



Wonder in the Schoolyard

MINDFUL PATHWAYS INTO THE
NEW SCIENCE CURRICULUM

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Omahkitapiksi

Elders

ai'stamattsokiwa

teach us

inikhatsimatsiwa kottaka

call your spirit

awaanopa *say "Okiah" Let's go.*

Iitasokimmohsopa

feel good.

*Our Elders teach us to always call our
spirit with us by saying, "Let's Go."
We want to keep our physical body and
spirit together to ensure balance.*



Agenda

Why

- Why mindfulness
- Why outdoor learning
- Inspiration/motivation

Who

- Who lives in your schoolyard?
- Tools and resources for identification and connection

What

- Bringing out pieces of new science curriculum that lend themselves well

How

- Practical activities and lesson plans you can implement
- Tuesday morning

Framework

- A template you can use to design your own outdoor learning experiences
- 10 min break at 10:15
- Outdoor Portion



New Science Curriculum

Organizing Idea

Earth Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.

Living Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.



What's Your Spark?





BACKGROUND

- We live in challenging times - do young people have a relationship with the natural world?
 - For their own benefit
 - For the benefit of natural world
- My research
- Mindfulness



WHAT DO I MEAN BY MINDFULNESS?



- Being inside your experience
- Attending to what you're doing
- Non-judgemental, present-moment awareness

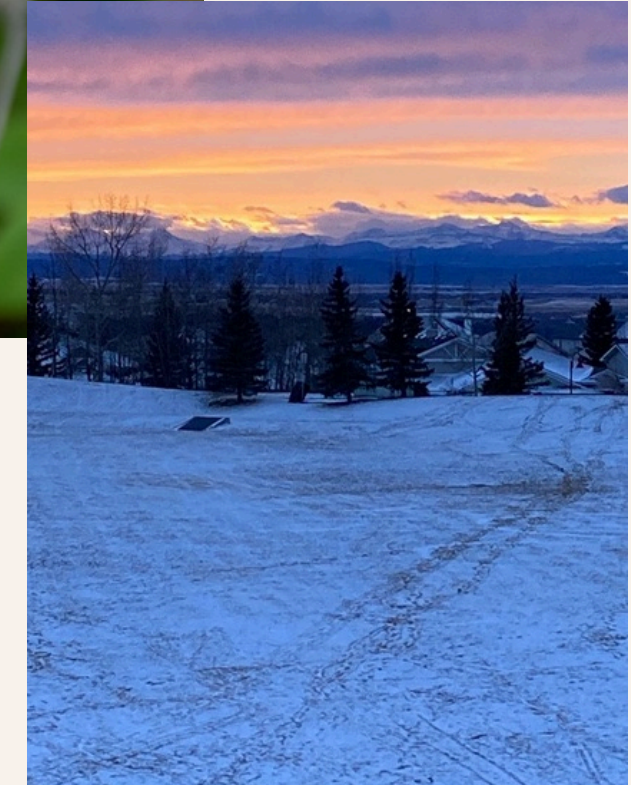


SOME BENEFITS OF MINDFULNESS



- Supports all aspects of social-emotional learning (SEL)
- It facilitates feelings of connection
- Great for focus and learning





Nature does a lot of the work. It invites us into the present.
It invites us to be quiet, embodied, in our senses, and it opens the heart.

-Mark Coleman





OUTDOOR LEARNING

- Equity
- Engagement
- Belonging
- Resilience

- Not always easy





SCHOOLYARD TEACHING TIPS

- Not just spring and fall - chinooks, sun!
- Get to know the space yourself
- Clothing
- Set expectations
- Avoid recess time
- Sit pads
- Sun to their backs
- Use your outdoor voice
- Always leave them wanting more

Be trauma-informed



INDIGENOUS CONNECTIONS



- This land is rich in history and stories
- As we bring students out onto the land, let's learn from those who have deep history and relationship here
- Including difficult histories
- Incorporate local connections
- Do your own learning
- I'll provide some examples but make it your own



INDIGENOUS CONNECTIONS



Indigenous Canada



Instructor: [Dr. Paul L. Gareau](#)



5 FINGER BREATHING



NEW SCIENCE CURRICULUM (2024)

Organizing Idea

Earth/Living Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.

Organizing Idea

Earth Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.

Living Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.

