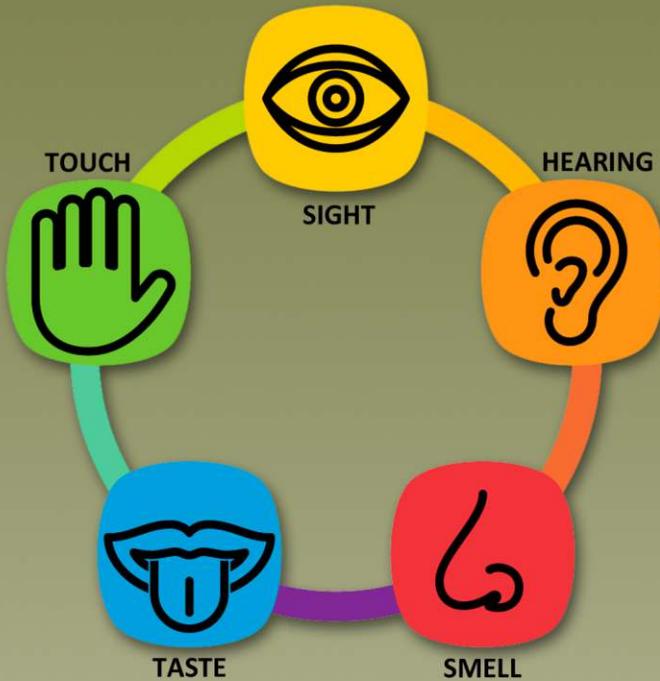


# GOOD SENSE



## An Educator's Guide to Outdoor Sensory Activities

*"Observation is noticing or perceiving with your senses."*

Merriam Webster





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The mission of the Foundation is to foster environmental stewardship; but, in order to *care for* the environment, one must first *care about* the environment. Educational research has found that an attitude of environmental responsibility comes from frequent experiences in nature with family, friends and teachers as role models. With this goal in mind, Jeffers provides free training and materials to support learning outdoors. Professional development workshops help teachers discover the wildness in the tamest of school grounds while teaching outdoors.

Materials and workshops are described in detail in the Jeffers website: [jeffersfoundation.org](http://jeffersfoundation.org).



## Foreword

We receive five senses at birth – the sense of sight, smell, taste, hearing and touch, but, to an ever-increasing extent, we learn through one-dimensional acquired knowledge using computer searches, social media and memorization. What we lack is the continuing multi-dimensional knowledge we receive from the development and use of our senses to learn and to explore and reach logical conclusions from our own observations and experiences. We hope that the activities contained in this booklet will help you discover and explore the limitless possibilities available through using your senses to see and discover them.

Paul Oberg, CEO, Jeffers Foundation

Students at Jeffers Pond Elementary Nature Preschool

Examining pond water at McColl Pond, ELC. Students discover that many simple devices can extend our vision into the unseen world.



# Good Sense

A primer of easy-to-use sensory activities taken from Jeffers workshops designed to enhance observation skills. With slight modifications most activities can be used with K-12 students.

## What teachers say about Jeffers workshops:

Written reflection after a Jeffers workshop:

*"...The last powerful thing that I left the workshop with was the power of our senses. I could not believe how many things I overlooked when I didn't really engage all my senses. The various activities that we did helped me to stop and really observe closely using my senses. When I engaged my senses I could notice how much detail there was. This is a process that I have to teach students. It is also something that will take time..."*

Kelsey

*"Wow, the more you look, the more you see!"*

*"I'm amazed! It was right in front of me and I didn't even notice."*



Teachers learn outdoor education skills at a Jeffers workshop

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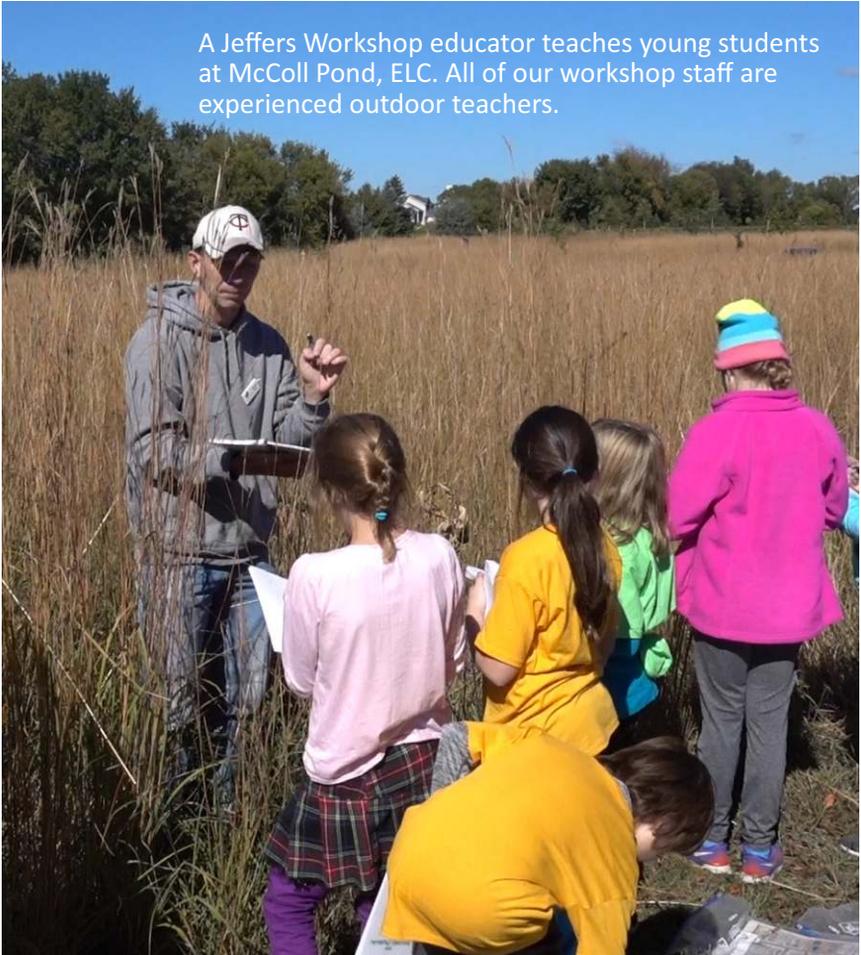
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A Jeffers Workshop educator teaches young students at McColl Pond, ELC. All of our workshop staff are experienced outdoor teachers.

SIGHT

HEARING

TOUCH

SMELL

TASTE

TOGETHER

BEYOND

## Research Says These Activities Are Important:

From the moment of birth we begin learning about our surroundings through our senses. It is the job of our brains to combine all of our sensory information to make sense of the world. It is easy to observe babies and toddlers learning as they investigate by touching, listening, tasting, smelling and watching as a way of answering their questions about their surroundings. In a way, we all begin life as little scientists.

