



H2Grow



Albuquerque Bernalillo County
Water Utility Authority

Next Gen Science Standards

Summary:

Students will move drops of water up root systems and into the stems and leaves of plants in this colorful board game. They will learn:

- All plants need water
- Plants have roots, stems, and leaves
- Water travels up through the roots into the plant and then exits up through the leaves into the air, where it may join clouds
- Different plants have different kinds of root systems

Grade: First

Subject Areas: Science

Materials:

Four gameboards (one for each of 4 different plants)
Four sets of 10 glass beads
A die

LS1.A: Plants have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. (1-LS1-1)

Structure and Function: The shape and stability of natural and designed objects are related to their function.

LS3.B Individuals of the same kind of plant or animal are recognizable as similar

NM Science Standards and Benchmarks

K-4 Benchmark: Know that living things have diverse forms, structures, functions, and habitats.

II.II.LS1-2 Know that living organisms have needs (water, air, food, sunlight), inhabit various environments and have various external features to help them satisfy their needs (roots, leaves)

II.II.LS3 Describe the differences and similarities among living organisms.

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Introduction:

Have a discussion where we get our water in Albuquerque. Explain how we live in an area without a lot of water, so plants from here have had to adapt/change to survive and that humans plant a lot of “thirsty plants” in gardens and yards that use more water than our environment can provide on its own through rain. Explain that the purpose of roots is to draw water from the soil up into the plant, and that all plants need water to grow and survive. Hold up each of the four different plant playing boards(cottonwood tree, rose bush, carrot, cholla cactus) – discuss the similarities and differences in their root structures with the children.

Some things to point out on the boards:

Cottonwood trees have been in New Mexico for a long time, so they know to grow big deep roots to reach the water underground. They are “smart” and grow near the Rio Grande so they don’t have to reach as far for water. (Could go further to explain their seeds need water from river floods each spring if the students seem interested)

Cholla Cactus roots are very close to the top of the soil so they can grab all the water they can when it does come.

Rose bushes have lots of roots and are considered “thirsty plants”.

When you eat a **Carrot** you are actually eating the root of the plant!

Activity:

Divide students into four groups and pass out a board and baggie of playing materials to each group. Ask to wait to open up baggie until instructions are told and educator says to begin. Students may have to partner up depending on class size. Provide around 25-30 minutes for students to play game.

Explain that in this game, students will take turns rolling the die to move water droplet pieces through the plant’s root system, through the stem of plant, and out through the leaves into the air. The goal is for the group to collect each of their water droplets in the clouds to create rain. When they do, the students will take turns shaking a rain stick as the educator sings the Desert Rain song:

“Rain Rain Come Today

Rain Rain Don’t Go Away

We’re Desert Kids and We Want To Play!”

The educator can encourage the children to sing along after they have heard it a few times.

Explain that after it rains, the water will return to the soil and the process will start over again...so the playing pieces can be moved back to the roots from the clouds to play again!

Emphasize that this is just for fun and NOT A COMPETITION. (May want to demonstrate game in central area where students can watch.)

Extensions:

After each roll an environmental element card is picked up with instructions. Ex. "You are in a drought! Stay where you are"

ABCWUA Educator will have various bonus rounds where all teams will get a chance to answer extra questions to move ahead 2 spaces.

For example:

"Which one looks like this when after they die?" (hold up Cholla stick)

"Which one is found not only along the Rio Grande river, but throughout all of Albuquerque?"
(Cottonwood)

"Which one makes fluffy cotton-looking bits that get carried by the wind in order to spread their seeds?"
(Cottonwood)

Each board has a close up of the leaf system of each plant. Educators can explain how each one is special for the plant to keep water. Ex. Cholla cactus have needles, not leaves to keep their water from evaporating/escaping since they live in such a dry place.

Wrap Up:

Bring students back together. Have them turn in game pieces. Discussion about what happened during the game, remind student where our water comes from and how they can use less water at home.

Questions?

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Authority