Planting by the Signs: Gardening in Appalachia

Overview

In this activity, students will learn about the Appalachian practices of planting by the signs and heirloom gardening, while building scientific skills. Students will also apply text analysis by encountering primary and secondary sources.

Georgia Standards of Excellence*

- **S6E1.** Obtain, evaluate, and communicate information about current scientific views of the universe and how those views evolved.
- **S6E2.** Obtain, evaluate, and communicate information about the effects of the relative positions of the sun, Earth, and moon.
- **S6E3**. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.
- **S7L4.** Obtain, evaluate, and communicate information to examine the interdependence of organisms with one another and their environments.
- **S7L5.** Obtain, evaluate, and communicate information from multiple sources to explain the theory of evolution of living organisms through inherited characteristics.
- **S8P5.** Obtain, evaluate, and communicate information about gravity, electricity, and magnetism as major forces acting in nature.
- **ELACC6RL2, ELACC7RL2, ELACC8RL2:** Determine a theme and/or central idea of a text and how it is conveyed through particular details
- **ELACC6L6, ELACC7L6, ELAC8L6:** Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases
- **L6-8RHSS1**: Cite specific textual evidence to support analysis of primary and secondary sources.
- **L6-8RHSS2:** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
- **L6-8RHSS8:** Distinguish among fact, opinion, and reasoned judgment in a text.

Materials

- Scrap paper
- Pencil
- Seeds (can be found in kitchen: dried beans, corn, or lentils)

Activity/Procedures

*Note: Adapt to your context as needed

I. Planting by the Signs

Folks in the mountains used to plant their gardens according to the phases of the moon or the signs of the zodiac. They didn't have apps or even almanacs to tell them when to plant! People believed that each day of the month fit with a particular sign of the zodiac and a specific body part. The characteristics of these signs would influence what was planted when. For example, people would plant their beans when the signs were in the arms because they thought that the vines would grow long—just like arms!

1. Watch this video on planting by the signs, then answer the following questions.
    - Why did mountain people plant by the signs?
    - What happens if you plant corn on the new of the moon?
    - How did communities support each other?
2. Listen to the following clip and answer the questions:
    - https://www.foxfire.org/it-still-lives-signs/ 24:55-26:45
    - Transcript: Harriet Echols

      HE: And have fresh potatoes for fall, and use them to store for winter.
      FF: Was there a certain sign that you planted them on?
      HE: Yes there is and that is on the new of the moon, when it's dark nights. It's dark nights, where you plant your potatoes. And they go by the zodiac signs, you know. And when you plant your cabbage, plant when the sign's in the head. And I don't remember, now, the dark nights is for onions and potatoes. And then the other, the new moon I believe, is for corn, where it won't grow so tall. If you plant it on a full moon, it grows way up. And when you sow your plants, at different signs, and when you plant your beans, the best time is from, plant 'em in the arms, to have a lot of beans. And then, when you set out your plants, start when the sign's in the thighs. That's the old time rule now, and we still go by it. 'Course I'm old, I'm almost seventy now. When you get to be as old as I am, that's quite being an old timer. But my parents went by this, and I find all these old mountain people go by the zodiac signs. And when the sign is in the bowels, never plant because your seed rots.
      FF: That goes also for the heart, too.
      HE: Yes.
    - What do you think of this tradition? Discuss with your classmates.

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- Why might it be important to preserve practices like these? Can you think of something you learned from your grandparents that you didn't learn in a book? Is that skill or story important to you? Why or why not?