Although many visual skills develop early in the child's life, other sensory skills develop more slowly. Brain development research indicates that some manipulation skills continue to develop through ages eight to fourteen. What better argument for hands on learning as a vital teaching technique? Tactile experiences linked with the other sensory stimulation improve skills in cognition, social interactions, physical development, motivation and concentration. In addition, when this learning occurs outdoors the sights, sounds, and aromas strengthen positive feelings and attachments to the natural world. This attachment becomes the motivation for being environmentally responsible citizens.

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Or <https://www.childrenandnature.org/2014/05/12/nature-is-the-ultimate-sensory-experience-pediatric-occupational-therapist-makes-the-case-for-nature-therapy/>

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A misty day at McColl Pond, ELC as fifth grade students make observations. McColl was funded, in part, by Jeffers Foundation.

## Learning Standards... No Matter What You Teach

From the simplest kindergarten benchmarks to the most sophisticated secondary science benchmarks, Minnesota Academic Standards ask students to use observations in the classroom and in the field to describe natural phenomena, compare data and communicate ideas. These activities integrate all learning disciplines.

### **Rationale**

In this booklet the initial activities are designed to isolate and focus on a specific sense while the last activities focus on multisensory experiences. We know that more can be better. When it comes to observations, the more senses that can be used the more meaningful and accurate the observation. And for students with limited visual, auditory or tactile abilities it is important to provide these multisensory experiences.

Learning in the outdoors provides students with an element of freedom and empowerment – a sense of taking charge of their learning. Students with behavioral issues and fidgeting in the classroom may function better in the less restrictive outdoors.

Some activities are designed as work alone situations while others are wonderful opportunities for cooperative learning. Students with special needs can benefit as they work alone for some activities and partner with a classmate for others. Class members can share their discoveries with a child of limited mobility and both students benefit during the process of sharing information. Putting discoveries into words is an important aspect of language development.

Students with visual or auditory impairments learn to compensate. A blind student may have more acute hearing and more tactile skills. A deaf student may be a better visual observer than peers. Thus, a give and take exists as students learn from each other.

Look in the Management Strategies section of the following lessons to find some suggestions for adapting lessons to meet individual student needs.



An outdoor learning area to use as a base can make a big difference in the effectiveness of taking students outside.



A few minutes spent surveying potential resources on-site will pay off when you come again with students.

## Getting Started: Management Strategies for Investigations in the Field

- **Get to know your site.** Look for easy access, diversity of habitat (micro-habitats) in cracks, along sidewalks or buildings, concrete/asphalt, and check for any safety concerns.
- **Establish expectations with your students** – no running or shouting. Let students know the simple rules will be enforced. “Three strikes and you're IN!”
- **Circle UP:** Gathering students in a large outdoor circle allows you to look every child in the eye to assess understanding, maintain focus, facilitate discussions and if need be, control misbehavior.
- **Establish boundaries outdoors.** You must be able to see students. They must be able to see you.
- **Use a whistle to communicate.** When students are spread out in the established boundaries communicate by whistle:
  - 1 tweet = Look at me. I have something to tell you.
  - 2 tweets = Come and circle up around me.
  - 3 tweets = Line up at the door where we exited the building.  
This is a good signal in an emergency or if the bell is about to ring.
- **The exit door sends a subtle message.** If possible do not exit the building through the door used when going outside for recess.
- **Maintain Focus.** Each student should have a task and something in their hands such as equipment and a journal for data collection or reflection.
- **Notify the office.** A call, or a note on the classroom door indicating where you are and when the class will return. Carry a phone or walkie-talkie.
- **Collect with Care.** Discuss the ethics of collecting. Take only small samples – a petal, not the whole flower. Never take the last one. The Rule of 100: It is okay to collect a little if there are more than 100.
- **Keep Stewardship in Mind.** For good Earth Manners, take along a small plastic bag so students can pick up unsightly trash as you explore outdoors.

## Tools of the Trade

- **Writing instruments:** Pencil, Color Pencils, Crayons, small whiteboard for teacher.
- **First aid kit:** A sandwich baggie with band aid, sterile wipes, plastic gloves. Know about student allergies to bees or pollen.
- **A cell phone or walkie-talkie** to communicate with the office if there is a problem.
- **Sit Upons:** Extra Large zip-lock bags containing a padding of newspaper – one for each student to sit upon if the grass is damp.
- **A Jeffers Tweety or whistle**, a designated sound to assemble the group from their study areas.
- **A Jeffers LookIt for each student:** A magnifier, thermometer, and measuring tape to help extend students' observational skills. Practice using them before going out.
- **Journals or data sheets/clipboard** to record observations and maintain focus.
- **Jeffers Nature Detective Bandana**, a helpful device to limit sense of sight to focus on other sensory skills.
- **Minnesota Weatherguide™ Environment Calendar** is a great resource for outdoor exploration with weather, astronomical and phenological data.





### Magnifier use

- Place the magnifier in the same position that an optometrist places a lens – up next to the eye.
- Hold the object to be examined in front of the lens and move the object back and forth slowly until it comes into clear focus.

## Look and See

### Can You Find the Pencil?

**Overview:** Challenge students to find a common object, a pencil, hidden in plain sight. This activity makes the important point that one should not observe with pre-conceived expectations.

**Materials:** 1 yellow #2 pencil

**Time:** 5 – 10 minutes

**Action:**

- Circle Up in a grassy area.
- Walk the inside of the circle showing everyone the pencil. You are going to hide the pencil somewhere in the circle and their challenge is to find it.
- Ask students to turn around with their backs to the center, close their eyes and wait as you hide the pencil somewhere inside the circle.
- Walk around the circle making scuffing sounds – and stick the pencil behind your ear. Be sure to stay inside the circle.
- Give the signal for everyone to turn around to look for the pencil, BUT they may not move from where they are standing.
- When students find the pencil, they should not divulge the location but simply raise a hand. Help keep it a secret.
- As students search the grass, walk throughout the circle so everyone has an opportunity to see you as you challenge them to find that pencil.

**Management Strategies:** Almost all students will study the grassy area looking for the pencil, seldom glancing at you. Divulge the location when many have seen the pencil, being careful not to embarrass a lone student who has not seen the pencil.

Discuss lessons learned: Look up, Look down, Look all around. Think outside the box. And most important: Don't observe with preconceived notions.



## Look and See

### Can You Find the Changes?

**Overview:** All good science begins with observation and this quick activity asks students to notice changes to your appearance. It works best in a circle formation.

