Building on the cycle of learning

Background drawing: observation of germs on leaves in the outdoor atelier - DK
In Kindergarten we continue with our inquiry into plants. It is beyond just learning about plants. The children have really embarked on a journey and a cycle of learning, where they are theorizing, reflecting, re-theorizing, collaborating, expressing, and co-constructing ideas. Another important piece is the children are gaining new perspectives and connecting with their worlds in new ways to uncover meaning and knowledge.

As the work has unfolded, we have observed the inquiry groups shift and grow. The children make new observations, develop new interests, share ideas, and hear others' ideas, which enables them to develop stronger theories.

The teachers also met with NK's dad, Andy Kaufman, to share the children's work and theories with him; he confirmed that the children are dead-on in their thinking. The thinking the children have around the systems and relationships concerning aging, air, bugs, germs, language, roots, soil, and water seem to emerge naturally, as though they have an innate understanding of these concepts.

He also shared with us this word — biophilia — which suggests that there is an instinctive bond between human beings and other living systems. This is something the children have uncovered completely on their own through their own observations, all stemming from our first interactions with Ms. Matsumoto's unhealthy classroom plants.

Their awareness and speculations of how bugs help/hurt plants, what happens to plants as they age, or how plants communicate is evidence that the children are making deeper connections with nature and the world around them. The following are images, drawings, and quotes from each group that illustrate their amazing thinking. These quotes were collected by all the teachers.
"Maybe germs come from the bugs." - KT

**Germ group:**
Kylana, Drew, Bryson, Minato
“Humans can’t see it, but the bumpy germ leaf... the germs lay their baby eggs in the leaf.” - DK

“I think each plant has different germs.” - BH

“The germ goes inside [hole]. Then the germ is poking more holes and the weaker it gets.” (referring to the plant) - MH
“The healthy dirt has tiny little bugs.” - TM

“It looks healthy. I think it’s smelly because it looks like white skeleton bones.” (referring to one sample of soil) - RJ

“Dirt is nutritious, helps plant stay up.” - EE
[The soil has] “so much vitamin so they don’t get sick and they grow healthy.” - SM
"It's a baby growing up. The dots help the plant take care of the babies at night." - EK

"Looks like a star or a flower. It's smooth. It's shiny. It looks reddish. It's turning red, maybe they change." - KL (at right)

**Physical Properties**
Kari Ann, Tira, Kai, Elisa, Lily
“Some plants you can see through.” - TL

“It’s fuzzy and soft like a pillow. All plants are different.” - KN

“I have a necklace that changes colors. The leaves change color; there’s light inside it.” - LF

Physical Properties
“The roots can go underground and under the cement. Sometimes the roots can meet a root when the cement is dry. The roots come through it because the roots are trying to connect to another tree or get more water. The roots break through the cement to get to the tree.” - RC

Drawing below: “The rain goes down into little holes in the roots up through the trunk and into the leaves. The peach color represents the air also going in. The system is like a pump.” - AD

Roots
Ayla, Micah, Dane, Linnaea, Richard
“The little roots are making the water jump up. The roots jump smaller. Every ten minutes. Every 66 seconds, the little roots jump and push the water up. The roots…” - MT, using his body to show the little roots pushing the water. (Upward motion)

“I think the roots have a little holes, about 100, to pick up the water. The branches are like roots. When it rains, the water gets on the leaves/branches. The water goes in the hole.” - DM

“I think the roots go very far because how much sun they got and water. Some trees have short roots and some trees have long roots because how much sun and water they get is how long they grow. When the trees are closer together their roots are longer.” - LK
“Plants have different language.” - TK

“The big ones are grandmas and grandpas, and the little ones are babies.” - KO

Language
Kalei, May, Tanner K., Jacoby
“It’s trying to tell us it’s looking at us because it’s trying to say, it wants us to see if we are kind to plants.” - JB

“I think it’s saying, ‘I’m sad,’ because I see the white flower going down.” - MS
Aging
Emma, Treyden, Ethan, BJ, Leiʻohu

“The trees are connecting to get bigger.” - TT

“Maybe that’s the skin.” - BY

“Like a grandpa’s wrinkles.” - EM
“They’re a family because they live together.” - LD

“They’re in the same family because they have the same leaves.” - EE
“Something like a vacuum sucks up the air. Plant uses the sun’s energy to move the air, kind of like a magnet, but more like a vacuum. Air is just floating around, some of it comes out [both holes].” - NK
“The tree has blood in it, and the air goes into the blood.” - JO

“There's a machine that turns air into food.” - DY
“The bugs have sharp mouths; they can hurt the plants.” - JF

“They [ladybugs] were trying to battle the poky ones. The poky ones wanted to eat them.” - CC

“The plant that gotten bitten wouldn’t feel happy.” - XG

Bugs
Jack, Xander, Cruz, Ellie, Maliyah
“Some of the bugs’ homes are the leaf.”
- MC

“Not every plant has bugs.”
- EC