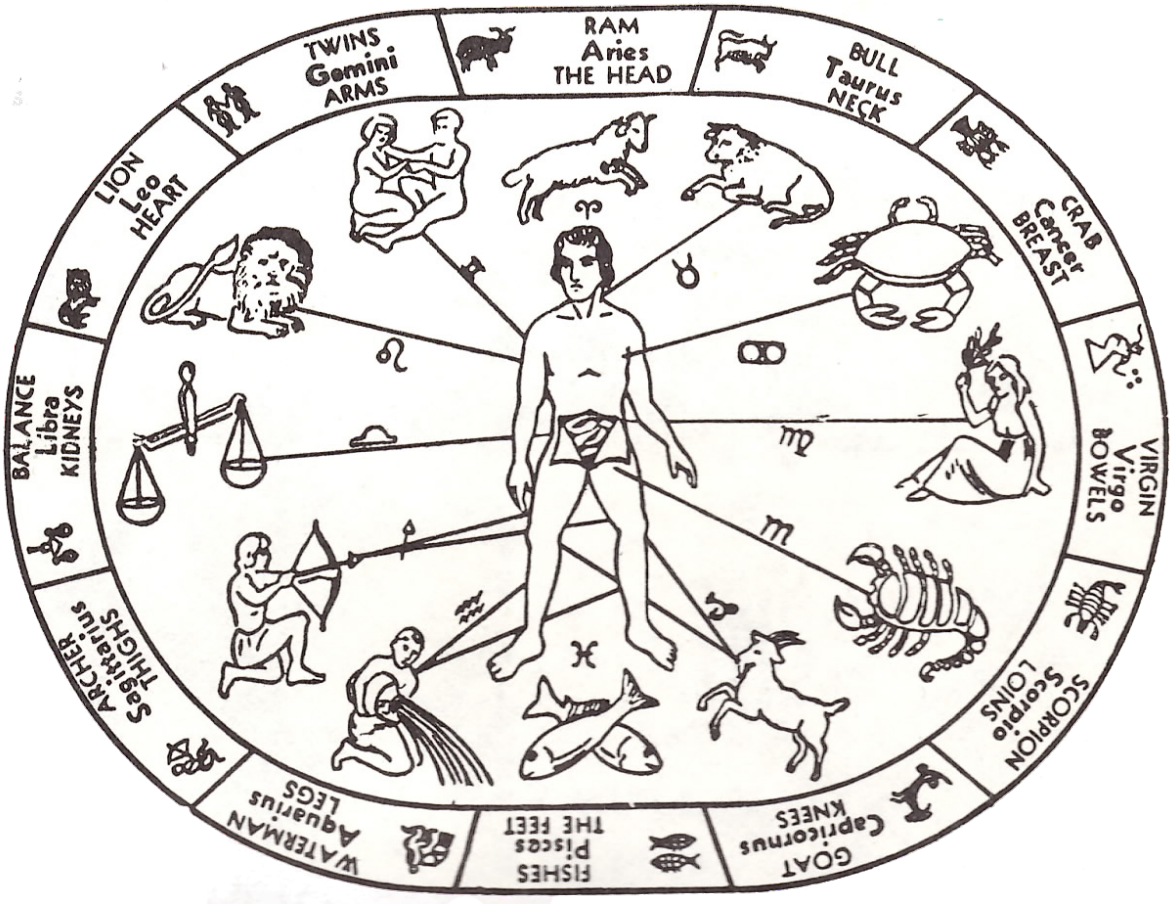

Image from T.E. Black's Almanac, depicting each Zodiac sign and its corresponding body part.

3. Fact or Fiction?

   While using the signs of the Zodiac or the phases of the moon to tell us when to plant and harvest might sound silly, there's actually some science behind it!

   What causes the moon to orbit the earth?

   The gravitational pull caused by the moon's rotation around the earth creates **tidal force**. This phenomenon causes the water on earth to move towards the moon. Can you guess what major body of water this affects? Why do you think the phases of the moon might affect how plants grow? Remember, the moon affects water on Earth. Why might this be important to agriculture?

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Read this article on the science behind planting by the signs and moon: https://www.newscientist.com/article/dn28051-moons-gravity-could-govern-plant-movement-like-the-tides/

Keeping in mind that people all over the world have been using the Zodiac and phases of the moon to determine when to plant and harvest for centuries, what is your conclusion about this practice? Do you think there's something to it?

Let's test this practice out! Imagine you are a renowned scientist who has just been assigned a grant to research planting by the signs. Using the following questions as prompts, pick your team of researchers (3-4 students per group), and design an experiment to determine whether or not planting by the signs works. You have unlimited resources, so get creative!

Download and fill out this worksheet to share your experiment.

II. Heirloom Gardening

1. Sprout a seed

In an age before mail-order seed catalogs or Home Depots, families relied on seed sharing to grow their gardens. Each year, they would not harvest fruit or vegetables from a few plants. Instead, they would let those plants create seeds that they would keep for the next year's planting. Known as seed selection, this process is similar to **natural selection**. Farmers would collect seed from plants with the best produce. They would often share these seeds with their relatives, especially children. Known as **heirloom gardening**, these special seeds were passed between generations, just like precious family heirlooms!

a. Time to grow your own garden! Gather some seeds from your kitchen (see material list) and follow these instructions to germinate your seed.
b. Once you've got your seed ready, put it in a warm, sunny spot.
c. Now let's start working on our observation journal. As scientists, it's important for us to record detailed notes about our experiment. For the next week, make a daily entry recording the growth of your plant.

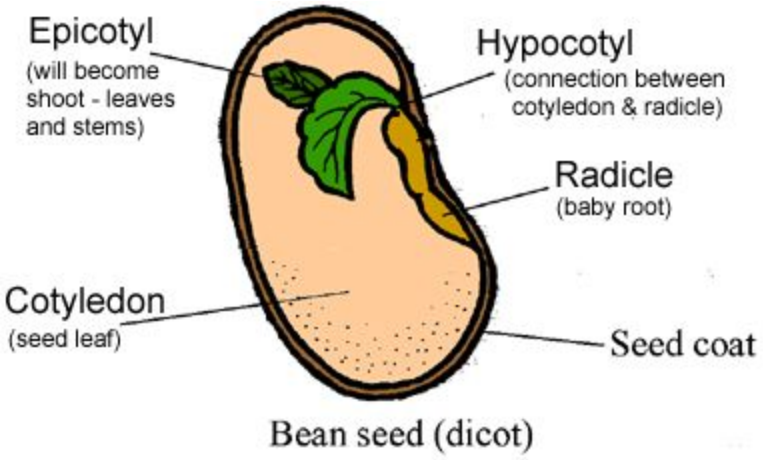
    i. Example: Day 1, August 10, 2020
    Today I put 5 black bean seeds in a pint mason jar with damp paper towels, and covered the top with plastic wrap, secured with a rubber band. I then placed the jar in my windowsill, which gets a lot of sun in the morning.

