

## Photo Description



This image shows two halves of a butternut squash or similar winter squash cut lengthwise. The pale yellow-orange flesh is visible, along with a central cavity containing many tan-colored seeds arranged in a fibrous, web-like pattern. The squash has a green outer skin and is photographed on concrete next to green grass.

## Scientific Phenomena

Anchoring Phenomenon: Why do plants make seeds inside fruits?

Scientific Explanation: Plants create fruits (like squashes) as protective containers for their seeds. The thick flesh of the squash protects the seeds from damage, while the fibrous material holds the seeds in place. Seeds are the plant's way of making new plants—this is called reproduction. The fruit will eventually fall to the ground, break apart, and release seeds that can grow into new plants. This is part of the plant's life cycle and helps plants spread to new places where they can grow.

## Core Science Concepts

- \* Seed Structure and Function: Seeds are tiny packages that contain a baby plant and stored food. Seeds need soil, water, and sunlight to grow into new plants.
- \* Fruit as Seed Protection: Fruits are the fleshy parts of plants that hold and protect seeds. The thick walls of a squash keep seeds safe from animals, weather, and damage.
- \* Plant Life Cycles: Plants grow, make flowers, create fruits with seeds, and then new plants can grow from those seeds. This cycle repeats.
- \* Plant Reproduction: Plants make seeds so they can create new plants. Unlike animals, plants don't move around, so seeds help them spread to new locations.

### Pedagogical Tip:

For Kindergarteners, focus on the observable, sensory aspects rather than technical terminology. Let students touch real seeds, feel the stringy fiber, and smell the squash. Use simple repetition: "Seeds make new plants. New plants grow from seeds." Avoid complex terms like "fertilization" or "pollination"—save those for later grades.

### UDL Suggestions:

Representation: Show the whole squash, then the cut halves, then individual seeds to build understanding through multiple visual supports. Use real objects students can handle (not just pictures). Action & Expression: Allow students to draw seeds, plant seeds in cups, and observe growth over weeks. Some may benefit from tracing seed shapes or sorting seeds by size. Engagement: Connect to food—butternut squash is eaten by people, creating genuine curiosity about where food comes from.

### Zoom In / Zoom Out

#### Zoom In: Inside a Seed

If we could look inside a seed with a special microscope, we would see a teeny-tiny baby plant sleeping inside! The baby plant has a small root ready to grow down into the soil, and a small stem ready to grow up toward the sun. Around the baby plant is stored food—like a packed lunch—that gives the baby plant energy to start growing when it gets water and warmth. This is why seeds are so special: they are like little packages with a whole new plant ready to wake up!

#### Zoom Out: Seeds in Nature's Web

One squash plant makes many fruits with many seeds inside. When the squash falls to the ground and breaks open, all those seeds scatter in different directions. Some seeds might be carried by animals, some by wind, and some by water. Each seed that lands in a good spot with soil, water, and sun can grow into a new squash plant. That new plant will make more flowers, more squashes, and more seeds. This cycle keeps repeating—seeds spreading across gardens, farms, and wild places—so squash plants can live almost everywhere on Earth. Seeds are nature's way of sharing plants all around the world!

### Discussion Questions

1. What do you think is inside these seeds? (Bloom's: Remember | DOK: 1)
2. Why do you think the squash has so many seeds instead of just one? (Bloom's: Analyze | DOK: 2)
3. If we planted one of these seeds in soil and watered it, what would happen over time? (Bloom's: Predict | DOK: 3)
4. How is a seed like a tiny baby? (Bloom's: Evaluate | DOK: 3)

### Potential Student Misconceptions

Misconception 1: "Seeds are dead things."

Clarification: Seeds might look quiet and not moving, but they are actually alive! A seed is sleeping—it's waiting for water, warmth, and soil to wake up. Once you give a seed water and plant it in soil, it will "wake up" and start growing into a plant. Seeds are living, just like you!

Misconception 2: "All the seeds inside the fruit are the same."

Clarification: Sometimes students think every seed is identical or that each seed will grow into a different plant. In reality, all the seeds in one squash are very similar, and they will all grow into squash plants (not tomato plants or other plants). The seeds are "brothers and sisters" from the same parent plant!

Misconception 3: "You need to eat the whole squash to get energy from it."

Clarification: Students may think only the orange flesh is useful. Actually, the seeds have food stored inside them too! The seeds can be roasted and eaten by people for nutrition, or they can be planted to grow new squash plants. Both the flesh and the seeds are helpful in different ways.

### Extension Activities

1. Seed Planting Experiment: Give each student a clear cup with soil and one large seed (sunflower, bean, or squash seed). Water it together daily and observe the sprout growing over 2–3 weeks. Children can draw pictures of changes each week and celebrate when the green shoot appears.

