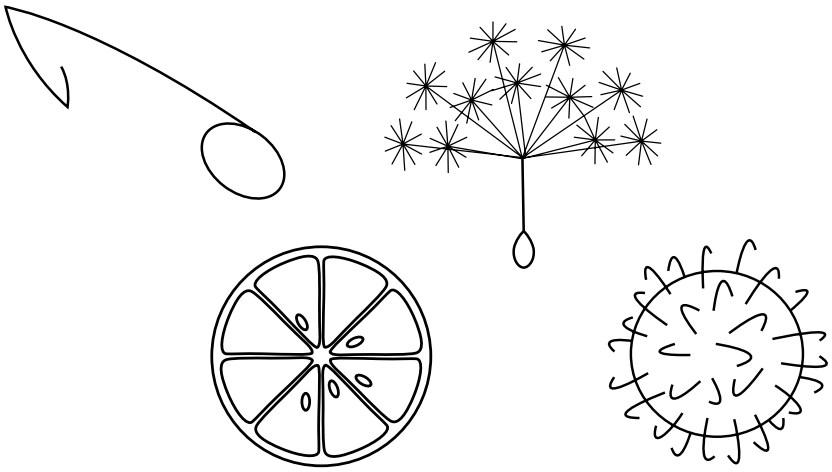
Lesson 13 Learning About Seed Dispersal



A QUICK LOOK

Big Idea

Plants are living things. They have many parts that work together to help them grow and make new plants.

Overview

Children observe seeds from different places to learn about seed variety and dispersal. They look at the physical characteristics of seeds and then try to figure out how the seeds travel from the parent plant to a new location to sprout.

Key Notes

- The "Sorting Seeds" exploration can be taught during a mathematics session.
- Make sure you have a variety of seeds and fruits with interesting dispersal types. See the Preparation section for specific suggestions and sources.
- For more information about the science content in this lesson, see the "Flowers, Fruits, and Seeds" section of the Teacher Background Information.

Lesson 13

Standards and Benchmarks

By studying seed dispersal, the children develop Life Science Standard C (The Characteristics of Organisms): "Each plant or animal has different structures that serve different functions in growth, survival, and reproduction."

They also develop The Living Environment Benchmark 5F (Diversity of Life): "Plants and animals have features that help them live in different environments."

Lesson Goals

1. Review and observe variation in types of seeds.
2. Identify ways that seeds are dispersed.
3. Consider links between the physical characteristics of seeds and the way they are dispersed.

Assessment

As an assessment of this lesson, play the "Dynamic Dispersers" guessing game, as described in the Further Science Explorations section on page 191.

NOTES

Materials

Item	Quantity	Notes
ExploraGear		
Magnifying lenses	1 or more per group	To examine seeds.
Classroom Supplies		
Basin or sink of water	1	To try floating seeds in.
Coconut	1	To demonstrate dispersal.
Fruits, fleshy types, such as apples and oranges	1 of each or more	To demonstrate dispersal.
Nuts in shells	Several	To demonstrate dispersal.
Paper plates	3 or more per group	To sort seeds onto.
Seeds, wild types with various dispersal methods, such as mature dandelions, milkweed pods, winged maple seeds, or acorns	Several	To demonstrate dispersal.
Trays (or paper plates, plastic bags, or other containers)	1 per group	To hold seeds.
Previous Lessons		
Seed-covered socks from Lesson 3	1 sock per child	To examine and sort.
Seeds collected from Lesson 12	1 collection per group	To examine and sort.
Seeds brought from home after Lesson 12 (Family Link)	Several per group	To examine and sort.
Curriculum Items		
***Collecting and Examining Life Science Notebook*, pages 18-20**		
Teacher Master "Dynamic Dispersers" (optional)		

Preparation

- ❑ Collect seeds and fruits with different dispersal types. Find as many different samples as you can.
  - From the grocery store, get an apple and an orange or other fleshy fruits, nuts in their shells such as walnuts, and a coconut.
  - From your neighborhood, try to find a mature dandelion with the seeds ready to blow off, a milkweed pod ready to burst open and release seeds, or ripe winged maple seeds.
  - Get out the seed-covered socks that you saved from the Sock Walk in Lesson 3.
  - Get out the envelopes containing the seeds that you saved from Lesson 12.
  - Collect the seeds generated from the **Family Link "Kitchen Seeds."**
- ❑ Assemble a diverse collection of seeds for each group and put the collections on trays or in containers, such as plastic bags or paper plates. Try to give each group at least one seed of each dispersal type (carried by wind, water, or animals). You might want to keep together the groups from Lesson 12 and give each group the following:
  - Their envelope of seeds from Lesson 12
  - Each group member's own sock from the Sock Walk in Lesson 3
  - Each group member's seeds from home
  - An assortment of the other seeds you've collected

Vocabulary

seed dispersal. . . . . How seeds travel away from a parent plant.

