STEMTaught

South America Adventure Plan 3

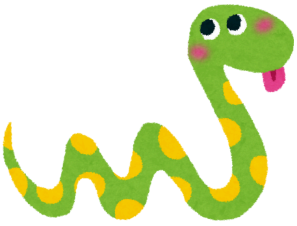
4TH-8TH GRADE

GAME TIME

(20 min)

Materials:

- Jump rope



STEM TIME

(60 min)

Materials:

- Paper bags or boxes
- Scissors
- Mystery items
- A blindfold (or just close your eyes)

SNAKE

Instructions: Have the students form a circle in a large open area. For larger groups, multiple circles can be formed, and there can be multiple games going at once. One student will be the snake. The snake will have a jump rope, and they will stand and spin in the jump rope around in the middle of the circle. As the snake spins the rope, the players who have formed the circle will need to hop over the rope as it comes to them. If the rope touches them, they are out. The snake can change things up by spinning at different speeds and heights, but for safety reasons, the rope must not come higher than the players' knees.

WHAT'S INSIDE THE MYSTERY BAG?

Say: "Today we are going to create a fun mystery challenge. We use lots of senses to understand the world. We can smell cookies as they are baking and we can feel water on our skin. What would it be like to sense things without sight? Do you remember learning how Sloths have poor sight. Let's see if you can use other senses to identify mystery objects."

Instructions:

- Have everyone pair up into groups of 2 to 4 students, and give each group 1 or 2 bags or boxes.
- Give the students 30 minutes or so to go outside or walk around the classroom to find the items they want to put in their bags. These items could be anything within reason, and anything small enough to fit in the bag.

Ask: "You'll probably rely on your sense of touch the most. What are some words you might use to describe how something feels?"
Example: Something could feel smooth/rough, sticky, small, soft, etc.
Ask: "What other senses might help you identify these mystery objects?"
Example: There could be a smell it has or a sound it makes.

- Once all of the groups have prepared their bags, have everyone take turns going to each group's mystery bags! Remind them that they cannot look in the bag. They may either shut their eyes or use a blindfold if needed. Remind them to use all their senses of touch, smell, and hearing to try to identify the items.

STEM TIME

(90 min)

Materials:

- Popsicle sticks
- Rubber bands
- Paper and paint

Optional: Scissors for harvesting natural materials

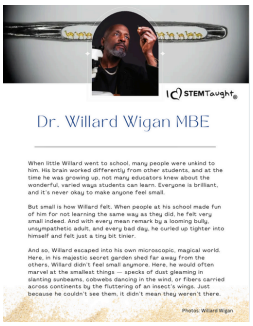
MAKE A PAINTBRUSH WITH NATURAL MATERIALS

Watch this video to help visualize the project. Instead of twigs your box contains popsicle sticks but you can use twigs as well!
https://www.youtube.com/watch?v=NTQy5MIAojw

Say: Indigenous communities in the Amazon have long used the forest as their art supply. They make natural paints from crushed seeds, fruits, clay, and charcoal. For brushes, they use sticks, plant fibers, or even feathers.
These tools help them paint faces, decorate homes, and tell stories—with each mark serving as a way to connect with the land and their traditions.

Take students outside and let them collect a variety of natural materials. Take your time for this adventure and have fun exploring. Compliment what they find. Encourage them to explore different kinds of texture and foliage. For instance: grass blades, bushes, spruce tips, leaves, ferns, seed clusters dried leaves, exposed roots etc. Students trim or pull the material (a little bit is enough) and secure it to their popsicle stick with rubber bands. Allow students to explore how their materials make different marks and make an individual or collective Amazon inspired mark-making project. Paint a landscape or a fun card with patterns.

STEM STORY
(15 min)



READ ABOUT DR. WILLARD WIGAN MBE

Say: Microscopes can help us see very tiny things that we can't see with our eyes. We are going to read about someone that uses them to make some of the smallest sculptures in the world!

Watch: **Meet the Man Making the Smallest Sculptures in the World**
https://youtu.be/MK8m0jl2leY?si=d0t9KWLyggyARDKu

MICROSCOPE TIME
30-60 min

Materials:

- Seeds (outside)
- Tedros test tubes
- Microscopes
- Glue
- Lab sheets

Today students will be going outside to look for seeds. They will collect seeds during an exciting seed walk around school and observe them under a microscope to study their tiny structures.

Say: **Just like Dr. Wigan used his microscope to craft miniature sculptures we are going to use the microscope to observe the tiny structures that exist on seeds! Seeds have an important task to accomplish. They need to get to a place where they have enough space to grow up to be a plant. How do you think they do that? Today we get to go outside and look for seeds to find an answer to our question! We can study them under the microscope.** Get students excited about the seed walk and tell them you would love for them to look extra carefully.

