



# Root Exploration

## Goals

Introduce students to roots and the ways they function. Talk with students about the 5 “Ws” (who, what, when, where, and why) and teach them as a guide for creating a poem.

## Curriculum Alignment

Find a list of which Common Core State Standards and NC Essential Standards this lesson plan aligns with on the lesson plan page at [www.growing-minds.org](http://www.growing-minds.org).

## Materials

### Root Starting

- Sweet potato chunk
- Small clear glass jar
- Wooden skewers

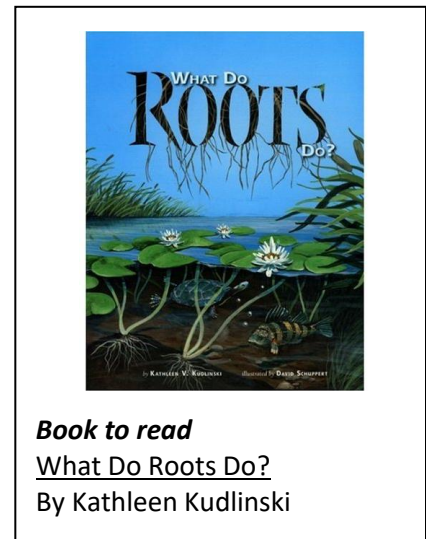
### Garden Exploration

- Magnifying glasses (one per student)
- Sheets of black or white paper
- Trowels

## Vocabulary

Nutrients: parts of food, like vitamins, that are used for growth

Soil: another word for dirt



### Book to read

What Do Roots Do?

By Kathleen Kudlinski

## Activities

### Read a Book

The book, What Do Roots Do?, provides students with a sneak peek underground, allowing them to dig into the wonders of roots. The fun rhyming text helps kids discover all the amazing things roots do for trees and plants. How do plants store food during cold winter? How do they carry water up to the leaves?

### Garden Exploration

Go out to the garden to explore roots. Identify several weeds and sprinkle baking flour on the weeds to mark them for student. (This prevents students from digging up plants you want to leave to grow in the garden.) Hand out trowels to each student. Demonstrate how to use the trowel to dig around a weed and remove its roots. Put your students in groups and ask them to carefully remove the weeds, keeping the roots in tact. Bring the roots back to the classroom. Ask students to look at the roots carefully, both with the magnifying glass and without it. What do they observe? Did any roots get broken off when they were dug? Ask them to compare the roots. How

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are they similar and how are they different? Are there large and small roots or are they all the same size? Students can draw a picture of their root.

## Write a Poem

Present the five W's asking words to students: "Who, What, When, Where, Why." Explain that people use these questions to learn important information, to solve problems or mysteries, and in descriptive writing. People even use the questions to write poetry.

Read two of the Five "W" poems enclosed, pointing out which line correlates with which question. Then read a third poem and ask the students to call out the "W" word that fits each line. The poems follow this pattern: **Who** (noun) **What** is the noun doing? (action phrase) **When** (time phrase) **Where** (place phrase) **Why** (explanation-phrase or sentence)

Ask students to create a poem about roots or another garden subject using the 5 Ws. *Here are a few examples:*

Roots (**Who**: noun)

Roots give plants food (**What** is the noun doing?)

All night and all day (**When**: time phrase)

Reaching deep, deep, deep underground (**Where**: place phrase)

Keeping the plants alive. (**Why**: explanation-phrase or sentence)

Roots

Roots hold trees in place

When the wind blows hard

Through the branches and the leaves

So they won't fall down

Gardens

Gardens feed families

in the spring, summer, and fall

from the yard to the kitchen

because we need vegetables to grow tall!

## Optional Game

Call out the W question word "Who" and then call on a student to give an answer (any noun). Next call on another student and give them the next W question word (what?/action phrase) and ask them to build on the previous answer, repeating until all 5 W questions are used.



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## Start Growing Roots!

For this project, you will need a jar full of water, four toothpicks or skewers and a sweet potato (which is a root crop). Push the toothpicks into the middle of the potato forming a cross on which the potato will be supported in the jar. Put the sweet potato on top of the jar, so that the toothpicks rest on the lip of the jar. Fill the jar with water so that part of the sweet potato is submerged.

Place the jar in a dark warm spot until it starts growing (several days) then bring it out into the light. Be sure to keep the jar filled with water and change it every few days. If the water is left too long the roots will be starved for oxygen and you can get some scum growing. You will get better results if you use spring water that doesn't have chlorine or fluoride in it. If you have to use city tap water let it sit in an open container for 24 hours so the chlorine can evaporate. Very soon you should soon have roots growing down into the water and a vine growing from the top. Ask students to make predictions about how long it will take for roots to begin growing. Will the potato grow a stem from the top or roots from the bottom first? Students can chart the sweet potato's growth and make predictions.