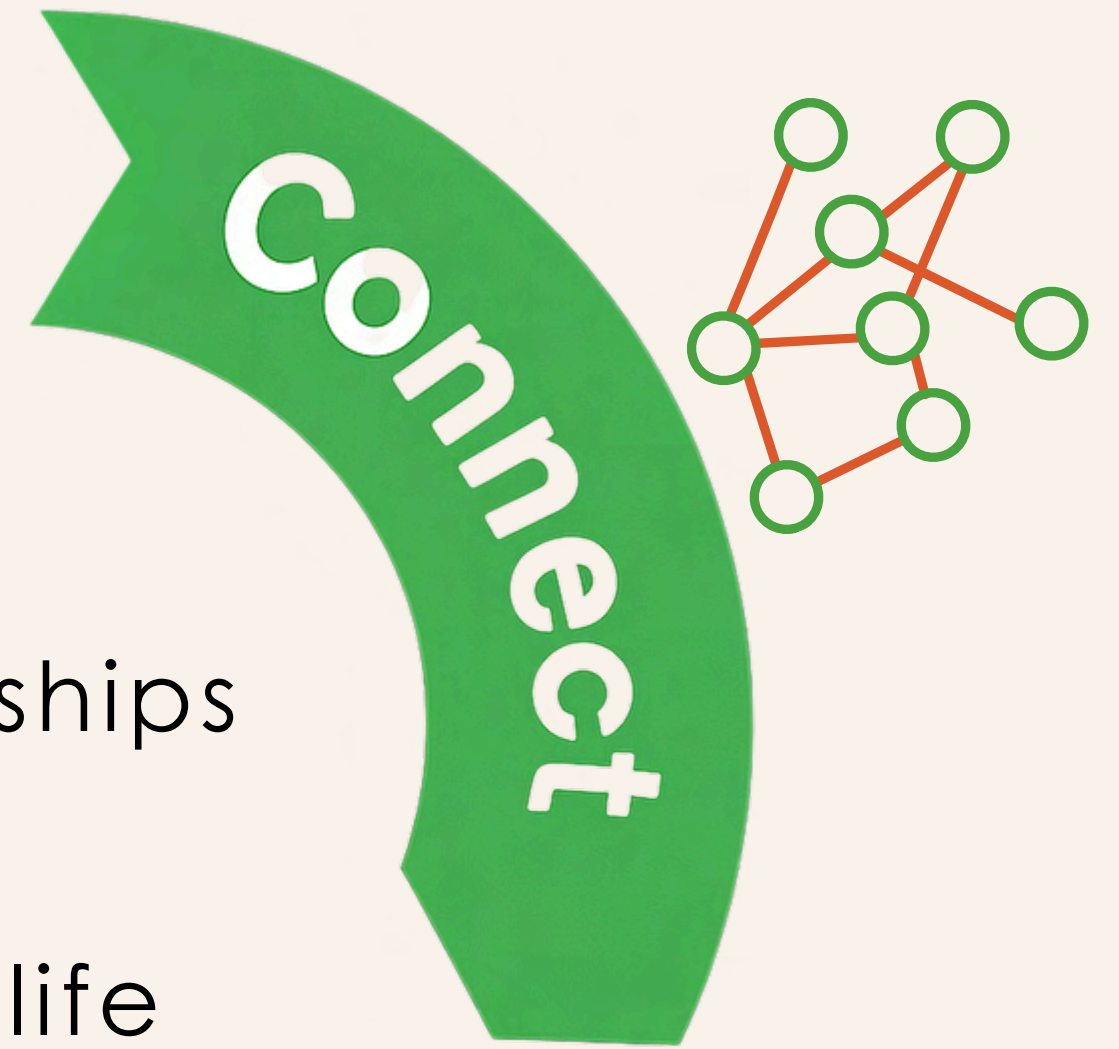




Observe

- Cultivates scientific thinking
- Slowing down and paying attention cultivates well-being and gratitude





- Understanding relationships
- Systems thinking
- Interconnectedness of life
 - including us!



“Education must play a pivotal role in radically reconfiguring the ways we think about our place and agency within this interdependent world, and therefore, the ways we act... Our future survival depends on our capacity to make this shift.”

-UNESCO Futures Education Report





KINDERGARTEN

General explorations using the senses

Asking questions about surrounding environments

Personal feelings of connection





KINDERGARTEN

- Environments can be explored using the senses



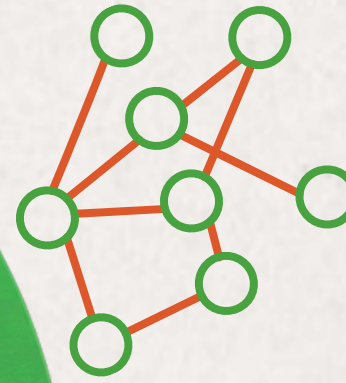
KINDERGARTEN



- Connections can be fostered by physical locations...and experiences in nature
- Identify experiences in nature that can lead to personal feelings of connection.
- First Nations, Métis, and Inuit ways of living connect to nature and the land.