2. Seed Exploration Station: Provide a variety of real seeds (pumpkin, sunflower, bean, squash) in a sensory bin. Students sort seeds by size, color, and texture. They can place seeds in order from smallest to largest, encouraging observation and fine motor skills.

3. Squash Cooking & Tasting: If appropriate and following school policies, roast squash seeds with salt and let students taste them. Discuss: "We eat the seed! But if we planted it instead, a new plant would grow." Connect this to the squash they see in grocery stores.

### Cross-Curricular Ideas

#### Math Connection: Counting & Sorting Seeds

Give students a small pile of real seeds and let them count how many seeds are in one squash half. Create a simple bar graph or picture graph showing "How many seeds?" Younger Kindergarteners can sort seeds into groups (big seeds vs. small seeds) and practice one-to-one counting. Advanced students can compare: "Does this squash have more or fewer seeds than that pumpkin?"

#### ELA Connection: Seed Stories & Sequencing

Read *The Tiny Seed* by Eric Carle or a similar book. Have students draw or act out the life cycle in order: seed ! sprout ! plant ! flower ! fruit ! new seeds. Create a simple picture sequence strip that students can arrange and "read" to a partner. Students can also dictate sentences: "First, the seed grows roots. Then, the plant grows leaves. Next, flowers bloom. Last, new seeds grow."

#### Art Connection: Seed Mosaics & Nature Collages

Students glue actual seeds (squash seeds, sunflower seeds, beans) onto paper to create pictures or patterns. This builds fine motor skills and lets them handle real seeds while making art. They can create a "seed mosaic" picture of a plant, flower, or animal using different colored and textured seeds.

#### Social Studies Connection: Where Food Comes From

Connect the squash photo to the grocery store and farms. Discuss: "Farmers grow squash plants from seeds. The squash we buy at the store has seeds inside, just like this one! Where does your food come from?" Take a virtual farm tour or invite a local farmer or gardener to visit and show students how they plant seeds and grow vegetables. Students learn that food doesn't just appear in stores—it grows from seeds that farmers care for.

### STEM Career Connection

#### Farmer or Gardener

Farmers and gardeners plant seeds in soil and take care of them every day by watering, pulling weeds, and protecting plants from bugs. They help seeds grow into fruits and vegetables that people eat! Farmers use their knowledge of plants, soil, and weather to grow lots of food. A gardener might work in a backyard, a park, or on a big farm. Average Annual Salary: \$28,000–\$35,000 USD

#### Plant Scientist (Botanist)

Plant scientists study how plants grow, why some plants are healthy and others get sick, and how to grow better plants. They might work in a lab looking at seeds under microscopes, or in a garden testing new ways to help plants grow bigger and stronger. They discover new information about plants that helps farmers grow more food and keeps plants healthy. Average Annual Salary: \$64,000–\$78,000 USD

#### Food Scientist

Food scientists work with fruits and vegetables (like squash!) to figure out the best ways to grow them, store them, cook them, and make them taste good and be healthy for people to eat. They might study how seeds grow into squash or how to keep squash fresh in grocery stores. Some food scientists invent new ways to prepare vegetables so more people will enjoy eating them. Average Annual Salary: \$63,000–\$75,000 USD

### NGSS Connections

Performance Expectation: K-LS1-1

Use observations to describe patterns of what plants need to grow.

Relevant Disciplinary Core Ideas:

- K-LS1.A - All organisms have basic needs. Plants need sunlight, water, nutrients, and air.
- K-LS1.C - Plants get the materials they need for growth chiefly from air and water.

Crosscutting Concepts:

- Patterns - Seeds follow a pattern: they grow into plants, plants make flowers and fruits, fruits contain new seeds.

### Science Vocabulary

\* Seed: A tiny package that has a baby plant inside and food to help it grow.

\* Fruit: The part of a plant that holds and protects seeds.

\* Plant: A living thing that grows in soil and needs sunlight and water.

\* Grow: To get bigger and taller over time.

\* Life Cycle: The different stages a plant goes through: seed, sprout, plant, flowers, fruit, and new seeds.

### External Resources

Children's Books:

- The Tiny Seed by Eric Carle – A beautiful picture book about a tiny seed's journey and growth.
- From Seed to Plant by Gail Gibbons – Clear illustrations showing the plant life cycle from seed to mature plant.
- Planting a Rainbow by Lois Ehlert – Colorful book about planting seeds and growing flowers.

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Next Steps: This lesson works best when paired with hands-on seed planting so students experience the phenomenon directly over time. The concrete observation of a seed growing into a plant is the most powerful learning tool for Kindergarteners.