

Growth and Changes: Pumpkins, Apples, and Students

Unit 1

Lesson #1, Introduction to the Garden

Book(s): Pumpkin Circle; George Levenson

Time Frame: 1 session of 30 minutes

Learning Standards:

Earth Science

Earth's Materials	1. Recognize that water, rocks, soil, and living organisms are found on the earth's surface.
Weather	2. Describe the weather changes from day to day and over the seasons.
Periodic Phenomena	3. Identify some events around us that have repeating patterns, including the seasons of the year, day and night.

Life Sciences

Characteristics of Living Things	1. Recognize that animals (including humans) and plants are living things that grow, reproduce, and need food, air, and water.
Life Cycles	3. Recognize that plants and animals have life cycles, and that life cycles vary for different living things.
Heredity	4. Describe ways in which many plants and animals closely resemble their parents in observed appearance.
Living Things and Their Environment	5. Recognize changes in appearance that animals and plants go through as the seasons change.
	6. Identify the ways in which an organism's habitat provides for its basic needs (plants require air, water, nutrients, and light; animals require food, water, air, and shelter).

Technology and Engineering

- Ask questions about objects, organisms, and events in the environment.
- Tell about *why* and *what would happen if?*
- Make predictions based on observed patterns.
- Record observations and data with pictures, numbers, or written statements.
- Discuss observations with others.

Student will be able to:

- 1) Explain a life cycle
- 2) Tell some phases in the life cycle of a plant


Background Information: Cycles are found in science in many areas. The life cycle demonstrates the phases that a living object, here a plant, goes through during the year and during its life cycle, germination to reproduction. Plants begin life as a seed. Roots are the first part of the plant to emerge. The cotyledons, the first leaves from the embryo, are the first leaves to emerge, followed by successive leaves. A flower is produced, pollinated, and the pistil in the flower swells to protect the seeds inside. Finally, the seeds are dispersed to begin the cycle again. Annual plants overwinter in the form of seeds where as perennials overwinter with the roots dormant until spring.

Anticipatory Set: Read the book, Pumpkin Circle; George Levenson

Activity:

- 1) Discuss the book. How does the story end?
- 2) We call this type of story a cycle. Since a pumpkin is living, we call it a life cycle. Can they think of any other cycles? There are many in science. Water, animals, etc.
- 3) Have children list the steps in the cycle of a pumpkin's life. It starts with a seed. Roots begin to grow. Etc.
- 4) Create a Moebius strip of a life cycle of a pumpkin. The children will draw a small sketch of the step in the blank spaces of the strip. Make sure the back side of the strip is turned opposite of the front side.
- 5) If there are too many steps on the board get them down to the 7 most important.
- 6) Children will sketch simple sketches to complete the strip.
- 7) Create the strip by twisting one side of the strip 180 degrees and tape together. This will require adult help.
- 8) Have the class read the life cycle of the pumpkin using the strips.

Closure: Tell the children they will be a part of the life cycle of plants by harvesting the pumpkins planted by the previous first grade classes.



Assessment: Children will be able to tell the story of the life cycle of a seed using the Moebius Strip.

Resources and Materials: Pumpkin Circle; George Levenson, Moebius Strips template, pencils, white board and markers, tape

Growth and Changes: Pumpkins, Apples, and Students

Unit 1

Lesson #2: Introduction to the Garden

Book(s): The Tiny Seed; Eric Carle

Time Frame: 1 session of 30 minutes

Learning Standards:

Earth Science

Earth's Materials	1. Recognize that water, rocks, soil, and living organisms are found on the earth's surface.
	2. Understand that air is a mixture of gases that is all around us and that wind is moving air.
Periodic Phenomena	3. Identify some events around us that have repeating patterns, including the seasons of the year, day and night.

Life Science

Characteristics of Living Things	1. Recognize that animals (including humans) and plants are living things that grow, reproduce, and need food, air, and water.
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Characteristics of Living Things	2. Recognize that animals (including humans) and plants are living things that grow, reproduce, and need food, air, and water.
	3. Differentiate between living and nonliving things. Group both living and nonliving things according to the characteristics that they share.
Heredity	3. Describe ways in which many plants and animals closely resemble their parents in observed appearance.
Evolution and Biodiversity	4. Recognize that fossils provide us with information about living things that inhabited the earth years ago.
Living Things and Their	5. Identify the ways in which an

Environment	organism's habitat provides for its basic needs (plants require air, water, nutrients, and light; animals require food, water, air, and shelter).
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Physical Science

Observable Properties of Objects	1. Sort objects by observable properties such as size, shape, color, weight, and texture.
Position and Motion of Objects	2. Describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.

Technology and Engineering

1. Materials and Tools

Broad Concept: Materials both natural and human-made have specific characteristics that determine how they will be used.

1.1 Identify and describe characteristics of natural materials (e.g., wood, cotton, fur, wool) and human-made materials (e.g., plastic, Styrofoam).

1.2 Identify and describe the safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct simple structures.

Skills of Inquiry

- Ask questions about objects, organisms, and events in the environment.
- Tell about *why* and *what would happen if?*
- Make predictions based on observed patterns.
- Record observations and data with pictures, numbers, or written statements.
- Discuss observations with others.

Student will be able to:

- 1) Explain why seeds need to move
- 2) Tell what moves seeds in nature
- 3) Discuss ways seeds are designed to accomplish their travels

Background Information: Seeds need to find their own space to avoid competition with the mother plant and other plants in the area. Therefore seeds need to use their physical design to move using other natural elements, such as animals, wind and water, to find an appropriate place to germinate.

Anticipatory Set: Read, The Tiny Seed; Eric Carle

Activity:

- 1) Discuss the story. What time of year is it at the beginning of the story?
- 2) What is going on in the garden at this time?
- 1) Give each child a bracelet of masking tape turned with the sticky side out. Explain that we are going out in the garden to collect seeds.
- 2) Go outside into the garden. Collect seeds from the garden and put them on the tape.
- 3) Why would a seed want to travel away from its mother plant? How do seeds move from the mother plant? What moves in nature? (Wind; *shooters (wild geraniums)*, *spitters (iris)*, *parachutes (dandelions)*, animals; *super poopers (apples, fleshy fruit)*, *hitchhikers (burdock)*, Water; *floaters (cranberry, coconut)*). Predict how a seed will move by examining its structure. (Wind, water, animal)
- 4) Inside, look at the seeds and discuss how they are the same and how they are different. Sort into groups according to how they move in nature.

Closure: Eat pumpkin seeds from pumpkins collected in the garden.

Assessment: Ask the children, "If you were a seed, how would you like to move? Why?"

Resources and Materials: Wide masking tape, The Tiny Seed; Eric Carle, seed samples from the garden, prepared pumpkin seeds from the pumpkins harvested