**Materials:** none

**Time:** 5 minutes

**Action:**

- Circle UP and ask students to notice everything about your appearance.
- Have students turn their backs to the center of the circle as you make 3 - 5 changes to your appearance, such as rolling up sleeves, untying laces, loosening a button.
- When students turn back to the center of the circle see if they can identify the changes you made.

**Management Strategy:** On subsequent trips for outdoor learning, remind students to be careful observers by first having them work in pairs, turn back-to-back to make changes for each other to find.



Observing bird behavior at feeders is a popular activity especially if the feeders are kept filled.



## Look and See

### Pay Attention with a Penny – You'll be Surprised!

**Overview:** We see pennies every day but what do we notice? As students try to draw a penny from memory they realize how many details they overlook on a daily basis. Later, using a magnifier, students recognize how scientific tools increase the powers of observation.

**Materials:** Journal or paper, pencil, penny and magnifier for each student

**Time:** 5 – 10 minutes

**Action:**

- You have seen a penny all of your life, but what have you really noticed? Ask students to sketch from memory, both sides of the coin.
- Discuss drawings: What is displayed on the coin? Is a person pictured on the coin? Who? How many images of a person are on the coin? Are all pennies the same?
- Now, distribute pennies and magnifiers. Compare the student drawings with the actual coin. Did anyone make a perfect sketch? Can anyone discover new details using the magnifier -- Perhaps a second image of Lincoln sitting in the Memorial building? Does anyone have a shiny newer penny that does not have a Lincoln Memorial pictured on the “tails” side of the coin?

**Vocabulary:** Coin, cent, heads/tails, magnifier, scientific tool, Lincoln Memorial, magnifier/magnifying lens.

**Management Strategies:** Check pennies as you collect them for this activity. Older pennies have a tiny image of Lincoln sitting in the memorial. The bright shiny newer pennies may have a shield on the “tails” side of the coin.





## Look and See

### A Color Match

**Overview:** This activity helps students increase visual observation skills as they search for natural objects that match a color chip.

**Materials:** Journals, pencils, variety of color paint chips, clear “scotch” tape

**Time:** 10 – 15 minutes

**Action:**

- In the classroom, have students create a titled journal page. Explain the activity and discuss expected outdoor behavior.
- Outdoors, have students Circle UP. Review the assignment, explaining that they will have 5 minutes to match the color of the chip they receive to a natural (not human-made) object. If possible they may collect a small sample of the object (usually plant material) to tape in the journal and write a description, a reflection, or a surprise they discovered.
- Define boundaries where students may search. You see them; they see you.
- After 5 minutes, students return to the circle to tape samples and discuss their discoveries.

**Vocabulary:** Paint producers name color chips. Have students develop colorful names too. (e.g. Tadpole green, Deep Woods green, Sea foam green.)

**Management Strategies:**

- For quick distribution, hold chips face down, so no choosing colors.
- Color chips are available at paint stores, or have students select a crayon color to match in the journal. Provide a variety of reds, yellows, brown, grays, and greens.
- The activity can be done in all seasons. In winter, the red and maroon colors can be matched if students look at the tips of tree buds. In spring, there will be many shades of green to match. Green may be the hardest color for an exact match.
- If someone has no match, or is color blind, have classmates help search.
- Visually impaired students may be given a texture to find in nature.
- An Art extension: Assign teams to collect every shade of a single color and have them arrange the various shades in order on a long strip of masking tape.

## Look and See

### Alike and Different

**Overview:** The activity is a fun way to introduce young students to the terms alike and different as you focus on observation skills. Older students notice more details.

**Materials:** None

**Time:** 5 - 10 minutes

**Action:** Scope out your students to find two students wearing similar clothing.

- Circle-up and invite those two students to stand in the middle of the circle.
- Ask students to use their observation skills to share what they notice is alike, or the same about the students. Then ask what is different.

**Management Strategies:** With younger students it may be easiest to notice differences first. With practice students start making more detailed observations that improve their science learning and lead to asking questions. Questions are the essence of science.

**Variation:** Provide two similar objects from nature that have tactile differences for students to compare and describe.



Two girls in mostly pink, but look closer.

## Look and See

### Themed Hikes - We go looking - under!

**Overview:** This is a refreshing break and a fun way to make words real as you stress a new vocabulary word – Under.

**Materials:** none

**Time:** 5 – 15 minutes

**Action:**

- Circle UP and explain that the class is going on a hike to look UNDER things.
- Look under the tree, under the bush, under the rock, under the log – and observe the living/nonliving surprises, like a pill bug.
- Have students suggest other things or places to look under.

**Management Strategies:** Be sure to return the log to its original position. Somebody lives under there. All hikes help develop motor skills and balance.

Look at your curriculum for other “Themed Hikes:”

- Alphabet hike
- Numbers hike
- Noun or Verb hike
- Geometric Shapes hike
- Bird hike – listening to bird songs may improve spatial awareness.
- Texture hikes
- Topics are limited only by your imagination.



## Look and See

### Eye Spy

**Overview:** With young children a simple and fun outdoors game of “I Spy” can sharpen observation skills as well as address basic learning standards. This game can be played many times with a different learning outcome each time.

**Materials:** none

**Time:** 5 – 15 minutes

**Action:**

- Circle-up outdoors. Explain expected behavior and “rules of the game.”
- Begin the game focusing on colors: “I spy something red.” Does adding more information help focus on a single object?
- Next add a combination of size (bigger/smaller than) and color. Or living/non-living.
- Include location terms near/far, above/below/beside/around, etc.
- When students are ready, add geometric shapes to the spy list. Take a “Find the Shapes Hike.”
- Let students play “spy” with each other.

**Concepts & Vocabulary**

Customize the activity to stress recent concepts or vocabulary: Colors, letters of the Alphabet, Geometric Shapes, descriptive words for locations, prepositions. The activity links communication skills to scientific observation.

**Management Strategy:** Use word cards and verbal directions.



A schoolyard garden is an excellent place to play eye-spy.



Many outside lesson activities can be effective in the winter, especially if activity levels are kept high.

## Listen Up

### Footsteps

**Overview:** Young students will take a walk to hear what different kinds of footstep sounds they can make.

**Time:** 15-20 minutes

**Action:**

- Walk children to a variety of places to make sounds in the grass, dried leaves, gravel, puddles, snow, ice, sidewalk, or hallway.
- Have them think of words to describe the sounds they hear.

**Vocabulary:** Make a vocabulary list for each area and each season. These words could be posted in the classroom to use in writing and speaking activities.

**Management Strategies:** Talk about safety when walking in puddles, snow and on ice. These substrates improve balance and spatial awareness. To be more inclusive, focus on textures as well as sounds.



