Plants and Their Seeds

Overview:

In this lesson, students do a field study on the great variety of seeds on their school grounds. They use the "wool sock" collection method, hand lenses, and microscopes. The main line of inquiry is "How are seeds dispersed?", but opportunities abound for lesson extensions.

Grade Level: K-5

Subject(s): Science, Math, Art

Topic(s): Plants, STEM, Structure & Function

Great Lakes Literacy Principles:

5. The Great Lakes support a broad diversity of life and ecosystems.

Standard(s):

SCI.CC6.K-2 Students observe the shape and stability of structures of natural and designed objects are related to their function(s).

SCI.CC6.3-5 Students understand different materials have different substructures, which can sometimes be observed, and substructures have shapes and parts that serve functions.

SCI.LS3.B.3 Different organisms vary in how they look and function because they have different inherited information; the environment also affects the traits that an organism develops.

SCI.LS4.B.3 Differences in characteristics between individuals of the same species provide advantages in surviving and reproducing.

What do I already know about the learners themselves, what they have done before, what they will do after, and where they are located?

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Materials:

- Wool socks, or other fabric samples that will collect seeds (per partner group)
- "Discrepant event" jacket, sweater, or socks that will hold seeds that hitchhike.
- Magnifiers: hand lenses, field scopes, loupes
- Collection jars, dishes, slides.
- Recording sheet, below
- Clipboards (store-bought, or home-made from cardboard w/rubber band around the middle), (per partner group)
- Background information on "Seed Dispersal" from *Cornell University's Naturalist Outreach*

Preparation ahead of teaching:

Wear an article of clothing that plant seeds may get stuck on

Lesson Plan:

Whose Hitchhiking? Invitation (7 Minutes)

Whole Class Discussion.

1. Welcome the students to the lesson, wearing an article of clothing that has picked up some "hitchhikers". Let them tell you all about the specimens that are sticking to you! Ask them how they think they got there, and what ARE they?
2. Have students practice using hand lenses. Pass some seeds around and lenses.
   Explain to students how they can use the lenses. It is recommended to hold the hand lens at your eye, then slowly bring the object to the lens, until it is in focus. Also let them do the same with a field scope.

No seedy business: Exploration (20 Minutes)

Whole Class Discussion.

1. Ask students to describe what they notice about the seeds up close. They can share their observations in pair or table groups before sharing out with the class.
2. Share that the goal today is to try and learn more about plants and their seeds. Share with your students that they will each get a piece of clothing (like a wool sock or a fabric square that they will use to collect seeds.

Going Outside!

3. Go outside, establish a basecamp, and let students have free exploration using their collection tools (socks, etc. and jars, etc.).
4. Once students have spent some time collecting seeds with their fabric, have students group up in and share what they collected.
5. Hand out the "In Your Watershed" document and ask students to pick a seed that they collected and return to where they collected that seed. They will take some time to complete the first side of the document, sketching their seeds and describing where in their watershed they found these seeds.

Seed Dispersal: Concept Invention (5 Minutes)

Whole class read aloud and listen.

1. Gather for large-group, teacher-led discussion using the "Background information" on seed dispersal. Read the paper to your students in a large group.

Return to your seeds: Application (7 minutes)

Students work individually.

1. After reading, ask students to answer the question on the bottom of their sheet "Based on the seed's characteristics, how do you think these seeds might be dispersed?

2. Give students an opportunity to tape one of the seeds that they found onto their paper for later reference.
    a. Math Extension: Using the magnifiers, count out the number of seeds found in each type of seed pod. Graph the number of seeds found in each type of seed pod.
    b. Engineering Extension: Biomimicry – Explore Velcro, this was invented based on burrs. Create flying machines using craft supplies that use seed dispersal mechanisms to get around.
    c. Science Extension: Learn how to "mount a microscope slide" by having students attach a seed to an index card with clear scotch tape, and label it.

Reflection

1. Bring your students back inside and ask them to share what they discovered about seeds today?
    a. What helped you learn today?
    b. What would you have done differently when you were outside looking for seeds?

Resources:

The reading for this lesson is from Cornell University Naturalist Outreach and is available on the Rivers2Lake Curriculum website.

Teacher Comments:

In Your Watershed

Plants and their Seeds

Here are sketches of some of the seeds we found:

Here is a description of the place where we found them in our watershed:

TREE TYPES –

HUMAN IMPACTS? –

INSECTS PRESENT? -

OTHER ANIMALS PRESENT? -

What I wonder:

Return to one of the places that you found a seed. What plant did it come from?

If these seeds grow up, this is what one of the plants will look like: (Draw the plant)

Based on this seed's characteristics, how do you think these seeds might be dispersed?

You will need to listen closely to the reading on seed dispersal to answer this.