

Science Lesson: Studying Seeds and Plant Growth

Materials Needed:

- Stackable Caddy Organizer (DEF29003) and/or Rotating Carousel Organizer (DEF3901CR)
- Wet Erase Markers (assorted colors DEFSMA510-V4 & white DEFSMA510-V4-WT)
- Magnetic Customizable Sheets precut into 4" x 3" squares (DEF5901)
- Seeds (sunflower or pumpkin seeds) and beans (lima beans recommended)
- Extended Activity: herb seeds (basil, mint and oregano are fast growers)
- Potting soil
- Water
- Measuring cup
- Ruler
- Science journal or data capture sheet

Grade Level

☒ Pre-K - 3rd Grade

LEARNING OBJECTIVE

At the end of this project students will be able to identify parts of a seed and plant, understand basic needs for plant growth, construct a miniature garden and analyze predictions with results from the experiment.

LESSON SUMMARY

In this two-three week science project students will get an up-close look at seed germination and plant growth by planting their own seeds and/or beans. Students will work in teams and plant their seeds and/or beans (sometimes under varying conditions) and complete daily observation journals to record the data.

GUIDING QUESTIONS

- What are the parts of a seed?
- What do seeds need in order to grow into plants?
- What are the parts of a plant?
- What happens when seeds are planted in different areas?

LET'S GET READY!

Students, are you done growing yet? Nope—not even close! What are important things you need in order to grow up to be a healthy and strong adult? Give each student a Magnetic Customizable Sheet square and Wet Erase Marker to write a word or draw a picture of something that helps them grow. Examples could include, food, rest, exercise, education and family. As students place their squares on the display board, discuss each and help students look for patterns and ways to group the responses based on similarities. Organize the different responses into categories. For older students, extend further by creating a bar graph on the board.



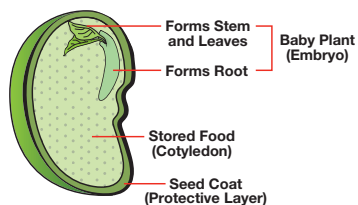
DEF29003
(2 Units shown)



DEF3901CR

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Parts of a Seed



Extended Herb Garden Option:

Use either the Stackable Caddy Organizer or the Rotating Carousel Organizer to grow three different types of herbs. Organize the "garden" into three sections by creating miniature herb label signs (basil, mint, oregano) from index cards and toothpicks. Once the stems reach about four inches in height, transfer the herbs into individual containers. Tie different colored ribbon around each container to represent the different herbs and the class can present the herb plants as gifts to the school cafeteria staff!

LET'S GET SET!

Just like kids need certain things to help them grow, plants do too! Plants are living things and if they do not have proper care they cannot live and grow to become adult plants. Plants start out as very small seeds; seeds that have a lot of potential inside of them to become adult plants! Show students a diagram of a seed and point out the main parts and terms using grade level appropriate vocabulary embryo (baby plant), seed coat (protective layer), and cotyledon (stored food). Explain the different parts of the seed and purpose for each (transforming in to roots, stem, leaves and a flower). Explain that plants need water, soil, light, air and time in order to grow. For younger students, focus on identifying the three main seed parts and their functions. For older students, extend by introducing the term "potential energy" and explain how seeds contain the potential to grow. When solar energy warms up the soil it changes into chemical energy which activates the potential energy in the seed to make it grow into an adult plant, which is an example of energy transfer.

LET'S GO!

It's time to plant our seeds and watch them grow!

PLANTING

- Pre-K & Kindergarten: With supervision, students fill the Rotating Carousel Organizer or Stackable Caddy Organizer canisters half full of potting soil. Plant four seeds into each canister and place the seeds close to the outer part of the container for visibility. Assign one canister per student pairs; students write their names on the canister with the Wet Erase Markers. Pour ¼ cup of water on the seeds once a day.
- 1st Grade: Follow the same instructions but divide the canisters so half will contain seeds and half will contain beans. Allow students to fill the canisters with soil. Alternate placement of bean and seed canisters on the Carousel or Caddy for easy comparisons. Label canisters "bean" or "seed" along with student names.



DEFSMA510-V4



DEFSMA510-V4-WT



DEF5901



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NATIONAL EDUCATIONAL STANDARDS

- NGSS: K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.
- NGSS: 2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.

ADDITIONAL RESOURCES

- Watch this video on the development from seed to flower: <http://www.pbslearningmedia.org/resource/tdc02.sci.life.colt.plantsgrow/from-seed-to-flower/>
- *A Place To Grow* by Stephanie Bloom (Bloom and Grow Books)
- *From Seed to Plant* by Gail Gibbons (Scholastic)

- 2nd and 3rd Grade: Follow the same instructions for seed and bean containers. Once seeds are planted and watered, determine different growing locations and place the carousel canisters around the room. Examples of locations could be: on the window sill, the teacher's desk, in a dark closet, on a book shelf and on the floor in a corner. *Option:* Put the canister lid on one seed compartment to compare/contrast seed growth and without air. Labels for each canister should state student name, seed or bean, and planting location. It's important to label plant location for comparison purposes later in the project!

PREDICTING

- Students make predictions in their science journals (or a group chart) about the seed growth.
- Predictions can be about: How long until germination? Which will germinate the first—seed or bean? How long until a stem reaches the surface? How tall will the stem become? What planting location yields the best growth?

OBSERVING AND RECORDING

- Students record and/or draw their observations every day in their science journals. Help students take measurements with rulers as appropriate. Younger students can draw pictures. Older students can draw pictures and/diagrams and utilize vocabulary terms as appropriate for their grade level. Student drawings will become more detailed to reflect roots, stem and leaves. Older students compare and contrast the seeds with the beans in addition to the variable of multiple growth locations.
- Examples of observations: The seeds germinate but do not grow in the dark. Or, no matter what position the seed is in the roots always grow downward. Or, sunflower seeds sprout faster than lima beans.
- Upon completion of the seed growth project, students summarize their observations and what they have learned by creating a publishing piece such as a poster, seed growth booklet, compose an original story to illustrate or act out, design and construct a PowerPoint to share findings, use an online graphing program to organize findings.