Notes

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Teaching the Lesson

Engage

Introductory Discussion

1. Review what the children know about where seeds are located and why they are important to the life of a plant. (*Establish that seeds are found in or on fruit, and that new plants grow from seeds*.)
2. Talk to the children about *where* new plants grow and how this might happen.
   - Do all seeds just fall down and grow right under a parent plant? Why not? (*There wouldn't be enough room or light or water.*)
   - If new plants don't all grow right under a parent plant, how do they get to a new place?
3. Show the children some of the seeds you brought in (at least one from each category) and encourage them to brainstorm some ways that they think seeds get to new places. In the course of discussion, elicit or introduce the following categories and list the sample seeds on the board in the correct category.
   - Wind carries the seeds. (*Seeds with "wings," such as maples, or "parachutes," such as dandelions or milkweed, get blown away from the plant; additionally, some plants "pop" tiny seeds when they're brushed against*.)
   - Water carries the seeds. (*Seeds such as coconuts fall into water and float to a new location*.)
   - Animals eat the fruit and leave the seeds somewhere else. (*The seeds from berries or fleshy fruits such as apples and oranges are carried away with the fruit and then dropped; or the fruit is eaten near the plant, but the digested seeds pass whole through the digestive tract and are deposited in a new location later*.)
   - Animals hide the seeds. (*Nuts or acorns are buried in the ground or stashed in a tree or log*.)
   - Animals carry the seeds. (*Seeds with burrs, hooks, or stickers get caught in fur or feet and get carried to a new place.*)

TEACHER NOTE: When you talk about the last category on the list above, you may want to remind the children of the seeds that stuck to their socks during the "Sock Walk" in Lesson 3.

4. (Optional) Allow the children to act out different dispersal methods.

Teacher Note: For animal dispersal, children can act out how specific animals hide or carry seeds from place to place using the real fruits, nuts, or seeds that you brought in. For wind dispersal, blow the dandelion or milkweed seeds across the room or have a few children blow while you or another child move a seed as if by force of wind. For water dispersal, float a coconut in a small basin of water.

Safety Note: Let the children know they are only to play-act eating the fruits, nuts, or seeds. They are not to actually eat them.

5. Tell the children that today they are going to look at a variety of seeds. They will sort them based on how they think the seeds travel away from the parent plant.

Explore

Sorting Seeds

1. Divide the children into groups (perhaps the same groups from Lesson 12) and give each group the following materials:
   - An assortment of seeds
   - 3 paper plates
   - Magnifying lenses
2. Direct the children to observe and compare their seeds. Encourage them to look for and think about characteristics that might help the seed travel or be dispersed. As they work, ask children to think about questions such as the following:
   - How are the seeds attached to the socks from the Sock Walk?
   - Are there "wings" that might help some of the seeds be carried by wind?
   - Do any of the seeds float in water? (Allow children to test this in a sink or basin of water.)
   - How do the fruits that held the seeds compare with each other? Are some fruits tougher or more prickly than others? Which types are animals more likely to eat?
   - Have you ever seen animals eating any of these fruits or seeds?

Teacher Note: Some seeds may not have their outer covering or fruit anymore. Other seeds may still be encased in fruit. Help children figure this out in the course of their observations. If the seeds no longer have their outer covering or fruit, encourage children to think about what that fruit was and looked like. If the seeds are still encased in their fruit, help the children extract them.

