Scent Trail Scavenger Hunt

LESSON SUMMARY
Students use their sense of smell to follow a trail and complete a puzzle.

Unit: Interconnection/Harmony
Grade Level: Pre-K through 2nd grades
Duration: One hour
Domains: Contemplative, Embodiment, Sciences
Tags: awareness, insects, ants, MindUp, teamwork, scavenger hunt, scent trail, sense of smell, perception

Teacher Description & Notes:
"This was part of a unit on interconnection and also a scientific exploration about ants. We did it in early spring, before the forest underbrush had grown. The children loved this activity. The birds were back and we were all eager to be outside. We merged a grade 1/2 class with a pre-K/K class for the afternoon. Seeing how excitedly and well the mixed-age pairs of students worked together was probably my favorite part of this lesson. Older-with-younger student pairs worked beautifully together to smell and record their correct sequence of letters. All succeeded in finding the right letters to fill in the blanks on their recording sheets, though younger students needed help to read the word that was then spelled out, especially since the letters were found in backwards order." - June O Wheeler, co-teacher (2019)

Essential Questions: How do we rely on our sense of smell?

Guiding Questions:
What would it be like to have no sense of smell?
How do ants experience the world?

And Then? Why is this important to learn?
The sense of smell is more important than one might think. Bringing awareness to this powerful faculty, we are more awake to the world. Heightened senses help us cooperate and communicate more harmoniously with each other.

Materials Needed:
- Two distinct scents that look alike when applied to a cotton ball or material. We used a standard kitchen vanilla (can be synthetic) and coffee because they are similar colors on the cotton balls. Be careful with essential oils, which can cause allergies.
- Cotton balls or other material that can hold scent
- Tacks or string for attaching material and letter tags to the trees
- Paper for letter tags
- Scent Trail Recording Sheet

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Lesson Outcomes:

Know At the end of the unit, all students should know…	Smell is the **first sense we use** when we are born An adult can identify about **10,000 smells**. Ants have **four to five times** more odor receptors than most other insects. Smelling and tasting are two of the five senses. **They often work together**. At the top of the inside of our nose are millions of **tiny little hairs called cilia**. These hairs are connected to smell sensors which send signals to our brain about smell via the olfactory nerve. We smell things when they emit **small molecules** that float in the air and end up in our nose. We can't see these tiny molecules, but they are there. The reason we sniff is to get more of those molecules up into the top of our nose to where they can attach to the **special sensors** and determine the smell. Smelling helps us in many ways. It first makes our **food taste better**. We can't really taste that many flavors, but with the help of smell we can "taste" thousands of different things. Smell helps to **warn us about bad things** like rotten food or smoke from fire.
Understand At the end of the unit, all students should understand that...	How important **communication and cooperation** are among animals. Ants and other non-human animals have intelligent ways of living that are **different but no less valid** from our own. One cannot always rely on one's sense of sight to identify things. In fact, one should always **examine what our senses tell us**. (one of the 10 principles of MWS) **Teamwork** is important to succeed in a difficult challenge. Our perceptions **cannot always be trusted**.
Do How will students apply knowledge and understanding beyond this lesson	Appreciate the **intelligence of ants.** Be **more aware** of the sense of smell.

ACTIVITY DESCRIPTION

Students work in teams of 2. They are led to the beginning of the trail and are given one of the scents to track. They enter the forest using their sense of smell to find the scent path the teacher has created through the forest using cotton balls tacked to a tree that are soaked in the scent (you can also put them in film canisters or use another method). Each point on the trail is a tree with two cotton balls separate scents. Each cotton ball has a letter attached to it. Teams have to discern which is theirs and follow it, writing down the letters on their Trail Recording Sheet as they go. Once they come to the end, they should have spelled out a word. Only if their scent is correctly identified every time will the letters they've collected spell the correct word, so it's easy to check at the end of the route.

Prep:

- Decide on two words (or more depending on how many trails you want to create) with an equal number of letters that will be spelled out. We used the words "skandha" and "essence" and "chrysalids". We started the trail with the last letter of each word. Skandha is a Sanskrit word for sense and this gives an opening to discuss our sense faculties from this perspective. Also essence can open up to an interesting discussion about what is an essence, not just scent but the essence of a being etc. But you can use any word.
- Create a safe pathway, preferably in a wooded area.
- Attach scent-soaked cotton balls or other material that can hold scent to trees at child-height with a letter label for each scent stop (Tree #1: the letter "e" for example).
- Print a **Scent Trail Recording Sheet** for each team.

Hook/Connection:

- The ability to smell is probably one of the earliest senses developed by organisms. It is especially important in the insect world. When foraging worker ants find food, they leave a scent trail for other ants. The ants touch their abdomens to the ground and secrete a substance that is detected only by members of the same species using their antennae. If another animal accidentally crosses the scent trail and breaks it, the ants become disoriented and confused. To define an area or territory, many animals mark objects with scent from special glands. Scent marking can be used for finding a mate or for establishing an area for family, shelter, and food supply. Animals often defend their territory from intruders, especially members of the same species.
- The day before, you can set out a tasting panel of bread, cheese, honey, etc., to see which food ants like best.
- We looked for ant trails on the playground
- Watch short videos (see suggestions below) about how amazing an ant's sense of smell is.
- Connect to MindUp research about the importance and function of our sense of smell.

Active Engagement Strategies:

Think | Pair | Share

Teaming up using scent or sound tubes

Closing/Review:
Teams check with the teacher to make sure they spelled the word correctly that was assigned to their scent trail, and then they could do the other trail to figure out the other word. Circle up and discuss.

Assessments:
Students can be given a prompt to write about the challenges and successes of the activity.

Audio, video, links and other resources:
How Ants Keep Clean and Safe NYTimes article
How do we smell? - Rose Eveleth TedEd
Helpful to read the MindUp Lesson 6: "Mindful Smelling" for the neuroscience behind smell.
Making Sense of Scents: Smell and the Brain

Books:
Questions and Answers About Ants by Millicent E. Selsam
Those Amazing Ants by Patricia Brennan Demuth
Ant and Bee and the Kind Dog by Angela Banner
Are You an Ant? (Backyard Books) by Judy Allen (Author), Tudor Humphries (Illustrator)
Hey, Little Ant by Phillip & Hannah Hoose (Read-aloud version) (about stepping on ants)

Differentiation
It helps to have another separate activity led by another teacher simultaneously so that pairs can work independently and at their own speed along the trail.

Cross Content Connections
This is just a suggestion. Please suggest your own!

Sciences	Insects, social insects, ants How the senses work Smell and memory
Humanities	Cooperating to follow a trail Smelling things and writing The Ant people of the Hopi Other myths and legends about ants
Arts	Drawing ants, drawing smells
Embodiment	Moving like ants
Contemplative/Dharma /Social Emotional	MindUp/Mindful Smelling Teamwork Recognizing that we all experience things based on our perceptions