Activity #2

All Sorts of Seeds Travel!

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
Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)
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, fill in alpha boxes as a class with words or phrases that sutdents know about seeds. Use this information to help plan mini-lessons for extendingt 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 Pervformance. *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. *Jornal for Research in Mathematics Education,* 21(2),k 124-158.

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

Invitation to Learn

Materials

- Mystery container (not see thru)
- Variety of seeds

Gather a variety of seeds that are very different in shape, size, and texture. Such as avocado, peach, pear, mango, apple, peach, plum, nectarine, grapefruit, cherry, etc. Place seeds inside a mystery container (not see thru). Give students an opportunity to feel inside the mystery container and respond to some of the following questions. What do you feel? How do they feel? Are they all the same? What are they? Are they different objects?
After a class discussion show students the seeds. Tell them they are all seeds and we are going to have to opportunity to explore seeds as a class.

Seed sorts

Materials

- Apples (different varieties)
- Plastic knives
- Plastic spoons
- Paper plates
- Paper towels
- Variety of fruits
- *How many seeds page*
- Alpha boxes
- Hand wipes

Instructional Procedures

1. Tell students that they are going to be exploring apples and their seeds. Ask questions such as: Where do apples grow? What is inside an apple? Do you think apple color makes a difference in the number of seeds? Allow students time to respond to the questions and perhaps relate any experiences they may have had with apples.
2. Divide the class into groups of 2 or 3. Give each group an apple, (apples should be of different varieties) a plastic knife (have a conversation about knife safety), paper towels and a paper plate. Tell them there are different ways to cut an apple. Allow them time to explore and cut their apples. Tell them to look for seeds and their placement when they cut their apples. Have students collect the seeds on their paper plates.
3. After all seeds have been collected come together and ask the following questions: Where were the seeds in your apples? How many seeds do you have? What color are the seeds? Are all the seeds alike? How do they feel? Does everyone have the same number of seeds?
4. Have a prepared bag with 3 or 4 different fruits for each group. Have fruits cut apart so students don't need the knives anymore. Choose from the following fruits: cantaloupe,

1st 4-2 2.2

tomato, cucumber, orange, lemon, squash, green peppers, peas or beans in the pods, strawberry, kiwi, peaches, plum.

5. Allow students to explore the fruits and find the seeds. They may need a spoon to get to some of the seeds. Ask some of the same questions you did previously.
6. Have each group fill out the number of seeds graph page.
7. Discuss findings as a class. Which fruit had the most seeds? Which one the least? Did the size of the fruit make a difference in the amount of seeds? Did the size of fruit make a difference in the size of a seed? Were all the seeds where you expected them to be? What were some ways you sorted your seeds?
8. Complete this lesson by creating a seed/plant word wall. Add 4-6 words to the word wall.

Seeds Scatter

Materials

- *Now I Know All About Seeds*
- *Seed sort*
- Seeds from the store
- Alpha boxes
- Seeds travel worksheet

Instructional Procedures

1. Read Now I Know All About Seeds or another good book about seeds traveling.
2. Discuss different ways that seeds travel. By the wind, by floating in rivers, lakes or oceans, by people planting them or them sticking to people, by sticking to animals fur and by animals carrying the seeds in their bodies and leaving them in a new place.
3. Provide students with a plate of seeds that have been purchased from a store. Have students sort the seeds by the way they believe they can travel using the seed sort page. You can also have them sort the seeds other ways such as texture or size.
4. Discuss possibilities of seed travel and the graphs as a class. Do the seeds travel worksheet.
5. Return to the alpha boxes and have students dictate new words or phrases they have learned about seeds.
6. Add 4-6 words to the seed/plant word wall.

Assessment Suggestions

- On a paper have students respond to the following questions? Draw a picture of a seed or what is a seed? Where do seeds come from? Where do you get seeds? Do you eat seeds?
- Have a variety of seeds out and see if students can identify where they come from.
- Have a variety of seed packets. Look at the packet as a class. discuss what that particular seed will look like. (texture, size, color, shape) Have students make predictions. Then dump out the seeds and compare predictions to seeds.

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- Give students a piece of blank paper. Add drops of glue and different seeds to a page. Have students label the seeds.

Possible Extensions/Adaptations/Integration

- Have students bring an old sock. Put the sock over their shoes and go for a walk in a place there will be seeds. You can sort the seeds on the sock. For fun plant one of the socks and the seeds on it will grow.
- As jigsaw groups meet to collect data, interview individual students to assess gaps in understanding or misconceptions. These interviews also provide an opportunity to encourage deeper ideas and expanded knowledge of your advanced learners.
- This lesson has built-in adaptations. It provides students the opportunity to work collaboratively and express their thoughts orally, as well as through pictures and writing.

