

All Sorts of Seeds

Standard IV

Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.

Objective 2

Living things change and depend upon their environment to satisfy their basic needs.

Intended Learning Outcomes

Communicating Science: Communicating effectively using science language and reasoning.

Knowing in Science: Understanding the nature of science.

Content Connections: Language Arts, Math

Background Information

This activity is designed to give students the opportunity to compare seeds and describe the ways that they are carried through the environment. Prior to teaching this lesson, make sure students have experienced identifying attributes and sorting various objects.

Before you begin this unit, complete a K-W-L chart as a class showing what students already know and would like to know about seeds and plants. Use this information to help plan mini lessons for extending the activities provided in the CORE Academy Handbook.

As this is an inquiry-based activity, notice that questions, investigations, tools for data collection, and journaling response opportunities are included.

Research Basis

Shymansky, J. A., Hedges, L. V., & Woodworth, G. (1990). A Reassessment of the Effects of Inquiry-Based Science Curricula of the 60's on Student Performance. *Journal of Research In Science Teaching*, 27(2), 127-144.

The evidence reveals that inquiry-oriented curricula positively impacts teaching and learning in many areas.

Friel, S. N., Curcio, F.R., & Bright, G.W. (2001). Making Sense of Graphs: Critical Factors Influencing Comprehension and Instructional Implications. *Journal for Research in Mathematics Education*, 21(2), 124-158.

To be functionally literate, students need to be able to read and understand graphs. Comprehension of graphs includes translation, interpretation, and extrapolation.

Assessment Suggestions

- Use sketches and journal entries to assess student understanding of:
 - comparisons between seeds
 - ways in which seeds travel
 - graph comprehension and application
- Use oral discussion and reflection as an informal assessment. Interview students to determine their perceptions of seeds and what knowledge they have constructed.
- Give students an opportunity to record their understandings of how seeds are carried through the environment. This may be done in their journals or as a separate assessment piece. Invite students to “show and tell” their journal writing with each other.
- Use the *Sorting Seeds!* worksheet to assess students’ ability to compare seeds. For an even deeper understanding of their thinking, ask the students to explain their sorting process to you.

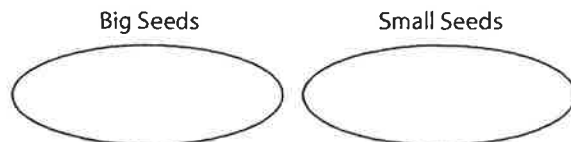
Invitation to Learn

Display a variety of fruits and vegetables for students to see and touch. Ask the question, “What would happen if we cut open these fruits/vegetables and looked inside? What would we find?” Students will give their predictions. Follow up by asking questions such as, “Why do you think that? How do you know?” These types of questions help you understand their previously constructed knowledge. Cut open the fruits/vegetables and allow students to freely explore the contents. Provide them with cups, plates, or Ziploc® bags for collecting their findings (seeds).

Instructional Procedures

1. Using the seeds gathered during the Invitation to Learn, help students make a real graph to represent their findings (e.g., graph fruits/vegetables by number of seeds, size of seeds, color of seeds, etc.).
2. Ask, “What do you observe by looking at the graph?” Use questions to guide the extraction of information from the graph.
3. Have students record their observations about the graph in their journals.

4. Take students on a seed walk. Each student needs at least one sock to wear over his/her shoe. Students may also use socks on their hands. Take a walk around the school grounds, being sure to pass through grassy areas and under/next to trees and bushes.
5. Upon returning to the classroom, students examine the seeds they gathered. Encourage them to share their “treasures” in groups of two or three. You may choose to make another real graph, depicting the data collected from student observations about their seeds (e.g., size, color, shape, location). Discuss the graph by asking questions to guide understanding. Allow the students to write about their interpretations of the data.
6. Discuss how seeds travel. Ask, “How did this ‘helicopter’ seed end up on the playground?” As a focus/validation for the discussion, share books like *How and Why Seeds Travel*, *The Tiny Seed*, and *Seeds Get Around*.
7. Create a class book that describes the different ways the students’ seeds might have been carried through the environment.
8. Provide students time to freely explore all of the attributes of the seeds themselves, using hand lenses to observe and nonstandard measuring tools to measure/compare. Give each student an assortment of the seeds collected from the Invitation to Learn and the seed walk and/or supplement their collections with seeds from packets purchased at the store. Once they have had ample time to observe the seeds carefully, ask the students to name various attributes about the seeds (e.g., size, color, texture, method of travel, etc.). Create a Seed/Plant Word Wall using poster board to record these attributes on.
9. As a class, use the Sorting Circles side of a “Graph-it” vinyl mat to sort seeds, using attributes listed on the Seed Word Wall. Allow the students to sort the seeds in at least three different ways.



