What Do Seeds Need?

Objectives:

Students will!

· Be able to identify the conditions needed for seeds to grow

· Engage in conversation comparing human needs to the needs of seeds

· Hypothesize outcomes of seed experiment

Educator Notes

· While there are different types of seeds, all have the same requirements in order to sprout into healthy plants

· All seeds need air, water, nutrients, and the proper conditions of light and temperature in order to mature

· This module requires preparation 1 week in advance

Materials:

· 4 Glass Jars

· 4 Seeds (Beans)

· Soil

· Water

Preparation:

Because this lesson requires observing the results of an extended experiment within a short period, the educator should prepare the seeds 5 - 7 days beforehand. There will be 4 seed samples, each planted in a separate jar with a distinct set of conditions. Jar 1 will contain a seed planted without water, Jar 2 will contain a seed planted with water and soil but kept in a box removed from sunlight, Jar 3 will contain seeds planted without soil, and Jar 4 will contain a seed that has been planted with soil and water and access to light but kept in cold temperatures (refrigerator). After going through the lesson with students, educator can show them the Jars to discuss the results.

Key Vocabulary:

nutrients | water | sunlight | conditions

Activity:

Begin lesson by going over seed basics: what is a seed, what is their function, etc. Follow this introduction by discussing what seeds need to grow. Ask students to think about what they think seeds need. What do humans need to grow? Could seeds and humans need the same things? Communicate to children that the necessary conditions are air, water, nutrients, and sunlight. As students begin to make connections between the healthy growth requirements for themselves and seeds, discuss why this may be the case. Students will learn that while all seeds require the same things to grow, they need them in different quantities. Compare the conditions that produce healthy, tasty lettuce to those that foster good tomatoes. Pose the question: what happens if a seed is missing water? Soil? Light? Allow students to hypothesize, asking them to explain why they believe a seed will or will not grow without a certain element. Once students have made predictions, ask them how they think their ideas could be tested. Follow this up by introducing the experiment. To test the discoveries made during the discussion, students will plant seeds in various conditions: some without water, some without soil, some placed in areas with low exposure to light, etc. As this lesson is meant to be contained in one period, instead of revisiting the newly prepared jars in one week's time, explain to students that you have already done this experiment and introduce the pre-prepared, labeled jars to show them the results. Have students observe the seeds in the jars.

Wrap-Up:

To conclude, the educator should have students discuss their observations on how the seeds reacted to their growth conditions. A discussion on how the results compared to their predictions should follow. Are the students surprised by how the seeds turned out? How do they think their growth would be affected by missing one of those growth requirements? End the lesson by reinforcing the similarities and connections between nature and humans.

Extension Activity (K-5):

N/A

Sources:

http://www.csgn.org/images/pdf/SeedMagic.pdf

http://cnx.org/content/m17209/latest/