Learning outside in the winter is no problem for preschoolers when they're dressed for the weather.

## Listen Up

### Deer Ears!

**Overview:** Enhance hearing with this simple activity. For young students it is a fun example of form and function in animal anatomy.

**Materials:** For young students you might use photographs or puppets of animals such as deer or rabbit that have large ears.

**Time:** 5 minutes

**Action:**

- Circle Up and discuss the reasons why deer or rabbits might need excellent hearing.
- Let's be deer! Demonstrate how to cup hands behind the ears to increase observation with the sense of hearing.
- Try whispering to the group with and without Deer Ears. Does it make a difference?
- Take students on a hike around the school and practice using Deer Ears for appropriate sounds such as bird songs, playground or traffic noise.
- Build a word bank to describe the sounds heard.

**Vocabulary:** Descriptions of locations: Near/far/next to, high/low, Descriptions of the sounds: loud/soft, grinding, singing, ringing, clicking, roaring, whirring, rustling, flapping, etc.

**Management Strategy:** If students become noisy while studying in the field, a sudden instruction of Deer Ears may quiet the students and let you refocus attention on the task at hand.



## Listen Up

### Shake It Up....Listen and List

**Objective:** Students will collect nature items to make shaking containers to explore different kinds of sounds and develop deductive reasoning skills.

**Time:** 20-30 minutes

**Action:**

- Give each student a recycled container that has a cover to collect nature objects.
- Take students on a collection walk for nature objects such as seeds, rocks, bark, needles, pinecones, small twigs, etc.
- At a given area let students sit down with their collections and see what kinds of sounds they can make. Can they make a quiet sound, a loud sound? Can they match a sound with a friend?

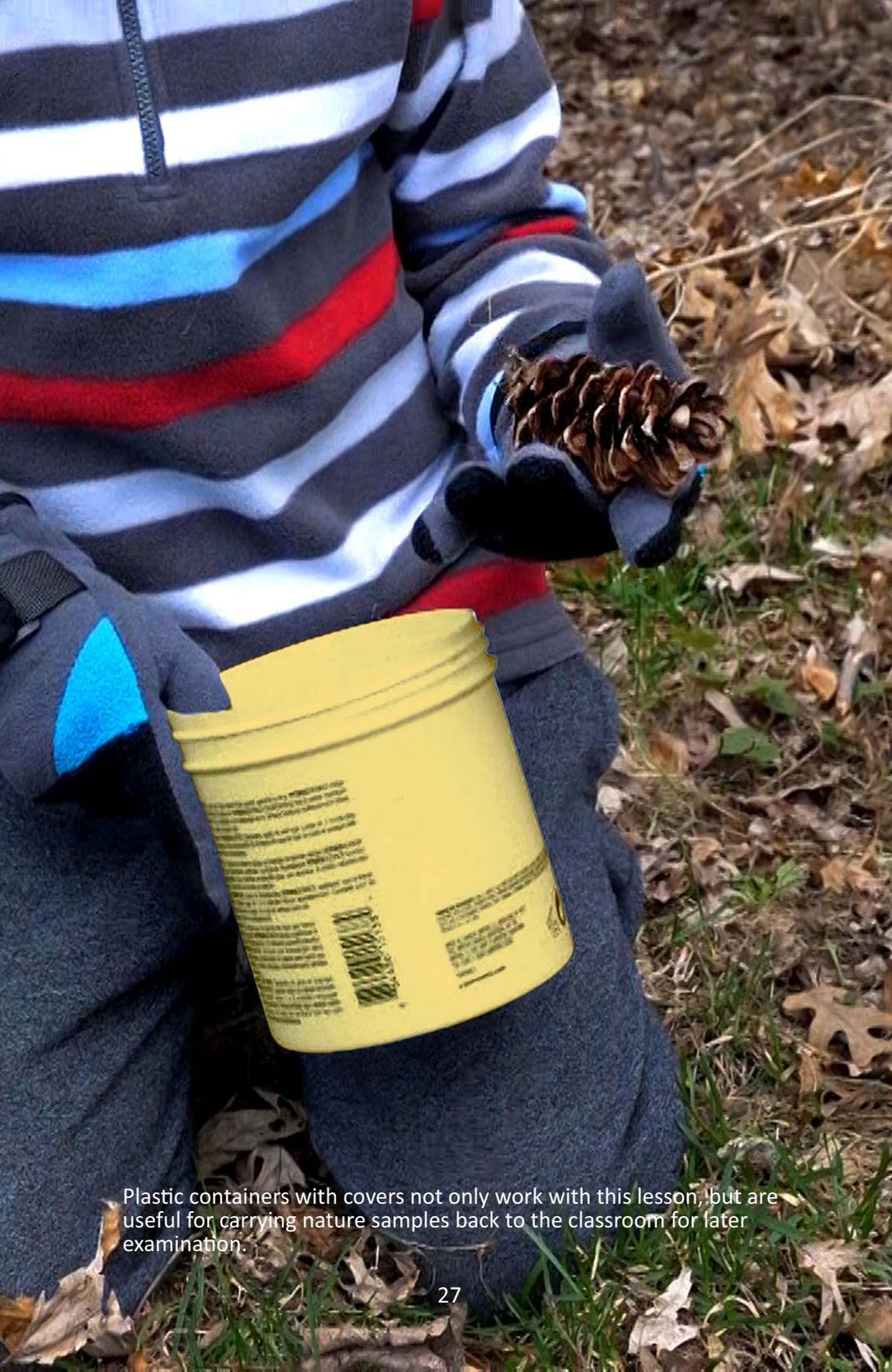
**Vocabulary:** Build a word wall or list of sound words. Encourage children to use these words in their writing activities

**Variation: Listen and List.** Use one of the following activities as a prelude to taking the group outside to *listen and list* natural sounds.

Put recycled containers out at a choice time and let students make sound containers using items from inside the classroom. See if students can guess what is in the container.

**Another variation:** Have a mystery box where you put an item and the students shake and feel the weight to guess what is in the box. You could also have them ask yes or no questions to help figure out what is in the box. It could be a nature object or a human made object. For students with special needs, select items with a definite difference in weight or sound - rocks, dry leaves, sticks, pine cones, or sand.





Plastic containers with covers not only work with this lesson, but are useful for carrying nature samples back to the classroom for later examination.

## Listen Up

### Make a Sound Map

**Overview:** The primary focus of the activity is listening skills but it combines easily with the benchmark concepts related to map-making and cardinal directions. If you have young students you may want to have them dictate as you make one large map for the group.