10. Allow students to practice comparing the seeds by having them complete the *Sorting Seeds!* worksheet three times and record their final sort.

Materials

- Fruit and vegetables
- Paper cups
- Old socks (at least one for each student)
- Posterboard for a “Seeds” word wall
- Hand lenses
- Non-standard measuring units (e.g., plastic worms)
- Sorting Seeds!* worksheet
- How and Why Seeds Travel*
- Seeds Get Around*
- Journals

11. Return to the K-W-L chart and ask students to dictate what they have learned and what they still want to know about seeds and plants.

Curriculum Extensions/Adaptations/Integration

- Read *A Dandelion's Life* aloud. Invite students to creatively write a story about the travels of a seed.
- Share the poetry book, *Silver Seeds*. Encourage the students to use the pattern established in the book to write poems about their knowledge of seeds.
- Introduce students to *Plant Fruits and Seeds*.
- Students create a graph depicting edible seeds and nonedible seeds.
- For students who are emerging writers, adapt the journaling from independent to interactive or shared writing by meeting with them in small groups or one-on-one while the independent writers are working.
- Many first grade students will be frustrated if they do not know how to spell the scientific words they want to use to express themselves. Offer your students a "Have-a-go" page and teach them the strategy of writing the sounds that they know. Encourage them to circle the words they are not sure about and keep writing, instead of waiting for an adult to spell the word so that they can continue their sentences.
- As a challenge, invite advanced learners to use the poetry pattern in Paolilli and Brewer's *Silver Seeds* to create their own poetry books about plants and seeds.

Resources

Books

- Integrated Curriculum and Developmentally Appropriate Practice Birth to Age Eight*, by Craig H. Hart, Diane C. Burts, & Rosalind Charlesworth; ISBN 0-7914-3360-9
- How and Why Seeds Travel*, by Elaine Pascoe; ISBN 1-5741-658-1
- A Dandelion's Life*, by John Himmelman; ISBN 0-516-26402
- Silver Seeds*, by Paul Paolilli and Dan Brewer, ISBN 0-14-250010-0
- Plant Fruits and Seeds*, by David M. Schwartz; ISBN 1-57471-330-2
- Seeds Gets Around*, by Nancy White; ISBN 1-56784-031-0
- The Tiny Seed*, by Eric Carle; ISBN 0-590-42566-8