Notes

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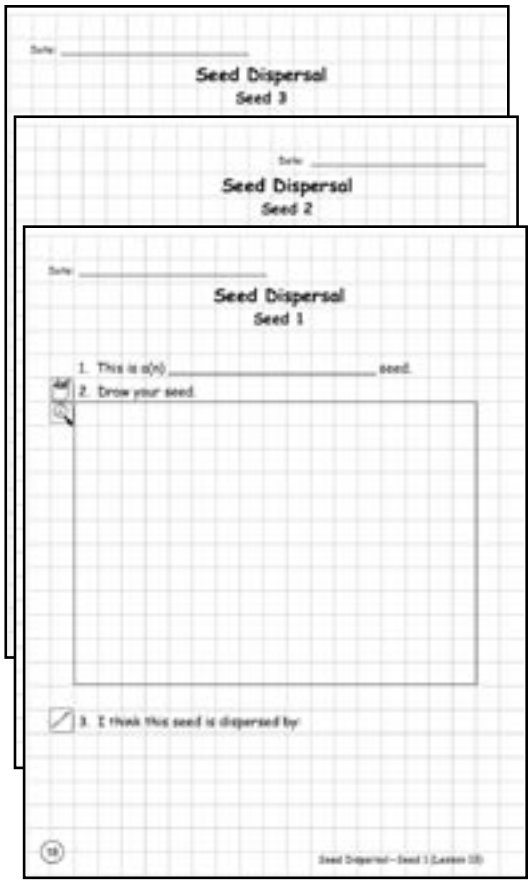
mathematics connection

The children practice sorting and classifying seeds according to their attributes.

language arts connection

For further language arts practice, you may want to have the children write labels for their categories.



***Science Notebook* pages 18-20**

3. Instruct the children to sort the seeds onto three paper plates based on the way they think they are most likely dispersed. Have them use one plate for each of the following dispersal categories:
   - By wind
   - By water
   - By animals (either through eating, hiding, or carrying on their fur or bodies)

TEACHER NOTE: If children want to further subdivide the "dispersal by animals" category (according to eating, hiding, or carrying), encourage them to do so. Provide additional paper plates, if you have enough.

4. Tell each child to choose three seeds they think have a different type of dispersal to write about on pages 18-20 in their science notebooks. For each seed, they should:
   - Write down what kind of seed they think it is.
   - Write how—by water, wind, or animals—they think each kind of seed is dispersed. (Children may want to be more specific within the animal category, such as "animals eat," "animals hide," "animals carry.")
   - Do a detailed drawing of their seed. (Encourage them to draw each seed extra big to help them include more details.)

TEACHER NOTE: You may want to encourage children to identify each seed's basic shape (is it a circle? a square? a triangle?) so they can use the shape as a building block for their drawing.

Trying Seed Dispersal

When the children finish their drawings, encourage them to test their ideas about seed dispersal. Use some of the following ideas.

- Wind carries—Try blowing seeds away.
- Water carries—Try floating seeds in some water.
- Hitchhikers (animals carry)—Try getting seeds to attach to clothing.
- Animals eat or hide—Think about what kind of animal would eat the fruit holding the seeds and where it would drop them.

Reflect and Discuss

Sharing and Synthesizing

Have a discussion to synthesize what the children have noticed and learned. Focus on connections between physical characteristics and likely dispersal type. Prompts such as the following might help initiate and enhance the discussion about each type of dispersal:

- **Wind**—Which seeds were best for blowing? What did they look like? Did they tend to be big or small? Heavy or light? How far could they fly?
- **Animals carrying**—Which seeds were best for getting stuck on clothes? What did they look like? What kind of clothes did they get stuck to? Could they also get stuck on an animal's fur?
- **Animals eating**—Which seeds were from sweet fruits? What did they look and feel like? How big or small were they? Have they ever seen animals eating the fruits they came from?
- **Animals hiding**—Which seeds have they seen animals carrying and hiding? Do they think the animals ever leave some of their hidden seeds behind? If so, what might happen to them?
- **Water**—Which seeds floated? Which seeds grow near water, such as rivers, streams, or lakes?

Ongoing Learning

Science Center

- Put out as many different kinds of seeds as you can for the children to observe and continue to test.
- Display a plant that doesn't reproduce with seeds or flowers: a fern. Mature ferns reproduce by scattering spores, which are found on the underside of the leaves.
- Put out the materials for the Further Science Exploration "Designing and Making Seeds and Fruits" and allow children to work on this project independently in the Science Center.

NOTES

Materials: A variety of seeds, magnifying lenses, a fern.

Notes

Materials: Various art supplies, scissors, glue and tape, real seeds and fruit

technology connections

The children may invent seeds or fruits that they can't actually build with the materials at hand. This provides an opportunity to talk to them about the problem of constraints. Point out that adults also face constraints when they design things, and for both adults and children the objective is to figure out the best solution given the Along with planning, designing, and making their seed or fruit models, the children practice other engineering skills—evaluating their models and communicating about their problem, design, and solution.