**Materials:** Pencil, paper or journal for each student.

Chart paper and marker (optional for a class map)

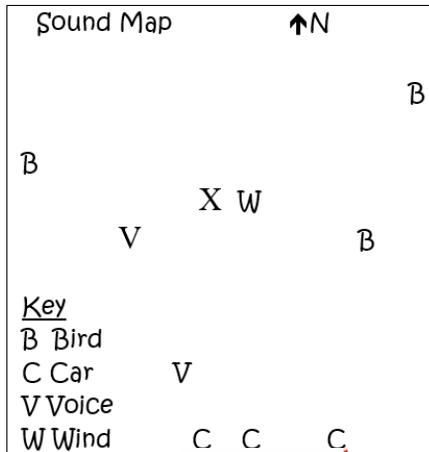
**Time:** 10 - 15 minutes

**Action:**

- In the center of the page, have students make a small X or stick figure to represent themselves.
- Now, draw a compass rose in one corner and a blank map key in another corner. Discuss the cardinal directions or practice using compasses.
- Students will listen for sounds, determine the source, then record the direction and distance of the sound using symbols on their maps, thus developing spatial awareness.
- Students create a key or legend to explain the symbols.

**Vocabulary:** Compass, Compass Rose, Map, Key or Legend, Cardinal Directions, North, South, East, West.

**Management Strategy:** Introduce the activity while students are gathered in a circle. Then, they may be assigned or select a listening spot. Adjust time to fit student attention, but also use the activity to help build patience. Visually impaired students may excel at identifying sounds.



## Listen Up

### One Finger at a Time!

**Overview:** Because we are very visual learners we often ignore or forget that we can learn a lot by listening. Having eyes closed helps focus on sounds. This activity is good at any grade level, but is especially good for building vocabulary with young students.

**Materials:** None required

**Time:** 5 minutes

**Action:**

- Circle Up and ask students to hold their hands at chest height and make two fists, then close their eyes.
- Now, direct them to raise a finger each time they hear a new sound.
- Who can raise the most fingers?
- Ask students to share their observations. What sounds did they hear? What made the sounds? What was the location of the sound? Was the sound natural or human-made? Can you mimic the sound of the machine, car or bird?

**Vocabulary:**

Words to describe location or direction: near/far/beside, high/low

Words to mimic sounds: soft/loud, flapping, banging, clanging, swishing, roaring, whirring, tweeting, etc.

**Management Strategies:**

Use this activity to evaluate which students follow instructions carefully. Do some seem to have trouble hearing? Can students verbalize their observations? Can students mimic the sounds of birds or other features? If students become loud during a nature hike or other outdoor learning activity, this technique may also be used to help quiet the group and refocus learning.





Collecting and testing pond water combines the methods of science with several of our senses.

## Listen Up

### Never Eat Soggy Waffles!

**Overview:** Students become familiar with cardinal directions, while increasing listening skills.

**Materials:** 4 Cards with the cardinal directions on them (N,E,S,W), blindfolds, compasses.

**Time:** 5- 7 minutes

**Action:**

- In a large circle outdoors, have students post the N,E,S,W directions around a circle to simulate a compass. Do their positions agree with a compass?
- Invite a student to be blindfolded in the center of the compass and count to 10 out loud.
- All other students tiptoe and scatter to their choice of one of the cardinal directions.
- At the end of 10 seconds, the student in the center indicates the direction where he or she thinks the largest number of students is located. Could the student tell correctly by listening?

**Vocabulary:** Compass, Cardinal directions, North, East, South, West.

**Management Strategies:** If you begin the game again with a new student in the center, be sure to have a clean blindfold – or merely trust students to keep their eyes closed. Students with limited visual ability may excel at this and all are improving spatial awareness.



Compasses can be a part of many outdoor learning activities.

## Feeling Your Way

### Touching Twigs

**Overview:** Students concentrate on the characteristics of a twig using only their sense of touch. Then, using the sense of sight and touch, students identify their twig.

**Materials:** 1 bandana for each student, 1 twig for each student

**Time:** 10 - 15 minutes

**Action:**

- Distribute bandanas and ask students to tie them on as a blindfold “bandit or triangle style.”
- Now ask students to raise one hand so you can easily give them sticks. They will have one minute to explore the twig by using their hands and then you will collect them and dump them together.
- At the end of the designated time, have students hold up their twig for collection.
- After all twigs are collected, mixed and piled together on the ground, students may remove blindfolds.
- Now, the task is to find “their” twig.
- Did they quantify: length, number of buds, thickness, etc? Was quantifying helpful?
- Using sense of sight now, what other characteristics do they notice?
- If two students claim the same twig, they should discuss characteristics until the claim is resolved.



Teachers, wearing Jeffers Bandanas, learn the Touching Twigs activity in a Jeffers Workshop.

## Touching Twigs contd.

### Vocabulary:

**Textures:** Build a word bank as students describe textures and features of the twigs while you record their words. Are there more explicit synonyms for some of the student words? Rough, smooth, hard, soft, bumpy, slick, flexible, brittle, spongy. What new descriptions does sight allow students to add?

**Botanical terms:** For older students, do they notice details such as alternate or opposite branching, spiral arrangement of buds, other botanical features?

### Management Strategies:

- Select a variety of twigs with a range of characteristics, with leaves, needles or without, variations in length, etc. Be sure to have some twigs that are similar.
- It is more difficult to peek with a bandit-style bandana rather than a narrow blindfold.
- Most often, all students will be able to find their twig. With young students a variety of textures and common objects may be best: rocks, cotton balls, pine cones, fabric, etc.
- Did you collect all twigs on the schoolyard? If so, take a hike and see if students can identify the source of their twig.



## Feeling Your Way

### Feeling With Your Feet – The Millipede Walk

**Overview:** Students recognize that sense of touch involves more than just their fingertips as you lead them blindfolded across the yard while they are feeling textures with their feet.

**Materials:** 1 blindfold /student, Long rope approximately 25 -30 feet (optional)

**Time:** 10 – 15 minutes

**Action:**

- Students form a line for this blind walk and tie on bandanas bandit-style with a point falling down over their noses so they can't see the ground.
- Use the Millipede-style walk with children placing both hands on the shoulders of the person in front of them.
- Assure them you will lead them slowly around the schoolyard and will keep them safe by warning them of anything like a step that might cause them to trip.
- The students are challenged to use sense of touch through their feet to determine where they are walking on varying textures. (Concrete, grass, artificial turf, mulch.) Did their sense of touch give other clues about the path traveled?
- Another technique for older students or for social distancing is to provide a long rope that all hold onto with one hand as you slowly lead the rope.

**Vocabulary:** Build the word bank with textural terms such as hard, soft, spongy, flat, inclined, irregular surface. Do they notice and describe the sound of their feet on the different surfaces? How did it feel to observe without using sense of sight?