Family Connections

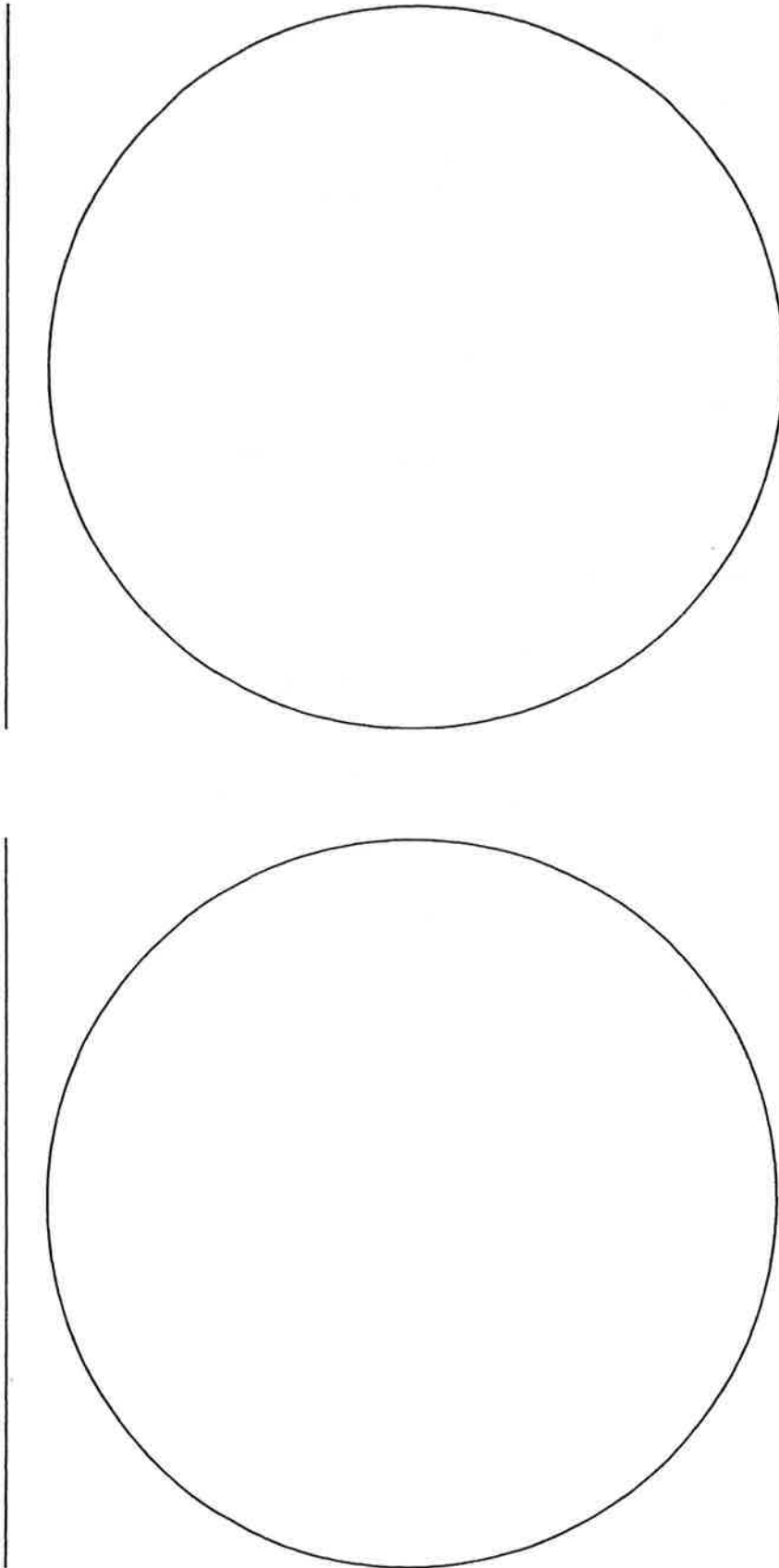
- Encourage students to add seeds they find at home to the classroom collection. Students may want to make their own collection at home.
- Have students take a writing log home for a week to keep track of how many times they eat seeds or foods that contain seeds.
- Allow students to take home seeds and a copy of the *Sorting Seeds at Home!* worksheet. Invite family members to take turns sorting the seeds by different attributes. Have the student record the different sorting strategies on the back of the page and glue an example of each. Family members sign their names next to their ideas.

Name _____

Sorting Seeds!

Sort your seeds at least three times. Choose your favorite attribute and record it by gluing down the seeds. Don't forget to label your sets!

Sorting record: [] [] [] [] [] []



1st 4-2 4.6

Name _____

Sorting Seeds at Home!

Ask family members to sort your seeds. Record their strategies by writing the attribute they sorted by and the names they gave their sets. Glue an example next to each set label. Have each person sign next to his/her strategy!

Strategy/ Attribute	Example	Set Labels	Example	Signatures
size		big & tiny		
		&		
		&		
		&		

