Gardening

Grades K,3,5 Subjects: Science & ELA Updated in 2024

What Seeds Need

Overview

A seed needs some basic things in order to grow: soil, water, sunlight, and air. In this activity, students identify those things a seed needs in order to grow, and then create conditions conducive to sprouting seeds of their own. In doing so, they'll learn about the development of a plant from a tiny seed. They will plant seeds and observe changes as their seeds grow.

In the second part of this activity, they will use a popular children's storybook, The Tiny Seed, to help them identify the parts of a plant, and then they will describe and draw plants in their journals.

Background

All seeds need soil, water, sunlight, and air in order to grow, although different seeds need them in varying degrees.

Plants make especially effective tools for studying life cycles, because the different stages of life are often easy to identify.

Regardless of the species of plant, when a seed sprouts it undergoes predictable growth: developing roots, stems, leaves and often flowers. Hair like roots will come from the bottom of the seed, absorbing water and nutrients from the soil like straws.

Hint: Pre-soaking the seeds hastens sprouting. Do this one day before the seeds are needed.

Stems or shoots will unfurl from the seed as well, stretching up to reach for the sun (or other light source). Finally leaves will emerge, which capture the sun's energy and convert carbon dioxide from the air to make food for the plant. Most plants also produce flowers, some showy like pansies; others less so, like grasses. The flowers will help the plants reproduce by producing seeds.

The Activity

Present the class with pictures from their *Minnesota Weatherguide Environment™ Calendar*, and identify different trees, plants, and flowers in the images. Discuss the differences and similarities in what the group sees.

Ask the children to identify the parts of the trees, plants, and flowers in the pictures.

Have the students share what they know about plants. How do they grow? What kind of plants can they name? What are the parts of the plants? What comes from plants?

Have several copies of “The Tiny Seed” available for children to look at prior to this activity. Having a “sneak peek” at a book deepens interest, sparks questions, and inspires further reflection after the activity is complete.

Day 1

1. Hold up a copy of *The Tiny Seed* and ask the children about it. What do they think the book is about? What is going to happen? What are some of

Time:

Day 1: 30 minutes or more
Day 2: 30 minutes or more
Day 3+: 10-15 min. /day

Skills:

Observing
drawing conclusions
describing

Vocabulary:

seed
shoot
root
sprout
leaves
soil
stem
flower

Materials Needed:

· *Minnesota Weatherguide Environment™ Calendar*,
· large chart paper
· markers
· drawing paper
· colored pencils
· sized zip-close plastic bags, Lima Beans or Mung beans
· potting soil
· masking tape
· small spray bottles filled with water
· (Optional: Internet access)
· *The Tiny Seed* by Eric Carle

the characters in the book? Can they describe something they remember from the book?

2. Ask, “What would you like to know about seeds?” After a group discussion about what they want to know, read aloud the book *The Tiny Seed* by Eric Carle. (Optional: Use a read-aloud of the book that you find online, there are several online videos for this book)

3. Have the students help you retell the story. As they are sharing make simple drawings of the life of the seed on large chart paper or whiteboard. Review what they shared by going over the chart.

4. Discuss what happened to some of the other seeds in the story (besides the “main character, the Tiny Seed). Why didn't they grow like the Tiny Seed? What did the Tiny Seed need in order to grow?

Next, invite the children to pretend they are seeds.

Start by crouching down into a tiny ball with their feet apart. “Imagine you are a tiny seed, buried under the leaves and snow. Now spread your feet and imagine that they are roots, stretching deep into the soil. As you imagine the roots stretching beneath you, stand up slowly, growing and stretching toward the sky. Your hands and arms can reach out and above you, leaves capturing the sunlight and making food for you. Imagine your head is a beautiful flower, your favorite color, looking up toward the shining sun.”

Now invite the children to take out their nature journals and draw a seed, roots, stem, leaves and flower. Help them label the words next to each plant and color using colored pencils.

Day 2

1. To review what the students learned the previous day, invite them to retell the story “The Tiny Seed.” They may also wish to demonstrate the life of a growing seed using their bodies, as was done the previous day.

