

lesson topic: **Seed Stew**

source: **Common Core Learning Standards for English Language Arts & Literacy**
<http://www.corestandards.org/ELA-Literacy/RI/introduction-for-k-5>

overview

This lesson focuses on the differences and similarities of edible seeds, and connects these seeds to germination over time.

objectives

Students will learn:

- what features of seeds are different
- what features are the same among seeds
- to use a seed catalogue to demonstrate the ability to locate the answer to a question quickly or to solve a problem efficiently.

materials

For this lesson, you will need:

- Store-bought "stew mix" or "soup mix" which contains a variety of seeds
- Magnifying glasses

resources

Read the content packet "Basics of Botany"

learning activity #1

1. Begin the lesson by reviewing the concept of a seed, and what function the seeds plays in the plant lifecycle.

2. Explain to the students that today's lesson will allow them to explore different seeds from the grocery store.

3. Provide a small amount of seeds that represent a diversity of plants to each student, or group of students.

a. Kindergarten students only need 2 types of seed

b. 2nd grade students may explore 3-4 types

c. 5th graders could explore 5-7 types

4. Ask students to look at the seeds closely and assign a name to each one. Commonly accepted names are fine, but they can give these seeds any name that they prefer.

5. In their science notebooks, ask the students to start a list of features for each type of seed in their collection. These features of seeds should be based upon their senses: observable features, tactile characteristics, olfactory attributes (taste is not preferred at this point). Children may notice many observable features, such as size, shape, and color, but may require some prompting for smell and touch.

6. Provide the students with magnifying glasses and allow them to look closely at the seeds, and add to their list of features.

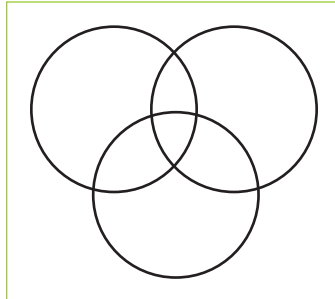
7. As a group, share some of the features that the students reported. This may allow other student to think of new ideas.

lesson topic: **Seed Stew**

source: **Common Core Learning Standards for English Language Arts & Literacy**
<http://www.corestandards.org/ELA-Literacy/RI/introduction-for-k-5>

learning activity #1 (continued)

8. As a group discussion, review the Venn diagram concept (see *right*) and how this tool allows a person to show things that are the same and different among items, such as seeds.



9. In their science notebooks, ask the students to make a simple Venn diagram of their seeds. Older students, who have many types of seeds, may just pick three types that they find interesting.

10. Students, who don't see any similarities, may need help to find aspects that are similar across seeds. For example, almost all seeds have a small, visible scar (called the hilum) which is analogous to a human belly-button. This is where the seed was attached to the inside of the fruit on the mother plant. The hilum is fairly obvious in beans.

11. As a group, share some of the features that were similar and different among seeds. A discussion about the hilum will help students understand that all of these seeds originated inside a fruit on a mother plant. They may even ask what the fruit of the seeds looks like.

12. A web sea should provide images, as long as you know the names of the plants, which is frequently listed on the seed bag. Another method is to grow the plants to complete the lifecycle (See *Extension*).

Ziploc Germination

materials

For this lesson, you will need:

- Variety of seeds
- Gallon-sized "Ziploc" bags
- Water
- Stapler
- Paper towels
- Graph paper (*optional*)

learning activity #2

1. Using the same seeds from the Learning Activity #1, review the concept of germination. Make sure that student understand that when seeds first begin to grow, we call this germination. [*Germination ends when plants can survive on their own through photosynthesis*].

2. Explain to the students that you are going to grow many of these seeds, to observe germination and to explore what plants come from these seeds. If needed, you should review the parts of the plant.

3. Provide each group of students with a few different seeds, a Ziploc bag, and piece of paper towel (*same size as Ziploc*), and a piece of graph paper (*optional*).

lesson topic: **Seed Stew**

source: **Common Core Learning Standards for English Language Arts & Literacy**
<http://www.corestandards.org/ELA-Literacy/RI/introduction-for-k-5>

Ziploc Germination (*continued*)

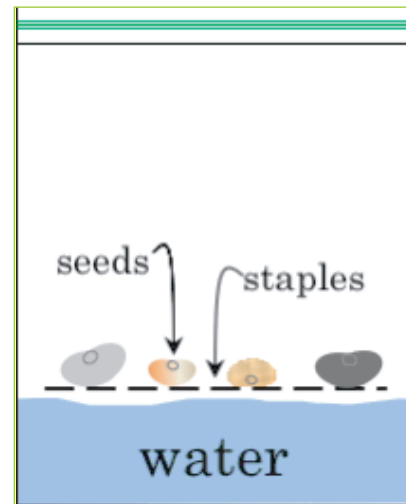
learning activity #2 (*continued*)

4. Demonstrate how the Germination Bag should be constructed (*see right*).

- a. Students should first slide a piece of paper towel into the bag. Adding a piece of graph paper on top of the paper towel will allow student to gauge growth over time.
- b. Students then can staple the bottom of the Ziploc at about 2 inches from the bottom. *[Students may need help with the stapler].*
- c. Then they should add the seeds to the Ziploc bag, so that the seeds sit on top of the staples.
- d. Students may now fill with water, almost up to the staples. This will provide humidity and water for the roots as they grow.

5. Students can now use strong tape to affix the Germination Bag to a window or wall. They can easily observe the changes in the bag over time. They should add water when it runs low.

6. Students should make their initial observations in their science notebook. As the seeds germinate, they can record changes such as root germination and elongation, as well as stem and leaf emergence and growth. Using the graph paper, the students can indicate how many "grids" that the stems have grown.



7. As plants get taller, students can open the ziploc bag and plants will continue to grow outside of the bag. They plants can last for a very long time, but will eventually show sign of mineral deprivation.

Ask students, "Why are our plants starting to turn yellow?" Some students may opt to add a tiny amount of fertilizer to the water to see the effect. How long can you keep the plants growing? N.B. Most plants that have roots that were grown in water will not be able to acclimate to soil. Therefore, transplanting these seedlings will not prolong the life of the plants.