**Management Strategies:** This activity can be a fun challenge for students, but some may be apprehensive about not being able to see where they are walking. Be sure to address any fears in the beginning. If a student does not want to be blindfolded, let them be observers or walk with you at the front of the line.

For younger students, ask them to identify textures underfoot as they are walking. For older students, ask them at the conclusion of the walk to identify the route where you led them. Be sure to include grass, sidewalks, sunny and shady areas. Walking barefoot builds spatial awareness and improves balance in very young students and students with special needs.

## Feeling Your Way

### A Touch of Sunlight

**Overview:** Students make observations with their largest sensory organ – the skin. Expect students to mention feeling the warmth of the sun, coolness of wind or other sensations of touch. Thermometers are used to enhance and quantify the sense of touch.

**Materials:** Thermometers (optional)

**Time:** 5 – 15 minutes

**Action:**

- Circle Up and sit in a grassy shaded area. What do students feel? (Hard ground, tickle of grass, cool shade, dampness, crawling insects)
- Discuss the largest sensory organ. Which areas are very sensitive (finger tips, lips, neck) or least sensitive?
- Estimate the temperature of the grass here in the shade?
- Enhance and quantify sensory skills by using a thermometer to measure temperature.
- Move the circle to the sun?
- What new sensations do they notice with sense of touch? (warmth, perspiration, dryness, etc.)
- Estimate, then use the thermometer to measure grass temperature. Compare grass temperatures in sun and shade. This is a good time to discuss the value of trees in our natural and human-made environments.

**Vocabulary:** Build the word bank with comparisons: warm/warmest/hot, cool/coolest, thermometer, temperature, comparisons, estimates, measurements.

**Management Strategies:** To enrich science concepts, compare temperatures on the sidewalk, asphalt parking lot, metal surfaces. For older students who can read thermometers, send them on a scavenger hunt to find the warmest and coolest areas in the schoolyard. Be sure to define their boundaries.



Teachers learn to make outdoor observations in a Jeffers workshop.

Leaf rubbings in your Jeffers Journal are a quick and easy way to better “see” leaf structures that can also be sensed by touch.



## Sniffing Around

### Being a Bloodhound

**Overview:** The Bloodhound Hike emphasizes how much we use our sense of smell.

**Materials:** none required

**Time:** 15 – 20 minutes

**Action:**

- Take a deep breath. Expand your nostrils as you inhale. We are smelling all the time -- although we don't always realize it.
- Many animals depend on their sense of smell more than we do. Bloodhounds have an amazing sense of smell. And you are going to be bloodhounds as we take a hike to observe with our sense of smell.
- Plan the path around the campus: Past the cafeteria, open the door to the custodian's closet to notice chemicals for cleaning, pass the art room or gym. Now head outdoors to the bus stop. What odors come to mind? These are all human-made scents that you have smelled.
- Now concentrate on nature-made scents. Visit the flowerbeds. Compare fragrances of the flowers. Find a pine or cedar to compare with oak or maple.
- Visit the school vegetable garden and rub a tomato or potato leaf gently between your thumb and index finger. Careful not to hurt the plant. Then smell your fingers?
- Rub and sniff leaves of other herbs or vegetables. Do they all smell the same?
- Sit in a circle on the lawn. Explain that students will explore on hands and knees as they smell the grass, the soil, tree bark, green leaves, dry leaves and other aromas. Does crushing a leaf give a different odor?
- As wrap up, students describe their sensory experiences and increase their vocabulary.

**Vocabulary:** Observation, sense of smell, nostrils, sniff, inhale, odors, aromas, fragrances, scents, odorless, musty, sweet, stinky, earthy.

**Optional warm up before hike:** Place cotton balls saturated with a variety of scents in pill bottles or small jars and ask students to identify the odors. Examples: vanilla, lemon, cinnamon, onion, garlic, damp earth, salt water, vinegar.

**Management Strategies:** Delineate the boundaries and have students spread out before they explore on hands and knees.

## Sniffing Around

### Finding A Scent Match

**Overview:** Students differentiate, identify and describe odors contained in canisters. Then, they take an olfactory expedition in the schoolyard.

**Materials:**

- Film canisters or pill bottles, 1 for each student
- Cotton balls
- Aromatic substances/kitchen spices

Time: 10 – 15 minutes, plus teacher prep time

**Action:**

Teacher preparation --

- Assemble and clean a class set of containers. Use film canisters, pill bottles, or small jars. Punch holes in the lids and place a cotton ball in each container.
- Arrange containers as pairs. Each pair will have a different scent such as peppermint, lavender -- or a small sliver of onion.

Student activity –

- Each student receives a canister, memorizes the scent and then tries to find the partner scent.
- Once students are paired they decide on a description for their scent.
- Now, take an olfactory expedition in the schoolyard. If you used natural scent items such as pine needles, find the source of these items outside.

**Vocabulary:** Build a list of student descriptions and include the following words: observation, sense of smell, nostrils, sniff, inhale, odors, aromas, fragrances, scents, odorless, musty, sweet, stinky, earthy, olfactory, similar to...

**Management Strategies:** Cotton balls will be saturated with a variety of scents such as peppermint, cinnamon, vanilla, oregano, a sliver of onion or garlic, vinegar – or schoolyard scents: damp earth, crushed geranium leaf, pine needles, water, grass, tomato leaf from the school garden.

Caution students to sniff the canisters gently and you should use liquids such as vinegar sparingly as you saturate the cotton. Nobody wants to deeply inhale a pungent odor.

If there is a child who is scent sensitive, make him/her aware of the various scents or only use natural scents.



Schoolyard gardens are an excellent place to use the sense of smell as well as taste. The Jeffers Foundation website has over 75 schoolyard garden videos.

## Yum and Yuk

### How We Taste

The tongue is an amazing organ. It contains the only muscles in our bodies that are not connected to bones and can move in many positions. The top surface of the tongue is coated with mucous and has special bump-like structures called taste buds. When coated with saliva, these taste buds can detect sweet, sour, bitter, salty, spicy flavors and a newly recognized taste of umami that recognizes savory (glutamate, MSG).

The tip, sides and back of the tongue are most sensitive and in the past were “mapped” as tasting only one flavor for each section of the tongue: sweet on the tip, bitter in back, salty and sour on the sides. Now scientists know these flavors in varying degrees can be tasted all across the tongue.

**For Safety sake, children shouldn't taste any substances unless under your direction.**

If you have a schoolyard garden, let the fun begin.

