**Where's The Water?!**

Big Ideas:

Plants keep more water in certain parts.

All living organisms consist mostly of water.

Students will be given some materials and the idea that we are learning about water storage in plants. They will look at the materials and come up with questions that could be answered about how plants store water with the materials they have been provided. After they have a list of questions, they will create a hypothesis and design an experiment to answer their chosen question. While completing the experiment, the students will need to keep relevant, detailed data results so they can analyze their findings at the end of the experiment.

Materials Provided:

Grapes (fruit)

Spinach (leaves)

Carrot (roots)

Asparagus (stem)

Apple (fruit)

Celery (leaves)

Onion (roots)

Broccoli (stem)

Scale

Dehydrator

Adaptations for different age levels:

Depending on the grade level and the class abilities, you could vary the amount of assistance you give them for this inquiry. With Upper Elementary students who are just learning about science inquiry, it would be good to give them a pre-created worksheet with much of the design already done. If you have already taught some inquiry lessons with them and they get the main concepts of what should be included you could leave parts out and help lead them to the right procedures when they seem to stumble.

For my lesson, I will assume that students are very new to scientific inquiry.



**Background**: We have been learning about the different parts of a plant and their functions. We have also learned that there is water in all living organisms.

**Aim of Investigation**: In this investigation, we will try to find out if plants store water equally amongst all of their parts or if some parts function better as water storage areas.

**Experimental Question**: Do all parts of a plant contain the same amount of water?

**State Your Hypothesis**: (What do you predict is the answer and why?) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Procedure**:

**Materials**:

* 1 Root
* 1 Stem
* 1 Leaf
* 1 Fruit
* Scale
* Dehydrator
1. Weigh your root, stem, leaf, and fruit on the scale and record your findings on the data chart.
2. Cut your root, stem, leaf, and fruit into thinner pieces if necessary.
3. Place the pieces of root, stem, leaf, and fruit onto the sheet to be put in the dehydrator by the teacher.
4. Once the dehydrator has finished, take your root, stem, leaf, and fruit and weigh them again and record your findings on the data chart.
5. Once you have weighed your four items before and after dehydration, calculate the total amount of water lost from each by subtracting the dried weight from the fresh weight.

$$\frac{Total Water Lost (g)}{Weight of Fresh (g)} X 100$$

1. Next, find the percentage of water in each part of the plant using this equation:

**Data Table**:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Fresh Weight (g) | Dried Weight (g) | Total Water Lost (g) | Percent of Water |
| Root |  |  |  |  |
| Stem |  |  |  |  |
| Leaf |  |  |  |  |
| Fruit |  |  |  |  |

**Analysis**:

Do different parts of a plant contain more water than others? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If so, which part contained the most water? Which contained the least water?

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Why do you think this is?

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