K-3 Activities Which Soil is the Best Home for Carrots?

Target Standards:
- **Kindergarten**
  - SK2E. Students will describe the physical attributes of rocks and soils.
    - Use senses to observe and group rocks by physical attributes such as large/small, heavy/light, smooth/rough, dark/light, etc.
    - Use senses to observe soils by physical attributes such as smell, texture, color, particle/grain size.
    - Recognize earth materials— soil, rocks, water, air, etc.
- **1st Grade**
  - S1L1. Students will investigate the characteristics and basic needs of plants and animals.
    - Identify the basic needs of a plant.
      1. Air
      2. Water
      3. Light
      4. Nutrients
- **2nd Grade**
  - S2L1. Students will investigate the life cycles of different living organisms.
    - Investigate the life cycle of a plant by growing a plant from a seed and by recording changes over a period of time.
- **3rd Grade**
  - S3E1. Students will investigate the physical attributes of rocks and soils.
  - S3L1. Students will investigate the habitats of different organisms and the dependence of organisms on their habitat.

Materials:
- Carrots with greens (different colored varieties if possible)
- Different soils: loam, clay, sand (can be purchased at local garden supply stores)
- 3 identical containers (containers should be deep enough to accommodate length of carrots and have equal size and quantity of drainage holes - recycled containers are best, such as 2-liter bottles cut in half)

Engage (Whole Group): 15 minutes

**Scientific Method: Make an Observation**
Observe carrots with greens (different colored varieties if possible)
- Look: Describe color
  - Orange roots contain betacarotene which is converted into Vitamin A and helps our eyesight
  - Green leaves due to the chlorophyll in the chloroplasts that carry out photosynthesis
- Touch: Describe texture of carrot and greens
- Smell: Describe the smell of raw carrots
- Sound: Describe sound of the break (crunch)
- Taste: Describe the taste with adjectives!
**K-3 Activities** Which Soil is the Best Home for Carrots? —

**Scientific Method: Research**
Determine what you already know about growing carrots
- Watch a Video about Carrots: [https://www.youtube.com/watch?v=bxkUO0SiAss](https://www.youtube.com/watch?v=bxkUO0SiAss)
- Ask a Farmer: Contact a local farmer with questions about how and when to grow carrots, along with any experiments they have done. Search the [Local Food Guide](https://www.georgiaorganics.org/for-schools/rooting-for-carrots) to find the contact information for local farmers in your area.

**Explore (Small Group): 10 minutes**
**Scientific Method: Ask a Question**
- Review prior knowledge: Plants need water, air, sun, and soil.
- Pose the question: What type of soil will carrots grow longest in?

**Scientific Method: Make a Hypothesis**
- Review or introduce soil types (with examples for hands-on exploration)
  - Loam: soil with equal parts of sand, silt, and clay
  - Clay: soil with the smallest particles; water does not pass through easily
  - Sand: soil with the largest particles; water passes through easily
- Gather student hypotheses on which soil type will grow the longest carrot

**Explain (Whole Group - Modeling): 20 minutes**
**Scientific Method: Conduct an Experiment**
- Plant carrot seeds in 3 labeled containers: soil, loam, and clay (containers should be deep enough to accommodate length and have equal size and quantity of drainage holes - recycled containers are best, such as three 2-liter bottles cut in half!)
  - If you need some carrot planting tips, watch the How to Plant Carrots video or review How-to Grow Carrots resource on Rooting for Carrots Resources webpage: [www.georgiaorganics.org/for-schools/rooting-for-carrots/resources](http://www.georgiaorganics.org/for-schools/rooting-for-carrots/resources)
- Place containers by the window or in the garden and water them regularly and equally for at least 2 months

**Extend (Small Group - Guided Practice): 10 minutes**
**Scientific Method: Draw Conclusions**
- After at least 2 months, harvest the carrots from each type of soil and measure to see which soil type grew the longest carrot.
  - Not sure how to harvest carrots? Watch How to Harvest Carrots video on the Rooting for Carrots Resources page: [www.georgiaorganics.org/for-schools/rooting-for-carrots/resources](http://www.georgiaorganics.org/for-schools/rooting-for-carrots/resources)
- Analyze results attempting to explain the results of the experiment given your prior knowledge about the pros / cons of each type of soil.

**Evaluate (Independent - Independent Practice): Length varies**
**Scientific Method: Share Your Conclusion**
Students can create a “How to Grow Carrots” guide based on what they learned from their experiment, from the seed pack, and from any further research they conduct.