1. Students grab a test tube as they go out the door. Take the students outside to collect and discover seeds. It is important to take time to explore and collect samples with the students. This portion could take up to 20-30 minutes. Have fun on your adventure and please don't cut the collection time short!
2. Bring the seeds back to the classroom. Say: **Seeds have special structures that allow them to float, fly, or stick to animals. Can you see and draw any of these special structures?**
3. Students can sort the seeds into categories according to how the students think they are dispersed. They can glue the seeds to the lab sheet (optional).

Watch the class movie: Exploring Seed Dispersion
Link: https://youtu.be/-SQfaZoggyM

STEM TIME
(20 min)

OBSERVE YOUR BIRD FEEDER

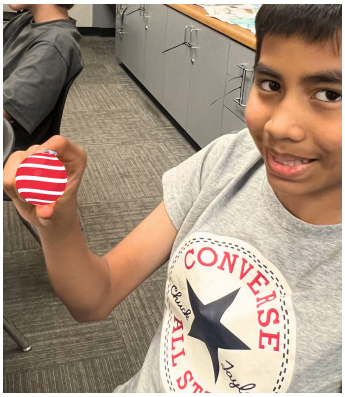
Instructions:
Take students outside to visit and observe their bird feeders. Allow tç

Ask: **"What do you notice about the bird feet you see? Do different types of birds seem to have differences in their feet? What are those differences?**

STEM ART
(60 min)

Materials:

- Tempra Paint
- Paper Plates for pallets
- {Paint brushes
- Wooden Ornaments



PAINT PATTERNS ON A WOODEN ORNAMENT

Teacher prep beforehand:
Set up a table with paper plates with some paint colors and water cups. Optional put a paper covering on your table to protect it from paint or have students paint over some scratch paper.

Instructions:

Say: **"In the rainforest, there's so much to explore—and so much to keep track of! Scientists study what animals eat, where they go, and how they help the forest. To do that, they sort and organize lots of data. You can practice this same skill by sorting and choosing the colors you'll need to make a special ornament. You can follow a pattern or invent your own—and if you want to wear it, you can make it a necklace as well.**

I ♡ STEMTaught®

Dr. Willard Wigan MBE

When little Willard went to school, many people were unkind to him. His brain worked differently from other students, and at the time he was growing up, not many educators knew about the wonderful, varied ways students can learn. Everyone is brilliant, and it's never okay to make anyone feel small.

But small is how Willard felt. When people at his school made fun of him for not learning the same way as they did, he felt very small indeed. And with every mean remark by a looming bully, unsympathetic adult, and every bad day, he curled up tighter into himself and felt just a tiny bit tinier.

And so, Willard escaped into his own microscopic, magical world. Here, in his majestic secret garden shed far away from the others, Willard didn't feel small anymore. Here, he would often marvel at the smallest things — specks of dust gleaming in slanting sunbeams, cobwebs dancing in the wind, or fibers carried across continents by the fluttering of an insect's wings. Just because he couldn't see them, it didn't mean they weren't there.

Photos: Willard Wigan

Once, he noticed his dog had dug up an anthill, and, barely 5 years old at the time, Willard was heartbroken that all the ants were now homeless. To help them, he snapped off a piece of a twig. Carefully, he nimbly bent, twisted, and shaped the single splinters to make perfect, ant-sized apartments, tables, and chairs. He even tried to make the ants some shoes and hats!

For the next 50 years and counting, Willard has enjoyed his microscopic world. Motivated by his mother's words: "If you keep making them smaller, your name will get bigger," he let his imagination roam free to create exquisite worlds and masterpieces…on the head of a pin or matchstick, in a hollowed-out hair, and in the eye of a needle. Letting calm stillness descend around him, he patiently enters this world and uses handmade tools to create his art work.

An eyelash is his paintbrush, or the antennae from a dead aphid fly he found. A speck-like shard of diamond? His chisel. The tiniest needle that doctors use? His drill, which he gently prods and turns 'like peeling a carrot' into materials so fine they are invisible to the naked eye. He even uses the claw of an aphid fly to hold onto his masterpieces as he makes them.

Willard works between his heartbeats, often trying to slow down his breath and using the rhythm of the pulse in his thumb to slowly etch out the shape he wants to create under the microscope. He holds very, very still while he works, almost like a statue.

Sometimes, he uses a single fiber or grain of dust to create his beautiful art! One time, he even accidentally inhaled and breathed in a teeny tiny sculpture he had made of Alice in Wonderland.

But in the fragility of his art—which could be blown away by the gust of wind from a fly's wings—is fierce bravery. Bravery to know that his differences are what makes him so very special and unique. And sometimes, microscopes can help us see the most wondrous things.