Sprouting Seeds — A Seed Has a Coat

Description:

Students will plant seeds that are quick starters in a variety of containers – plastic cups, 2 liter bottle on its side, peat cup, etc. Then, they will study the growth of their seed through the plant development process.

Background:

Learning about the growing process is a basis for science inquiry and data collection. Not only will students learn about the seed to plant process, they will learn about the unexpected, as seeds don't always sprout the way that they're supposed to. This concept also relates to their health. When people eat healthy, drink plenty of water, are physically active and get the right amount of sleep, they're more likely to grow healthy and strong. But sometimes this is not the case because factors such as disease, sickness or accidents occur. However, if we live healthy, we grow as healthy as we can.

Materials:

- Various planting containers (plastic cups, 2 liter bottle with a slit cut out of its side, peat cups, clear CD gem case, fingertips of a clear food handling glove, etc.)
- Soil
- Quick start seeds (lettuces, beans, alfalfa, etc.)
- Inside a Seed Sheet
- Sprouting Seeds Daily Growth Chart

Preparation:

1. Determine if this activity will be completed individually or in small groups, and gather the planting containers, soil and seeds for each student or group.
2. Make copies of the Sprouting Seeds Daily Growth Chart for each student. Students can also make the chart in their garden journal.

Activity:

1. Ask students what they know about seeds. Ask the students if they know how to plant a seed and what a seed needs to grow (soil, water, sunlight, nutrients). Make a K-W-L chart or list this on the board with their responses. A **K-W-L** chart is divided into three sections:

- What I **K**now
- What I **W**ant to Know
- What I **L**earned

2. Using the Inside a Seed Sheet, explain that seeds have different characteristics (shapes, sizes, hard, soft), but all have the same things inside them to turn into a plant. The process of growing from a seed to a plant is called germination. Inside every seed is an embryo (a tiny plant) and endosperm (small leaves that supply the embryo food). The outside of the seed has a seed coat, which protects the embryo. All seeds need moisture, oxygen and the right temperature to grow. Until they have these conditions, the seed remains dormant and does nothing. Once the seeds have the right conditions, the plant inside the seed starts to grow and pushes open the seed coat. Tiny leaves appear and push out of the soil.
3. Allow students to observe the different types of seeds and share some of the information on the seed packets. Younger students who are non-readers can compare the pictures that are on the seed packets and the teacher can point out and read some of the content that's included on seed packets.
4. Demonstrate how to plant a seed. Seeds shouldn't be buried deeply. The planting depth should be based on the size of the seed. For example, carrot seeds are planted shallow because they're small and lima beans are planted a little deeper because they're bigger. Information about the planting depth can be found on the seed packets.
5. Allow students to select their seed type and container and plant the seeds. After the seeds have been properly planted, have students water their seeds and put them in a sunny spot.
6. Then have students make predictions using their Sorting Seeds Daily Growth Chart. This chart can be placed in their garden journal so that the students can refer back to it as time goes by.
7. Over the next 24 days, have the students write about or draw a picture of their seed/plant each day and continue to fill out the Sorting Seeds Daily Growth Chart. On the last day, have students review their predictions and discuss the outcomes.
8. Plants can be sent home or planted in the garden or a pot outdoors.

Tying it Together:

1. What did we need to give the seeds so that they would grow into healthy plants?
   Water, soil, sunlight, nutrients
2. If our needs or plant needs aren't met, what will happen?
   We won't be healthy or the best way we can.
3. Did anything unexpected happen with your plant?
4. Which seeds grew the fastest?
5. Which seeds took the longest?
6. Why didn't all the seeds grow?

Special Care:

Some students who haven't mastered the art of writing can draw pictures on their Sprouting Seeds Daily Growth Chart. If you have the technology, take pictures and use it for their data. You can also write what the student wants to say for each entry.

Digging Deeper:

- As the plants grow, students can sketch and label the parts of the plant at different stages of development (leaves, stem, roots, etc.).
- Compare different plants, containers and seed parts.
- Experiment with different amounts of light and water to make observations.

National Standards:

CCSS.ELA

- Reading: Informational text: Key ideas and details.
- Writing: Text types and purposes.
- Writing: Research to build and present knowledge.
- Speaking and listening: Presentation of knowledge and ideas.

NGSS

- Interdependent relationships in ecosystems.
- Structure, function and information processing.
- Inheritance and variation of traits.

Lesson Extensions:

Math: Predict how many seeds will germinate (sprout), how long it will take to sprout, measure the growth each day, etc.

Science: Explore parts of the seed, plant parts, germination stages and make comparisons. Gather data on the growth rates using different containers, amounts of light and quantities of water.

Language Arts: Pretend that you're a seed. Write a narrative about what happens to you as you grow from a seed to a plant.

Literature Connections:

Water Weed and Wait by Edith Hope and Angela Demos
The Dandelion Seed by Joseph P. Anthony
The Tiny Seed by Eric Carle
Once There Was A Seed by Judith Anderson and Mike Gordon
From Seed To Plant by Gail Gibbons
The Carrot Seed by Ruth Krauss
Seeds by Vijaya Khisty Bodach
A Seed Is Sleepy by Dianna Aston
Seeds Go, Seeds Grow by Mark Weaklan

Inside a Seed



Sprouting Seeds Daily Growth Chart

Seed Predictions

I planted_____seeds.

I think my seeds will pop out of the soil on Day_____.

My seeds popped out of the soil on Day_____.

On Day 24, my plant will be_____inches tall.

I think my seed will look like this on Day 24.

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Day 7	Day 8	Day 9	Day 10	Day 11	Day 12
Day 13	Day 14	Day 15	Day 16	Day 17	Day 18
Day 19	Day 20	Day 21	Day 22	Day 23	Day 24