- **Take a Look at a Tongue.** Pair students facing each other and have them stick out tongues for their partners to observe. Can they distinguish taste buds of different sizes? Now everyone is ready to taste. (This has no effect on taste, but some students can roll their tongues. Math problem: What % of students are rollers?)
- **Taste the Tomatoes.** If your garden has many Sweet 100s or other cherry tomatoes, ask students to compare a ripe and unripe fruit to describe flavors. The sense of taste and sense of smell often work “in partnership.” Touch and smell an overripe tomato for a comparison. If there is not a large supply, cut the tomatoes into containers and let students use toothpicks to retrieve a small sample. Have paper towels handy. For other fruits, watermelon, cantaloupe and cukes make a nice comparison even if it means a trip to the grocery store. What defines a fruit?
- **Lick the Leaves.** If available, cabbage, lettuce, spinach, cilantro, mint make nice comparisons as students munch and discuss flavors and favorites. Lots of good vocabulary to record here including the term “vegetable.”
- **Sample Stems:** Asparagus, celery and young green onions. Again, cutting samples of these vegetables makes for a variety of flavors, textures and aromas to support new vocabulary.
- **Crunching Carrots – and other roots.** After tasting fruit, leaves and stems, move down to roots. Carrots, radishes (if not too hot), beets and

## Sense of Taste contd.

turnips add new textures and taste sensations – and interesting vocabulary.

**Management Strategies:** As you plan your garden, keep sensory experiences in mind. In addition to herbs, a few fragrant pollinator-friendly flowers like Hyssop (smells like licorice) make nice garden additions.



Students at Meadowbrook Elementary in Golden Valley taste produce from their school garden the same day it's picked.



## Putting it all together

### Qualitative/Quantitative Observations

**Overview:** Students use four of their five senses as they describe and quantify characteristics of natural objects or conditions in nature. The lesson integrates math, science and language arts.

**Materials:** Journals, pencils and LookIts for each student

**Time:** 15 – 20 minutes

**Action:**

- Students are assigned or select a favorite site to make observations.
- The top of their journal page should be a T-chart to record two columns of observations.
- They are to make 10 Qualitative observations that contain adjectives describing physical characteristics of the site or a natural object (such as a plant) in the site.
- In addition, they are to make 10 Quantitative observations that involve numbers: counting, measuring or estimating.
- Observations should include a simple sketch with labels.
- Students should use all senses except taste.
- At the bottom of the data columns, they should list at least one question and any surprises.

**Management Strategies:**

- Circle UP and discuss observations. Share any surprises.
- What math data did students collect? How can it be used?
- Testable Questions: To enhance the science experience, discuss the questions students asked. How can they be answered -- by literature search or by a scientific investigation? Which are testable questions? Is there a question here that students would like to test as a group or individually?



## Putting it all together

### Compare and Contrast

Examine natural objects in the schoolyard and complete the list below:

#### Find something:

Bigger than your hand \_\_\_\_\_

Smaller than your hand \_\_\_\_\_

Larger than your foot \_\_\_\_\_

Smaller than your foot \_\_\_\_\_

#### Touch and Identify something:

Smooth \_\_\_\_\_

Rough \_\_\_\_\_

Warm \_\_\_\_\_

Cool \_\_\_\_\_

#### Listen and Identify a Sound:

Loud \_\_\_\_\_

Soft \_\_\_\_\_

#### Sniff and Identify:

A pleasant aroma \_\_\_\_\_

#### Measure and Identify Something:

3 inches long \_\_\_\_\_

12 inches long \_\_\_\_\_

Circumference less than 6" \_\_\_\_\_

Circumference more than 12" \_\_\_\_\_

#### Find these shapes:

Cylinder \_\_\_\_\_

Triangle \_\_\_\_\_

## Putting it all together

### Sensory Isolation

**Overview:** Each student collects data using all senses (except taste), one at a time...in isolation. Then the group as a whole develops a descriptive vocabulary list.

**Materials:**

Marker and Tablet for teacher to record students' descriptions, Timer, Journals and pencils for students (optional.)

**Time:** 15 minutes

**Action:**

- Find a comfortable place in the lawn for students to sit far enough apart that they cannot reach out and touch a fellow student. Tell the class that the majority of the lesson will take place with their eyes shut.
- Select a time (20-45 seconds) for students to collect data while isolating each of the four senses by first listening, then touching, smelling, and finally looking. At the end of each observation segment, ask students to describe observations, not just try to identify what they notice.
- To begin, once you have shared the directions, ask students to close their eyes and listen. At the end of the time period --without opening their eyes---ask them to use adjectives to describe what they have heard, as you record their responses.
- Now, eyes still closed, shift focus to observations with their sense of touch. Again record their descriptions.
- Next, have them focus on their sense of smell. Finally, ask them to open their eyes and make visual observations for the final 20 to 45 seconds. Record observations. What new characteristics or observations can they make with the combination of senses?

**Informal Assessment:** Sharing observations: The teacher has a record of the students' sensory observations from each sense. Students, depending on age, may write their observations in their journal as well.

**Management Strategies:** You have a rich list of student observations to use for a variety of writing assignments (poems, personal narratives, creative writing) and possibly future investigations to conduct.

\*If you conduct this lesson in or near a school garden, you may have an opportunity to have students collect data from taste observations under your leadership.



It looks like these students are “digging it.” Exploring the natural environment may be one of the first opportunities that girls will have with hands-on science.

## Putting it all together

### Observing the Invisible: Wind

**Overview:** Students can't see the wind, but they can observe what the wind is doing? Students are encouraged to use as many senses as possible to observe the wind.

**Materials:** Journals, pencils, bubble blowers/soap

**Time:** 10 – 15 minutes

**Action:** Explain that students are going to observe something that is invisible, the wind.

- **Watching the Wind:** Ask students to watch what the wind is doing and list all evidence about the wind's actions. (Ruffled hair, blowing leaves, sounds, etc.)
- After observations circle up and share evidence/observations.
- Use a bubble blower to enhance observations. Can young children run as fast as the wind? Can older students measure and calculate the speed of the wind?
- What new ways can students observe the wind with eyes closed?
- Discuss what students heard and felt. What can students infer about the wind?
- Wind was the fuel in his sails, so in the 1800s, Admiral Beaufort invented a scale to rate wind speed. Use the Beaufort Scale to estimate wind speed.

**Vocabulary:** Words descriptive of motions and sounds: rustle, ruffle, snap, flap, whisper, whoosh, etc. Encourage students to use the words in their writing.

**Technology:** Students create tools to indicate wind direction or speed. Have pencils, strips of cloth, paper, pinwheel patterns, straight pins, tape, bubble soap, etc.

