

Transcript: Modeling Absorption in Plants (second–third grade)

Text on screen: Modeling Absorption in Plants (second–third grade).

Logo: Count, play, explore—for early education.

On screen: Kelly Rosales, third grade educator, speaks from a classroom

Kelly Rosales: Students are going to be investigating plants and their needs in a couple of different ways. I really wanted them to come away not only with a deeper vision of how a plant absorbs water, but why is it important.

Describer: Children are shown dipping paper towel strips into clear cups filled with colored water. Next, educator Kelly sits speaking to the children.

Kelly: Now, if I had water and I put it right here—

On screen: Kelly points to the ground in front of her.

Kelly: Is it going to go up or is it going to go down?

Children: Down.

Kelly: Do you remember our first science? What force makes water go?

On screen: Kelly points and moves her hand down toward the ground.

Children: Gravity.

Kelly: Gravity does. So we're going to do an experiment today to look at how does it—instead of going down—how does it go against gravity and climb up?

On screen: Kelly speaks as an illustration of a plant is displayed. The blue arrows and water droplets are moving up from the leaves of the plant to show the process of transpiration.

Kelly: An important part to help students connect with their prior knowledge is to make sure that you reference specific vocabulary words that will be relevant to them that they will recognize. And then I always try to introduce something that they don't recognize. In this case, it was transpiration. Transpiration is the effect of how come



the water comes up. That is the fact that the leaves are the ones that are receiving the heat and that creates almost like a dryness, a suction, that will pull the water up.

On screen: Kelly speaks to children in a classroom, showing the same illustration.

Kelly: Since we obviously don't have time to watch a plant grow this whole time, we are going to mimic or imitate the plant by using—the plant stem—by using some little paper towels.

On screen: Kelly speaks from a classroom.

Kelly: Each person in the group had an assignment. One person was responsible for dipping the paper, making sure it hit the water line. When I called the time, their responsibility was to pull it out and then pass it to the next person who measured the growth or the height of the paper affected by the water. And then the third person's job was to actually record that data.

On screen: A group of children perform the activity as described, measuring the height on the paper strip after it was dipped in water.

Kelly: Ready, and dip. Hold it right on the line just so that the water's on the line.

On screen: Children are shown working in groups of four. One child holds the end of the paper towel in the cup of colored water. The water moves up the paper towel. Next, the children use rulers to measure how far the water traveled up the paper towel and record their measurements.

Child 1: How much is it?

Child 2: It's four and...

Child 3: It's four and one.

Child 1: Four and one-fourth?

Child 3: Yeah, four and one-fourth.

Child 1: Okay, write four and one-fourths.

On screen: An absorption rate graph is shown on a whiteboard, with "time" represented on the x-axis and "height" represented on the y-axis.



Kelly: I already had the graph set up to do time versus length. And so when they came up, I would ask them to share their data and that person would be helped by the group to count by quarters to get to the actual point they needed.

On screen: A child stands with Kelly at the absorption rate graph. Kelly provides instruction as the other children watch.

Child 4: And then it went to five and one-fourth.

Children: [Gasps]

Kelly: Here we go.

On screen: Kelly points to each number on the y-axis, representing the distance the water traveled. She counts out the inches with the children.

Children: One, two, three, four, five, six...

Kelly: Uh-oh. Six? Right here. And go straight across. Up.

On screen: Kelly points to five and one-fourth on the y-axis of the graph and moves her finger horizontally across the graph towards the "Time 3" point on the x-axis. The child then marks the two intersecting points on the graph with a marker.

Child 5: The first growth was big.

On screen: Kelly uses the marker to connect each group's points to create a line graph.

Kelly: As each point was graphed, they were like, "Oh, look at that. It went more. Oh, it went less. Oh, that's exactly the same." By having them count along with the person and having them looking to see, did they get more, did they get less? I felt that they all were pretty engaged. I wanted to show them that recording data had a purpose and we looked at the purpose of it, understanding that there was a great deal of absorption at the beginning, but then as it went on, it was much less.

On screen: Kelly reviews the absorption rate line graph with the students.

Kelly: Now, when did we see the most absorption?

Child 5: The first time.



Kelly: The first time. Look how much that first—

On screen: Kelly points to the graph, indicating the level of absorption at “Time 1” was the greatest for all the groups.

Child 5: Four inches.

Kelly: Right. So that would be like if I was super thirsty, I could drink a lot of water, right? When you’re first thirsty, you’re like, “Gulp, gulp, gulp, gulp,” right?

Children: Yeah.

Kelly: But if you wait thirty seconds later, you might be ready for a little more of a sip, but is it going to go up like that first time?

Children: No.

Kelly: Does anyone want to comment on the time between two and three? Elise, what do you think about the time between two and three?

Elise: They were slower because they didn’t want water as much.

Kelly: There was already so much water in that paper towel, right?

Images on screen: Materials from the activity are shown—plastic cups of colored water, paper towel strips, and paper rulers.

Kelly: It’s really important to use models in life sciences, because too many times there are inner workings that we as adults understand, but that the students take for granted, but they don’t really know how it works. So by breaking it down into something as simple as a paper towel absorbing water, it takes that very huge idea and then it breaks it into little chunks so they can explore different parts.

Text on screen: A special thanks to the children, families, and staff of Lincoln Elementary School, without whose help these videos would not have been possible.

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