looks like. Let students pull the weeds and take them back to the classroom.
3. Ask: *What senses can you use to observe plants?*

EXPLORE (Part 1)

1. Have the students cover their work areas with newspaper. Let them soak the roots of their weeds in water, if necessary, to remove the soil. Have students observe and sketch the root system in their science notebooks. The students can use magnifiers to see the fine root hairs.
2. Ask the students to measure the length of the root and compare it to the length of the above ground part of the plant and record the information in their science notebooks.
3. Have students work with a group to discuss their ideas about the function of a plant's root system.
4. Have students groups report out their thinking on the function of the roots.
5. Distribute the rest of the materials (milk carton, soil, seeds, plastic wrap) to each group. Have students dampen the potting soil, fill the view box almost to the top with potting soil and water thoroughly.
5. Students should plant seeds about 1 cm from the plastic window, and the box should be covered with plastic wrap to slow down evaporation.
6. Have students observe the view box daily and make note of any changes in their science journal. Keep top of soil moistened as needed. Keep box at a slant for easy viewing and cover

EXTEND AND APPLY (Part 2)

1. Relate the terrariums to greenhouses. If possible, visit a nursery with greenhouses.
2. Ask the students to keep a journal or a list at home of the parts of plants they eat during the week. After a week's time have the students bring their journal or list to school to share.

ASSESSMENT

Use teacher observation and completion of student notebook entries.

Ensure that students are taking proper care of the terrarium.

HOW DO PLANTS GROW?

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The student:

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The student:

- uses various senses to make observations of different plants.
- draws pictures of the plants observed.
- discusses similarities and differences in the parts drawn in the pictures.
- identifies the stems, roots, leaves and flowers.

SC.1.N.1.1 Raise questions about the natural world, investigate them in teams through free exploration, and generate appropriate explanations based on those explorations.

The student:

- raises questions about the natural world.
- explores questions about the natural world with a team of students through free exploration and generates appropriate explanations for what was observed.

SC.1.N.1.2 Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.

The student:

- uses the five senses as tools to:
 - make careful observations.
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SC.1.N.1.3 Keep records as appropriate - such as pictorial and written records - of investigations conducted.

The student:

- keeps records, such as student-drawn illustrations, science notebooks, or digital media, of investigations conducted

KEY QUESTION

How do plants grow?

TEACHER BACKGROUND INFORMATION

Nearly all trees, shrubs, and vegetables started as seeds. A seed is actually a container or case, which contains plant life. Seeds have three main parts in common: the seed coat, a tough outer covering; the embryo, a “baby” plant inside the seed; and the cotyledon, the food supply surrounding the embryo. The food supply is the seed’s only source of nourishment as it pushes up through the soil and begins to grow into a young plant. Plants need light for growth, but seeds do not. Seeds are planted underground where it is dark, and they use their own stored energy for growth.

When a plant is just beginning to peek out from the seed, it is said to be sprouting. Once a seed begins to sprout, it needs the right amount of water and a suitable temperature. Water causes the seed to expand. Germination is the process through which the embryo inside the seed begins to grow. As a seed germinates, it develops roots that grow downward, a stem that pushes up to the light, and leaves.

MATERIALS

Teacher

packets of seeds (vegetables, flowers, herbs)
bag of assorted seeds
chart paper
Related literature:
The Tiny Seed by Eric Carle
The Garden in the City by Gerda Muller
Growing a Plant (Benchmark Education Co.)
The Garden from Frog and Toad Together

Student

1 milk carton
soil
magnifier
clear tape
student science journals
centimeter ruler
crayons
plastic or styrofoam shallow tray
1 piece of drawing paper

SAFETY

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TEACHING TIPS

1. This learning event requires patience and persistence. Note those students experiencing particular success or difficulty in these tasks.
2. Clean milk cartons and poke three holes in the bottom of each using a pencil prior to beginning this activity.

ENGAGE

1. Pass assorted seeds around the room to each table.
2. Ask: *Do you think that these seeds are alive? Why or why not?*
3. Ask: *How could we find out if they are alive?*
4. Ask: *If they are alive, or could be, what do you think would make them start to grow?*
5. As a class, brainstorm a list of the things students think seeds need to sprout. List these on a class chart.

EXPLORE

Preparing the plants:

1. Place assorted packets of seeds at each table.
2. Explain to students that they will be “adopting” seeds from one of the packets. Ask students to pick one packet of seeds.
3. On a chart, record each student’s selection.
4. Give each student a magnifier, a tray, crayons, and a piece of drawing paper.
5. On the drawing paper, have each student write his/her name; the name of the seed found on the seed packet; create a drawing of the seed from observing it; and a drawing of the plant on the front of the seed packet, which the seed will become.
6. Each student will take a prepared, clean milk carton; fill it 2/3 full of soil; place three holes in the soil with a pencil (about 1” deep); and plant three seeds in the soil.
7. Students will label their seed container with their name and the name of the plant. On one side they will tape the seed packet to the carton.
8. Read to the class either *The Tiny Seed* by Eric Carle or excerpts from *The Garden In the City* by Gerda Muller.
9. Ask: *What things do seeds need in order to grow?*
10. Ask: *How can we provide for our seeds?*
11. Ask: *Do you think seeds need to be moist or dry in order to sprout?*
12. Ask: *What have you observed that makes you believe this?*

Plants Sprouting

1. Allow students to place their seeds in a location they choose; water their plants as they feel necessary; and record all observations in student science journals.
2. Read the story called “The Garden” in *Frog and Toad Together*. After reading the story, discuss some of Toad’s ideas about how to “wake up” seeds.
3. Ask: *Do you think yelling might wake seeds up?*
4. Ask: *How will we decide when seeds have sprouted?*
5. Ask: *As seeds begin to sprout, record in student science journals how many days it took.*

Plants Growing

1. Students will water plants daily and record all observations about the plants (shape, height, number of leaves, color) in their science journals.
2. Have students compare their observations with those of others. How do different plants appear similar and different?

EXPLAIN

Through questioning and discussion, develop the concept of what plants need for growth. Ask:

- *Did your seeds grow?*
- *How did you take care of them?*
- *Did you water them often? How often?*
- *Did all of the seeds grow at the same rate?*
- *Where did you place your seeds in the classroom? Why did you select that spot?*
- *What can you tell us about growing plants?*
- *Can you explain why you think some plants are taller than others?*
- *Why are some plants not as green as others?*
- *Why have some plants not grown very much?*
- *Would you do anything differently if you were to adopt another seed?*

EXTEND AND APPLY

1. Take the class on a nature walk of the school grounds. Ask them to observe the conditions of various plants. Discuss some possible reasons why some plants are thriving and others are not.

ASSESSMENT

Teacher assessment through observation should include the following criteria:

- Tasks have been completed by the student.
- Student notebook entries should show growth and understanding.
- Student demonstrates understanding through successful completion of the activities and in class discussions.
- Data collection and organization of data was effective.
- Use of science tools enhanced their learning.
- Science safety rules were observed.