**Language Arts:** Creative writing, "If you were the wind, where would you go? What would you do?"

**Management Strategies:** The Minnesota Weatherguide™ Environment Calendar has the Beaufort Scale in the back pages.



## Putting it all together

### Sensory Search - *Can you fill all the boxes?*

LOOK	LISTEN	FEEL	SMELL
Birds in Flight Name of bird	Listen for evidence of a breeze. Where/how is this evidence made?	Fuzzy texture from a plant (stem, leaf, bud)	Sweet smell Where is it coming from?
Plant with a shade of purple in it. (stem, leaf, flower)	Bird song or bird call Name of bird or describe	Smooth natural object Name:	Earthy smell Where is it coming from?
Spot a mammal or evidence of a mammal Name:	Insect noise (chirp, hum, buzz.)	Breeze Which direction is it coming from?	Something damp What is it? Where did you find it?
Find a natural object that has three different colors in/on it.	Plant movement (Grasses or trees)	Warmth or coolness of the air...how does it feel?	Choose one word to describe the smell of the air or a natural object:



## Putting it all together

### Sit Spot

**Overview:** Students are isolated from one another in a single spot as they make observations using as many senses as possible. Use for frequent and repeated observations and reflections.

**Materials:** Journals, writing instruments, Jeffers LookIts (optional), color pencils

**Time:** 10 – 30 minutes

**Action:**

- Students are assigned or self-select a spot at which they will make and record multi-sensory observations for a specified time. They should use four of the five senses. This is a solo activity with no interaction between classmates.
- In conclusion, Circle UP for a brief sharing of experiences.

**Some suggested journaling prompts:**

**Signs of Life:** Who was here? What did they do? Describe evidence. (Signs include: tracks, scat, trails, nests, sounds, etc.) Include a sketch. Did you find any surprises? What questions do you have?

**Qualitative and Quantitative:** Make a list of 8 Qualitative (adjectives) features and 8 Quantitative (numbers) features of the object or area. Use 4 of your senses as you observe. (No tasting.) Include a sketch with labels. Did you find any surprises or questions?

**Mapping:** Use a journal page grid to map of your area and it's special features. Include labels, pictures, scale, and legend. Add reflections, questions or surprises about this area.

**Free Choice:** Draw. Write. Create poetry. Title your entry and have fun observing – use as many senses as possible.

**Observing the Invisible:** List as many ways as you can to prove that the wind is present. If you were the wind, where would you go and what would you do? Write a narrative or poem.

**Management Strategies:**

- For the initial activity, the teacher may assign the locations of the Sit Spots, but as students become familiar and a sense of trust builds, students may be allowed to select a favorite spot to which they return each time.
- Start with a short observation time. You may even ask students to spend at least 3 to 5 minutes observing before they begin writing or drawing. Extend times as students develop patience and increase skills.

## The Sixth and Seventh Senses

### A Sense of Place

A sense of wonder can connect a child's heart to the nature around them. All of the sensory perceptions together give children a sense of place – the natural and cultural world in which they live.

*"..linking curriculum with an engagement in the real world not only provides students with the thinking skills needed for whatever test comes their way, but also helps them grow into responsible citizens and stewards of the earth."* David Sobel, *Childhood and Nature*, 2008

#### Some Sense of Place Adventures:

- **Make a map of the schoolyard.** Name your favorite places? List all of the trees. Use your math, science, social studies, art and communication skills to portray your school.
- **Find your special place on the schoolyard.** Use it as a Sit Spot for frequent observations. What do you see, feel, smell, hear? Reflect on your experience.
- **Keep records of the daily weather.** Create a simple weather station.
- **Make a list of Phenological events,** the seasonal happenings in nature.\* When do you see the first or last green bud, leaf, flower, bird, insect? When do the birds migrate?
- **Keep track of the phases of the moon on a wall chart.** \* Can you ever see the moon during the day?
- **Follow animal tracks in the snow.** Who lives here? What do they do?
- **The children's bodies are more than 70% water.** Shouldn't they know where it came from? Every time it rains, the local creek or river starts on the roof of your school. Trace the raindrops down the spout, across the lawn to the drains on the street. Use maps to see how the water may travel to the Mississippi River.
- **Plan an Earth Friendly project:** Trash collecting. Recycling. Conserving natural resources. Planting a tree, pollinator or vegetable garden.

\* The Minnesota Weatherguide™ Environment Calendar is a great resource to getting to know the world around you. It contains data about weather, the moon, sun and seasonal happenings that will help you become better observers.



The Jeffers LookIt contains a measuring tape. A simple task like measuring circumference, holds lessons in math, natural science, estimating, and many more outdoor learning opportunities.



## The Sixth and Seventh Senses

### A Sense of Wonder

*"If a child is to keep alive his inborn sense of wonder...he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in.*

*...it is not half so important to know as to feel. If facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow."*

Rachel Carson, *A Sense of Wonder*, 1956

It's important to help children recognize the awe in every day! And then have questions -- wonder about the phenomenon they just observed and perhaps devise ways to find answers. Learning begins with observation, followed by questions, then investigations.

#### Plan adventures:

- **Take a rainy day hike.** How does the air and water feel on their skin? Look for droplets on a spider web or leaves. Watch splashes in a puddle. See where water flows and collects on the schoolyard and street. Is there erosion? Collect some rain to use making a water color picture.
- **Visit the pond or creek.** Don't worry about getting dirty. Focus on the diving beetles that carry a "scuba tank" in the form of an air bubble trapped under their wings. Or the tadpole that will amazingly transform into a frog. Or so many more amazing creatures that manage to "breathe" underwater!
- **Lie on the lawn.** Watch clouds wisp across the sky in imaginary animal forms. What are clouds? Where do they come from? Are they related to weather?
- **Go on a Wonder Hike.** List wonderful things the group observes – and list things the students wonder about. Come back with a list of good feelings and good questions.
- **Be Schoolyard sleuths.** How many different kinds of creatures live here? Where are their homes? Follow an ant trail. Where do they go? Where do they live?
- **Plant Ideas.** Make a list of all the ways you depend on plants from the moment you awaken until days end. (cotton sheets, toilet paper, shade, air you breathe...) Go outside to thank the plants. Give them a little CO<sub>2</sub> take a little O<sub>2</sub>. Lie down under a tree. Look up, listen, enjoy the shade. What's happening up there?
- **Winter Fun.** Use your sleds to explore gravity and the laws of motion. Catch snowflakes on your gloves or tongues.

## Notes



“Exploring nature with your child is largely a matter of becoming receptive to what lies all around you. It is learning again to use your eyes, ears, nostrils, and finger tips, opening up the disused channels of sensory impression. For most of us, knowledge of our world comes largely through sight, yet we look about with such unseeing eyes that we are partially blind. One way to open your eyes to unnoticed beauty is to ask yourself, 'What if I had never seen this before? What if I knew I would never see it again?'”

Rachel Carson, *The Sense of Wonder*, 1956

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