Extending the Lesson

Further Science Explorations

Designing and Making Seeds or Fruit

Allow children to use what they know about how seeds are dispersed to design and make their own models of seeds and fruit from a variety of art supplies, such as construction paper, drawing materials, foam, cloth, cardboard, pipe cleaners, string, feathers, play dough, and modeling clay, as well as scissors, tape, and glue.

Management Note: This activity can be done with the whole group or it can be explained to the class, then set up in the Science Center for interested children to pursue, either alone or with a partner or small group.

1. Explain the project to the children. Emphasize the following points:
   - They can use the available materials to plan (design) and make their own type of seed and fruit.
   - They can base their design on a real seed and fruit or they can invent their own kind of seed and fruit.

Teacher Note: Display real seeds and fruits as well as pictures of seeds and fruits so the children can get ideas for their own designs from nature's existing designs.

2. Review the various seed dispersal mechanisms with the children. (You may want to post them on the board or a sheet or chart paper.) Remind the children that it is often the fruit containing the seed that helps disperse the seed, so they should think about the fruit as well as the seed as they plan and build.
3. Have each child or group decide what kind of dispersal mechanism they want their seed to use before they begin building. Also encourage them to plan and design other characteristics of the seed before they start making it.

Teacher Note: If children have difficulty getting started, you might want to suggest that they use a ball of modeling clay or play dough as the base for making their seed.

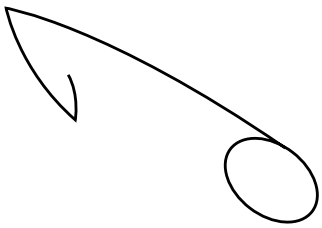
4. Make time for children to share their finished models with the class. Encourage them to do the following:
   - Explain how the seed is supposed to be dispersed.
   - Demonstrate or test the dispersal, if possible. (For example, will the seed model stick to clothes, or fly? Does the rest of the class think the fruit model looks yummy?)
   - Talk about their original plan and any difficulties they had or constraints they had to work around.

Dynamic Dispersers (A Cooperative Guessing Game)

Play the following game using the pictures of seeds on the Teacher Master "Dynamic Dispersers" and the clues listed below for each seed. Before you play, make a copy of the Teacher Master "Dynamic Disperser" and cut apart the four drawings. You may also want to enlarge the drawings.

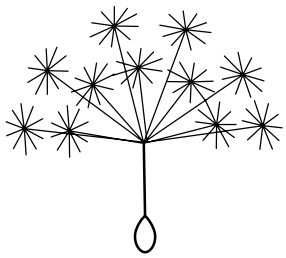
1. Hold up each drawing from the Teacher Master "Dynamic Dispersers" one at a time and read the clues listed below for the appropriate drawing.
2. Using the pictures and clues, have children guess what type of dispersal mechanism the seed uses and explain their guesses. Draw their attention to the unique shapes and characteristics of each seed type.

Seed A:



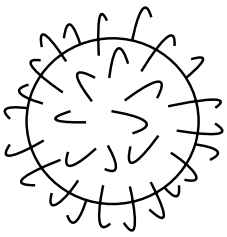
I have a strong barb or hook.
I am found in grass.
I take rides.

Seed B



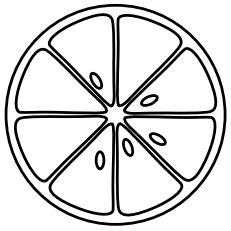
I am very light and fluffy.

Seed C



I have hooks all over my surface.
I am found in grassy areas

Seed D



I have thick orange flesh.
I taste sweet.
I hang from trees.

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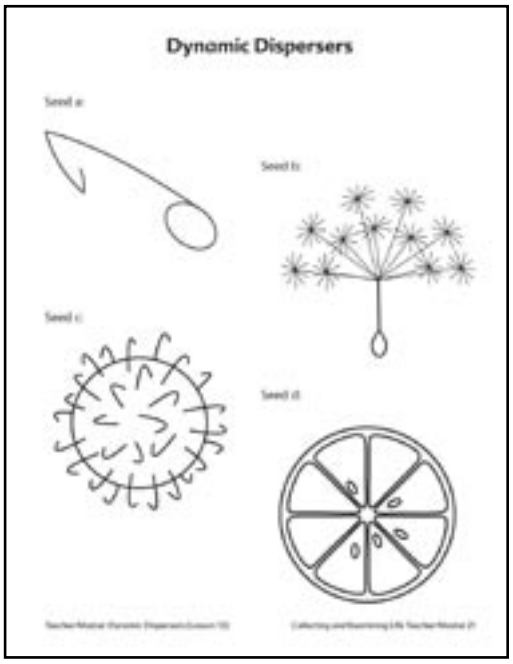


