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How Do Seeds Sprout?

NGSS Addressed

K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive .

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

CCSS Addressed

K.RI.1 With prompting and support, ask and answer questions about key details in a text.

1.RI.1 Ask and answer questions about key details in a text.

2.RI.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

3.RI.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

4.RI.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

5.RI.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.



Materials

Copies of the text “How Do Seeds Sprout?” for students in 2nd- 5th grade

Success Skills

- **Collaboration** with peers.
- **Communication** of ideas.



Challenging Question

How do seeds grow?

(K–5) Access Prior Knowledge

Say: Authors of informational text communicate ideas and facts about a topic they want you to understand. *Good readers keep questions in their mind while reading informational texts.* When you read a text, you do not need to memorize every word you hear or read.

Ask: What questions should you keep in your mind to help you understand a text? Think about your answer and talk to your group about some of the answers you have.

Say: Good readers of informational text are able to *ask and answer questions about the text*, and use the text to supporting their answers.



Explore

Kindergarten through Fifth Grade Explore

- Write the Challenging Question on the board.

Explain: There are some reading strategies that can give you clues to determine answers or help you ask questions about the text.

- The title might give you a clue. Read the title to students. (“How Do Seeds Sprout?”) Look at the picture. This tells you the *topic*, perhaps, but not what the author wants to tell you about the topic.

Ask: What do we know about seeds? Talk to your shoulder partner (or table group) about seeds. What do seeds need when we are growing a garden?

Explain: When we look a text before we begin reading it, it is called *browsing* a text.

Ask: Do you think browsing will give us all the information we need to know about a text?

Say: we must actually read the text to see if our browsing was correct. We need to check (make a checkmark in the air) for understanding by reading the text, and then looking through the text again to check that we understand what the author is telling us.

- Read the text “How Do Seeds Sprout?” aloud to the students (K-1) or chorally (2nd-5th) with the students. Remind students to keep these questions in their mind throughout the story: *What do seeds need when we are growing a garden?*
- When finished reading, have students discuss in groups or with partners the things that seeds need and what happens to the seed after we put it in the soil.

Kindergarten through Fifth Revision and Reflection

Have students draw a picture of how the seed changes as it is germinating.

How Do Seeds Sprout?

Have you ever planted a seed and watched it grow? Maybe you've just noticed plants and beautiful flowers magically spring from the ground now and then.

All the plants around you start life as a seed. Without seeds, there would be no plants and Earth would be a barren place that would not support the many forms of life that surround us every day.

Seeds are usually fairly small. Some are even tiny. Despite their small size, though, seeds contain food and all the instructions necessary to sprout to life as a plant.

When seeds are planted, they first grow roots. Once these roots take hold, a small plant will begin to emerge and eventually break through the soil. When this happens, we say that the seed has sprouted. The scientific name for this process is *germination*.

As the plant grows and begins to make its own food from nutrients it takes from the soil, it will grow into a larger plant. The seed itself is like a survival package. It contains the food the seed needs while it is growing roots and forming into a small plant.

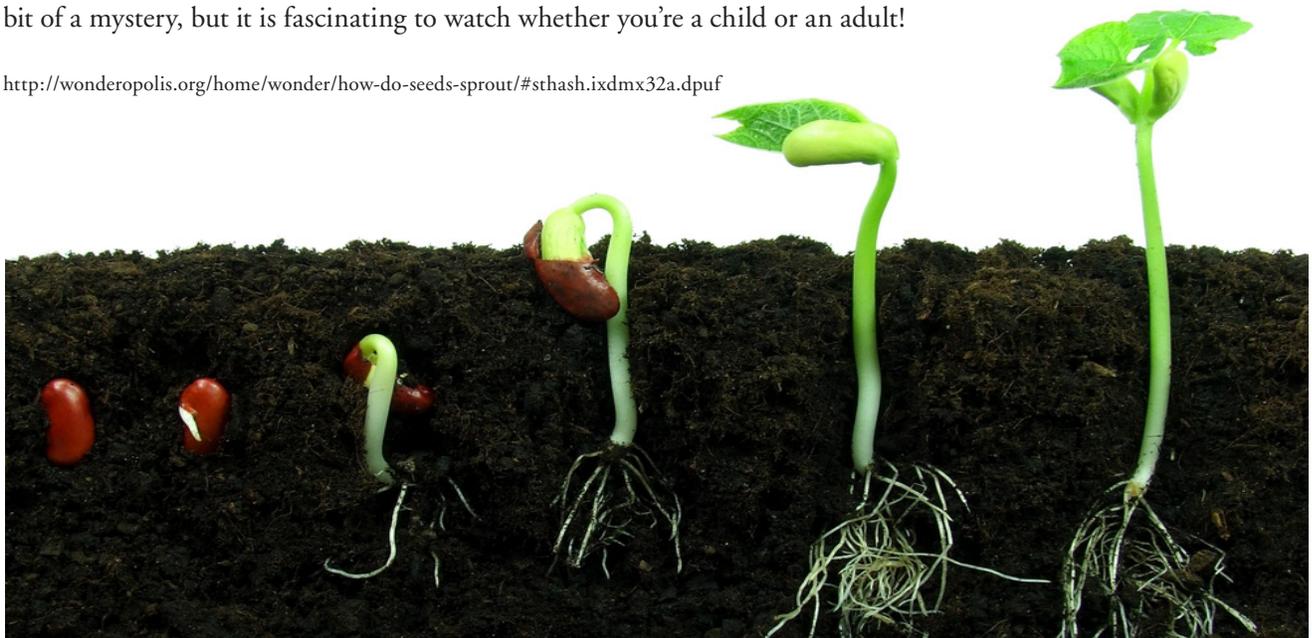
The three things plants need to grow are light, food and water. Light, whether from the Sun or an artificial light source (like a light bulb), gives the small plant the energy it needs to begin *photosynthesis*. Photosynthesis is the process the plant uses to convert light energy into food.

Like all living things, plants need water. Once a seed sends out roots, these roots will deliver water from the soil to the plant. As the plant grows and needs more water, roots will grow longer and stretch farther to find the necessary water in the soil.

When you get dry seeds at a gardening store, the seeds are *dormant*, which means they're inactive. All it usually takes to wake them up, though, is just to add water. Whether you plant them in moist soil or simply wrap them in a moist paper towel, they will begin to come to life.

Amazingly, scientists still don't fully understand what all happens inside of a seed as it comes to life. As the seed soaks up water, its food stored inside begins to be converted into energy in the form of enzymes. These enzymes start the process of sending out roots and sprouting the first parts of the plant. Exactly how all this works is still a bit of a mystery, but it is fascinating to watch whether you're a child or an adult!

<http://wonderopolis.org/home/wonder/how-do-seeds-sprout/#sthash.ixdmx32a.dpuf>



How Do Seeds Sprout? (K-1)

Have you ever planted a seed and watched it grow? Maybe you've just noticed plants and beautiful flowers magically spring from the ground now and then.

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