How Do Trees Eat?

Background Information:

Plants, from celery to maple trees need the same things as humans to grow and survive, water and nutrients. But how do they get them, if they do not have mouths? Plants have different parts that help them get these necessary resources. The start of this process is their roots. Their roots take in water and nutrients from the soil. The vascular system of the plant helps to carry this nutrient rich water up from the base of the plant to the leaves, where it is used to help the plant grow. The vascular system in plants is a system of small tubes running up the stem or trunk and out into the leaves. It is similar in concept to veins in animals. Along the way, this water picks up sugars stored within the plant, making it slightly sweet. In trees, this liquid is what we know as sap.

References and Resources:

"Parts of a Tree" North Carolina Forestry Association. Retrieved 10 January 2019. https://www.ncforestry.org/teachers/parts-of-a-tree/

Shiwnarain, Mohendra. "The Parts of A Tree" Retrieved 10 January 2019. https://sciencetrends.com/parts-tree-function/

Activities:

Rainbow Celery Experiment:

Goal: This activity illustrates that water and nutrients are taken in at the base of the plant and transported up to the leaves of the plant.

Equipment:

- 6 stalks celery (leaves still on)
- 2 colors food coloring (red and blue work best)
- 3 cups (clear is nice to be able to see the color)
- Water

Procedure:

1. Fill three glasses half full with water.
2. Place 4-5 drops of red food coloring in one glass, and 4-5 drops of blue in a different glass.
3. Place two stalks of celery in each glass freshly broken off the bunch. DO NOT TAKE THE LEAVES OFF.
4. Have your students make some observations and predictions of what will happen.
5. Let these sit for about 24 hours.
6. Have your students make observations again and try to explain what they see.
    a. You can leave the celery in the colored water for longer to see if more changes, but you should see results in about a day.

Outcome: After the 24 hour waiting period, your celery leaves will have turned the same color as the dye it is sitting in. This proves that nutrients, here represented by color, and water travel up through the plants vascular system, which you can see the tubes at the base of a stalk of celery, into the leaves.

Resources:
http://www.teaching-tiny-tots.com/toddler-science-celery-experiment.html

Tree Tai Chi:

Goal: This activity is an active way for kids to learn the parts of a tree and their functions.

Procedure:

This activity can be very free form. The general concept is to have a movement that reflects the function of each part of the tree. There are some examples below. Have the students follow you in each movement, doing them slowly as if it were Tai Chi.

Roots: Bend down and move your hands towards your feet on the floor pretending you are collecting nutrient from the soil.
Vascular System: Reach for your feet and slowly stand up bringing your arms up until they are over your head, representing water and nutrients traveling up through the vascular system.
Leaves: Extend your arms above your head and slowly bring them down to your sides while wiggling your fingers, representing the growth of leaves and their ability to absorb sunshine.

Link to Maple:

Maple Syrup is made from the sap of the maple tree, using heat to reduce the slightly sweet sap into very sweet syrup. The movement of sap from the roots of the tree up to the leaves helps the sap to flow out through the spouts we place in the tree and into our buckets as well. Without the processes demonstrated in the Rainbow Celery Experiment or the plant parts taught through Tree Tai Chi, we would not have maple syrup.

Link to Standards:

These activities can link to the science standards surrounding what plants need to live and grow and how they use their external and internal parts to grow.