RAFT IDEAS

Topics: Life Science, Ecology, Botany

Materials List

- ✓ Plastic vial such as a micro-centrifuge tube with hinged cap (~ 1 ml - 2 ml)
- ✓ Hot glue
- ✓ Cotton ball or paper towel
- ✓ Water
- ✓ Pushpin
- ✓ Pin back or screw eye hook, size medium
- ✓ Optional: ribbon or yarn
- ✓ Optional: materials for a picture diary or chart

This activity can be used to support the teaching of: Next Generation Science Standards:

- Plants & Environment (Grade K, Life Science 1-1, Grade 2, Life Science 2-1)
- Plant structures (Grade 4, Life Science 1-1)
- Plants, matter and energy flow (Grade 5, Life Science 1-1)
- Sun energy becomes food (Grade 5, Physical Science 3-1)

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Grow it and Wear it!

Sprout a seedling in a wearable necklace or pin

Celebrate Earth Day or spring by sprouting and wearing a seedling!

Assembly

1. Use a pushpin to poke a hole in the lid of a plastic vial for ventilation.
2. Hot glue a pin back or a screw hook to the vial. Optional: attach a length of ribbon or yarn to the hook to make a necklace.
3. Insert a small piece of paper towel or cotton into the vial.
4. Add drops of water to the paper or cotton until damp.
5. Place a fast growing seed (e.g.- grass, radish, peas, cantaloupe) in the vial.

To Do and Notice

1. Wear the vial daily and observe the process of germination. Optional: create a picture diary or chart to document the major or daily changes of the seed's germination.
2. When the seed sprouts open the lid of the vial to allow the leaves to emerge.
3. Add a drop of water, as needed, to keep the paper towel or cotton damp.
4. When the seedling grows too big for the vial, transfer the plant:
   - Method 1: Carefully remove the seedling and repot the plant into a larger container or into the ground.
   - Method 2: For less disruption to the plant, carefully clip off the bottom of vial. Plant the vial and seedling together in a larger container or into the ground.

The Science Content Behind the Activity

Germination is triggered when certain conditions of moisture and temperature are met. The dry seed absorbs the moisture supplied by the damp paper or cotton. A seed's embryo also needs air, so a submerged seed will rot rather than germinate. The seed contains enough nutrients to sustain germination and to grow the first leaves. The leaves will use carbon dioxide from the air and water from the roots to produce sugars. This reaction is powered by light in a process called **photosynthesis.** The sugars created by the leaves become the energy source for plant growth and development. Photosynthesis produces oxygen as a waste product. Animals, in contrast, use oxygen in respiration and produce carbon dioxide as a waste product.

- **Embryo**: A miniature version of the plant
- **Cotyledon**: The tiny leaf or leaves in the seed that will be the first to appear after germination
- **Endosperm**: Surrounds the embryo in the seed and contains the nutrients for plant growth and development

Taking it Further

Sprout seeds (e.g.- wildflowers) that could become part of an Earth Day celebration.

Web Resources (Visit www.raft.net/raft-idea?isid=94 for more resources!)

- Information on Earth Day - http://www.earthday.org/

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