2. Let the students know that they will be starting an experiment. They will be planting a seed and caring for it to see how it grows.

3. Pass out the beans and plastic bags. You may wish to set up “planting stations” throughout the classroom where children may scoop potting soil (about ¼ cup per baggie), place their seeds in the dirt, and spray with water until the soil is moist, but not soggy. “Puff” the bags full of air before sealing.

4. Review what you've provided for the seeds so far and ask what else the seeds will need in order to grow. (they have water, and soil, and they will need sunlight)

5. With the children, find a place with lots of sun in the classroom or another room in the school. Tape the bags to the window, writing each child's name on the tape.

Wrap-up & Assessment

Day 3+

Take time each day for 5-10 days or longer to check on the seeds (Timing will depend on seed type used, if seeds were presoaked or not, and plant growth and development). Add water, if necessary, and ask students to describe what they see. Plan a little time each day for children to sketch the seeds in their journals. Some children may wish to add descriptive words or labels to their drawings.

Questions for Discussion

· What does a seed need in order to grow?
· What could happen if a seed does not get what it needs in order to grow?
· What if it's too cold, too hot, or too dry?
· How does a seed get planted? (The wind can blow it, people/animals can plant it)

Extensions

· Measure the growth of the seeds. (There may not be much growth for the first few days, and then once the seeds sprout they may grow rapidly.) By including time and tools to measure the stems and roots each day you may address additional math standards at your grade level as students measure, organize data in charts, and plot data (pictures or data points) on graphs/timelines.
· Put some of the seeds in an area that does not get enough sunlight, or no sunlight, and compare to the ones that do receive enough. Describe the differences. (Hint—do not be surprised if the seeds in the dark grow faster at first—an unexpected result caused by the seed giving up all of its stored food to the young plant trying to reach sunlight before it dies.)
· Transplant the young beans into flowerpots or small outdoor garden, or allow students to take their plants home to watch them grow.
· Write and illustrate a story about a seed.

Resources

Carle, E. *The Tiny Seed*
Minnesota Weatherguide Environment™ Calendar
online: https://jeffersfoundation.org/programs/calendar-in-the-classroom/

Minnesota Academic Standards

3-D Science Standards
Science Practices:
1. Asking Questions
2. Developing and Using Models
3. Plan and Carry out Investigations (investigating through observation)
4. Analyzing and Interpreting Data
6. Constructing Explanations
8. Obtaining, Evaluating and Communicating Information

Crosscutting Concepts:
1. Patterns
4. Systems and System Models
6. Structure and Function

Disciplinary Core Ideas:
LS1: From molecules to organisms: Structures and processes
K: Observe and record how plants require light, water, and other resources in order to survive
3rd Grade: Develop drawings/models of changes organisms go through during their life
5th Grade: Obtain evidence how plants get the materials they need for growth
LS2: Ecosystems: Interactions, energy, and dynamics
3rd Grade: Determine how amounts of sunlight and water impact the growth of a plant

PS3: Energy

K: Determine the effect of sunlight on Earth's surface

Example: the effect of sunlight on plant growth

ELA Standards and Benchmarks

Grade	Benchmark with Anchor Standard/Code
K	Ask and answer questions about key details in a text, with prompting and support. (R4: 0.1.4.1) Write routinely (may include a combination of drawing, dictating and writing), with support and guidance. (W2: 0.2.2.1)
3	Describe the relationship between a series of events, concepts or steps in a procedure, using language that pertains to time, sequence and cause/effect, in informational text. (R4: 3.1.4.4) Interpret the ideas/information conveyed through illustrations, graphics and other audiovisual elements in text. (R5: 3.1.5.3) Write routinely for a range of tasks, purposes and audiences. (W2: 3.2.2.1)
5	Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text; summarize the text. (R4: 5.1.4.1) Interpret, apply and evaluate the ideas/information conveyed through illustrations, graphics and other audiovisual elements to support understanding in text. (R5: 5.1.5.3) Write routinely for a range of tasks, purposes and audiences. (W2: 5.2.2.1)