Teacher Master 21

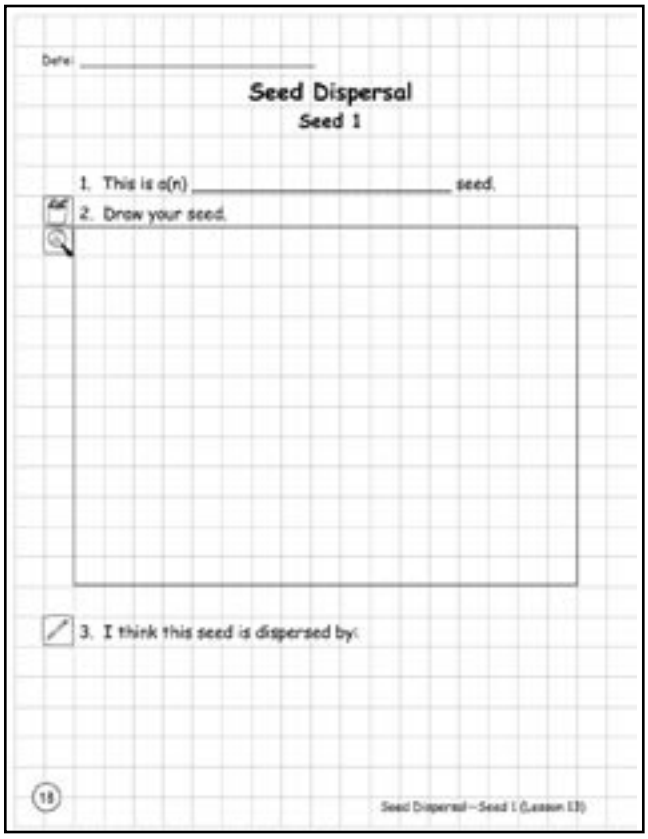
NOTES

Planning Ahead

For Lesson 14

Soak the corn and bean seeds overnight in preparation for the next lesson.

***Science Notebook* page 18**


Date: _____

Seed Dispersal
Seed 1

1. This is a(n) _____ seed.
2. Draw your seed.

3. I think this seed is dispersed by:

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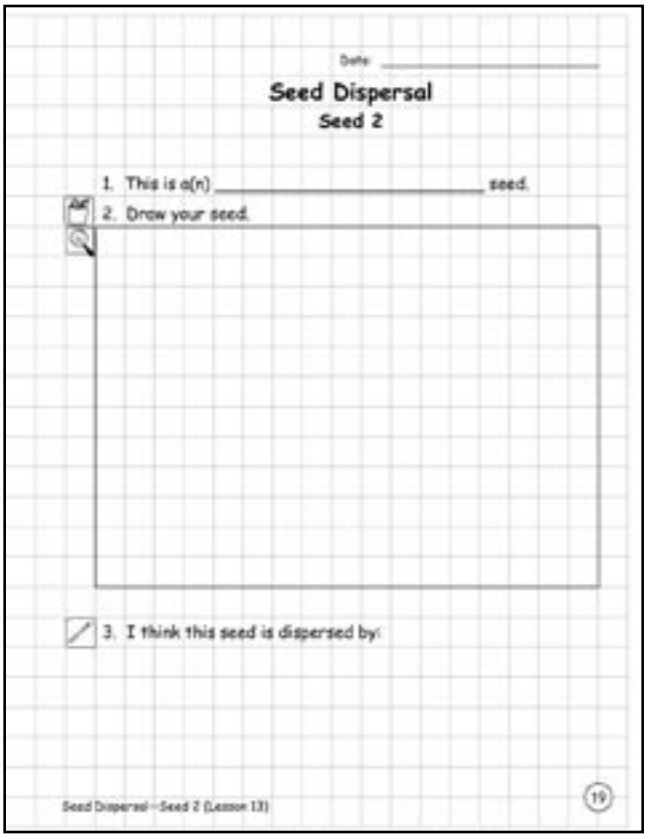
Seed Dispersal—Seed 1 (Lesson 13)