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 *Seed Sort!* 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.

Additional Resources

Books

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

Organizations

Red Butte Gardens, Thanksgiving Point, Utah Water District & Conservancy, Local Nurseries, and National Seed Bank.

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Name _____

How many seeds?

# of Seeds				
Fruit	apple			

# of Seeds				
Fruit				

1st 4-2 2.5

Name:_____

Seed Sorts!

#3

#2

#1

1st 4-2 2.6

Here are some ways that seeds travel.

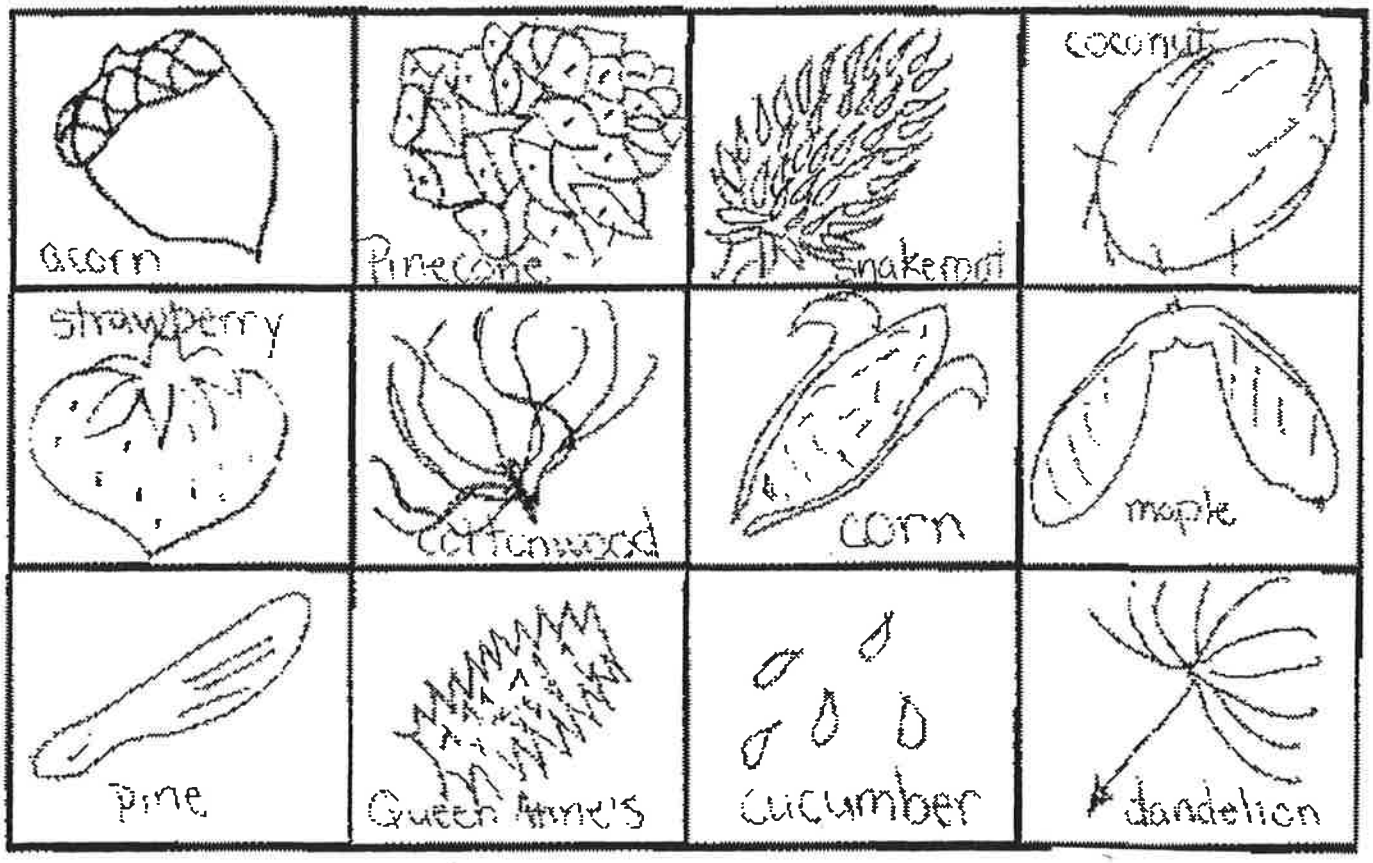
The wind

Floating in rivers, lakes or oceans.

People planting them or them sticking to people.

Sticking to animals fur and by animals carrying the seeds in their bodies and leaving them in a new place.

Cut apart and sort the following seeds into ways you think they travel.



1st 4-2 2.7