    Day 2, August 11, 2020

*Note: Adapt to your context as needed

I checked on my seeds at 9:15 am this morning. So far, there is no growth, but I noticed lots of water droplets collecting on the inside of my plastic-wrap lid. The paper towels are still damp, and it seems to be right in the sun.

d. Has your plant **germinated** yet? This is when the seed opens up and we can see small green shoots making their way out. This means your plant is growing and that you can put it in soil soon! Review the drawing below to help identify the parts of your seed.



Bean seed (dicot)

e. Now it's your turn! Draw a picture of what one of your seeds looks like. Can you label the parts?

f. Let's plant our seed so it can continue to grow. Do you remember the recipe for good gardening? Grab a pot, a shoebox, or even a cardboard eggshell carton. Fill your container with healthy soil, then gently transfer one seed to the pot. Place about ½ inch below the surface, so that the shoot can continue to grow up. Water it well and place it in a sunny spot. Keep taking notes in your journal, checking every other day on it's growth.

2. Plotting out a garden

a. Now that you've got your seeds growing, let's do some math to figure out how many and what types of plants Emily can grow in her garden.

i. Emily has a small backyard, but she really wants to grow some vegetables this summer. She has a 25 square foot area that she can use. She wants to build at least two raised beds, with each bed one foot apart from the other. On the grid below, draw what her gardens could look like. Each square represents one square foot.

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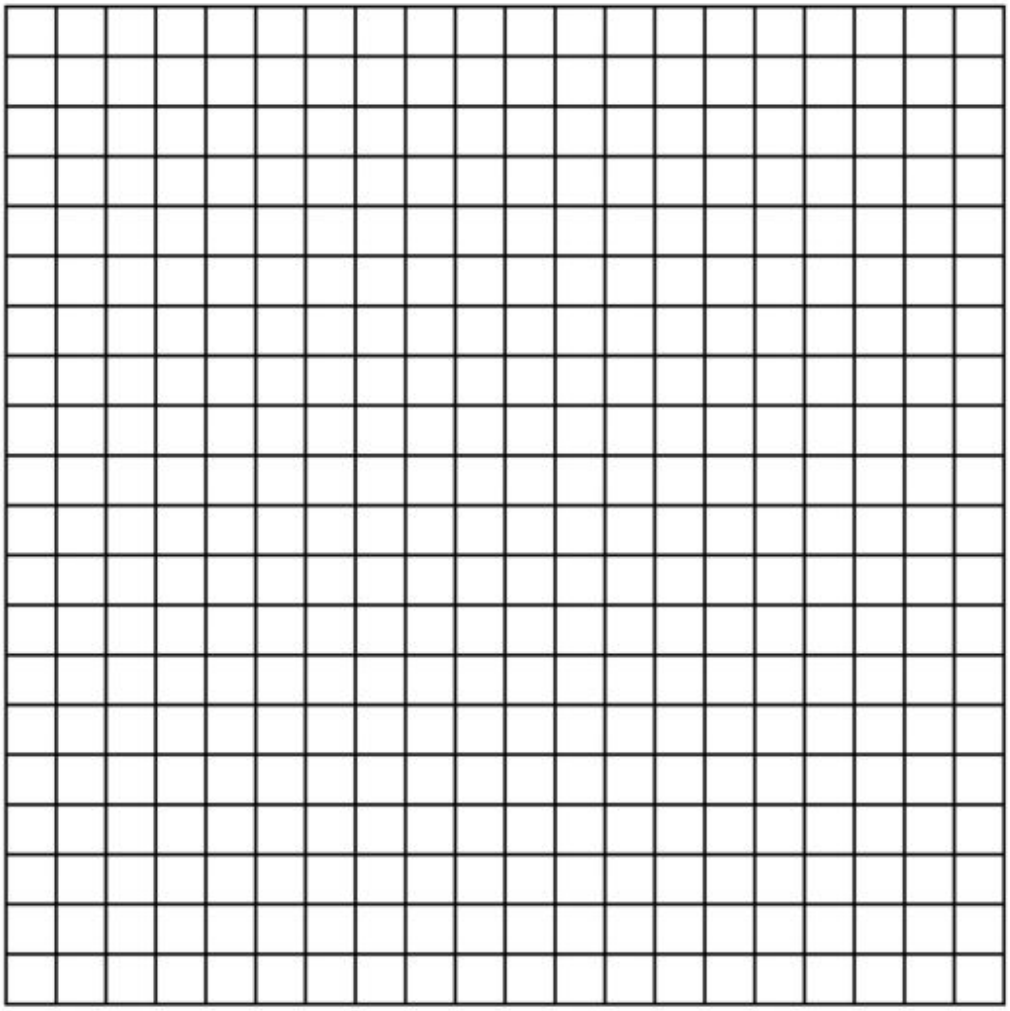

https://www.almanac.com/content/companion-planting-chart-vegetables#

*Note: Adapt to your context as needed