***Science Notebook* page 19**


Date: _____

Seed Dispersal
Seed 2

1. This is a(n) _____ seed.
2. Draw your seed.

3. I think this seed is dispersed by:

Seed Dispersal—Seed 2 (Lesson 13)

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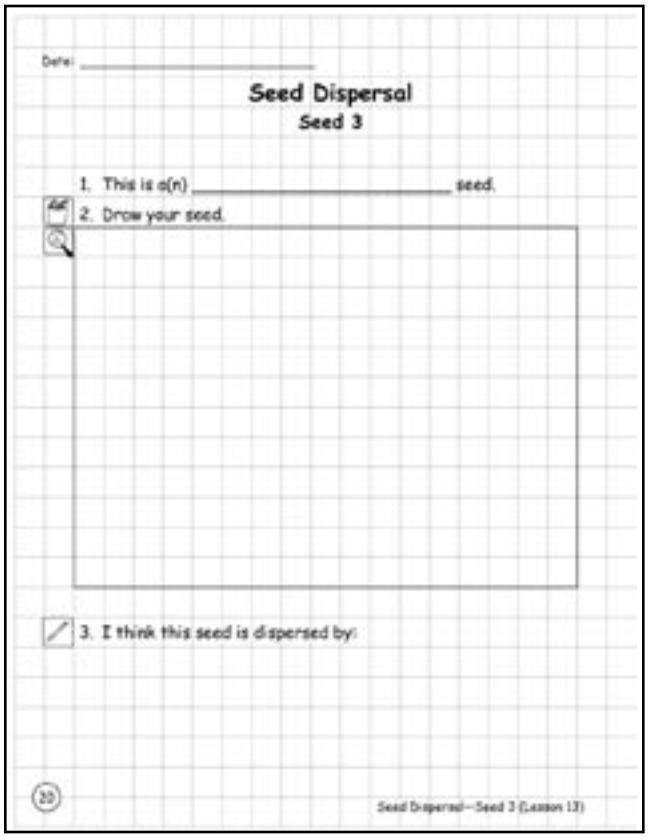
***Science Notebook* page 20**


Date: _____

Seed Dispersal
Seed 3

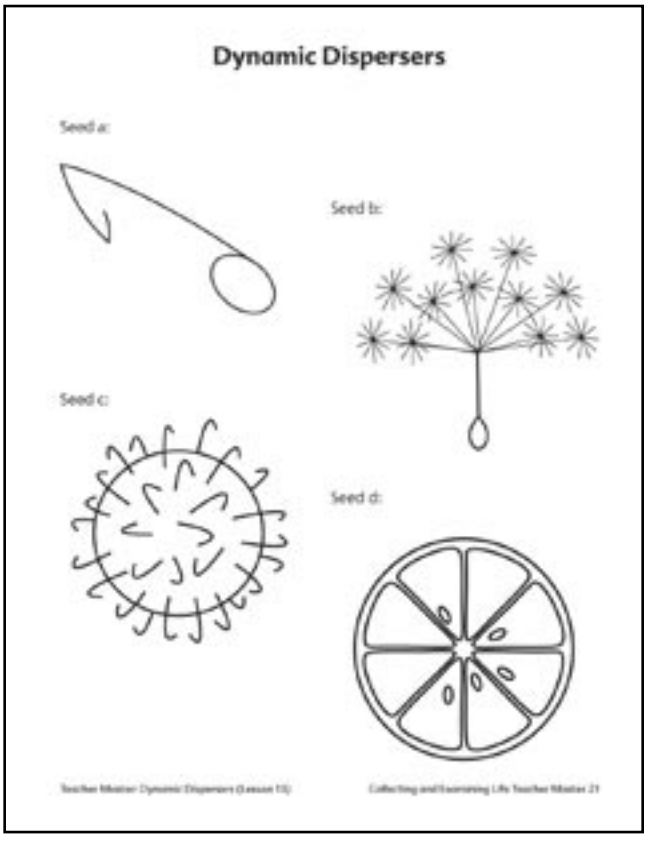
1. This is a(n) _____ seed.
2. Draw your seed.

3. I think this seed is dispersed by:

20

Seed Dispersal—Seed 3 (Lesson 13)

Teacher Master 21


Dynamic Dispersers

Seed a:

Seed b:

Seed c:

Seed d:

Teacher Master: Dynamic Dispersers (Lesson 13)

Collecting and Examining Life Teacher Master 21