KINDERGARTEN



- Demonstrate respect while interacting with environments





GRADE 1

General explorations using
the senses

Seasonal changes

Needs of plants and animals
(including humans)



GRADE 1



- Students analyze environments and investigate interactions and changes
- Seasons and seasonal changes
- Information can be gathered by using the senses
- Share examples of plants and animals native to Alberta
- Diverse plants and animals can be found in forests, prairies, lakes, rivers, mountains



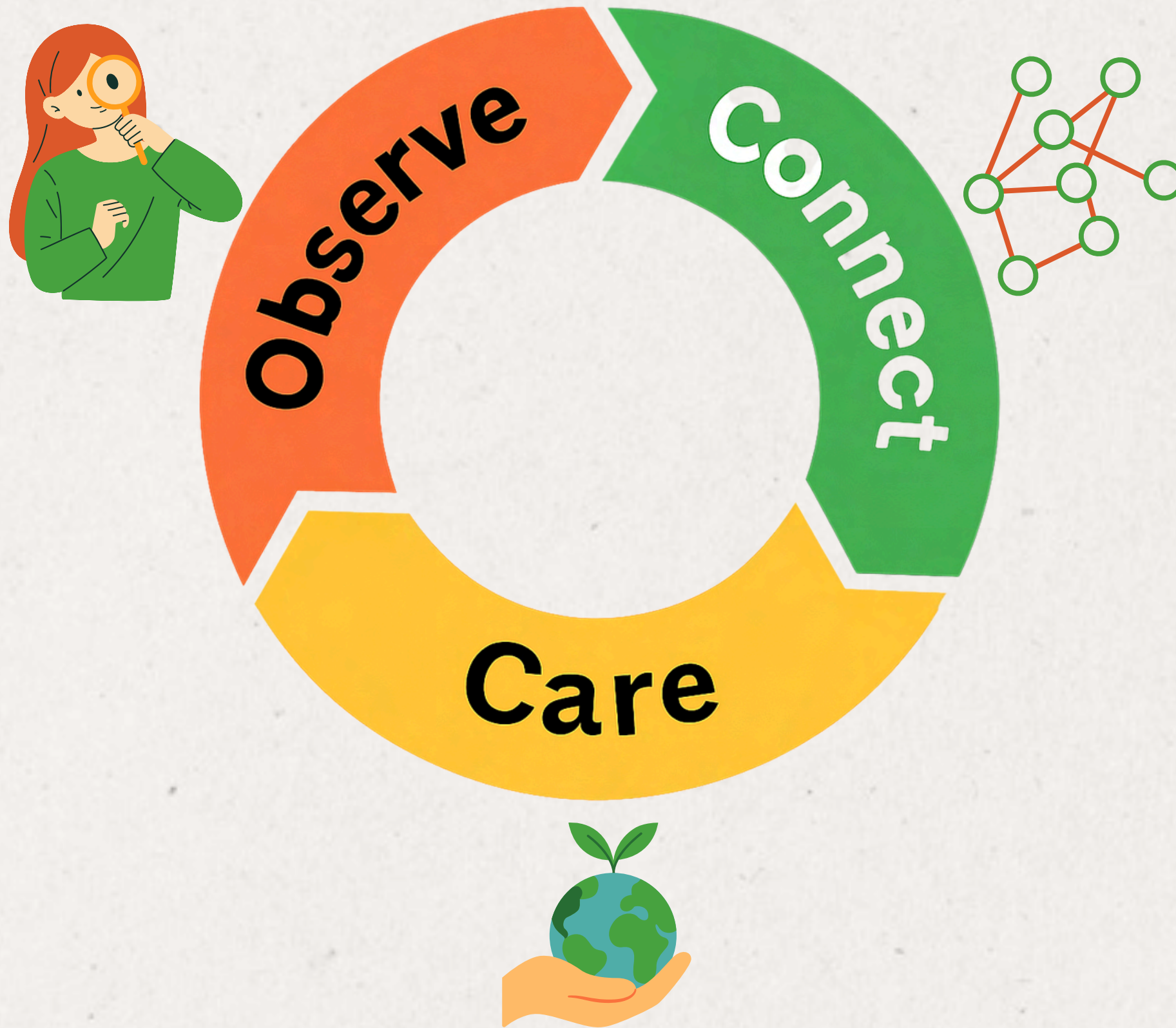
GRADE 1



- Describe various environments by drawing from information gathered with the senses
- Share personal experiences related to seasons
- Discuss benefits of spending time in nature
- Humans are part of nature and are classified as animals
- Determine how a local environment meets basic needs of plants and animals
- Humans, other animals, and plants depend on each other to meet their needs



GRADE 1



- The responsibility to care for environments is shared by all people and is fulfilled by showing respect for and protecting all aspects of nature
- For First Nations, Métis, and Inuit, a sense of responsibility toward nature can be connected to place and traditional teachings for future generations, such as taking only what is needed.
 - Reflect on teachings that demonstrate a sense of responsibility to care for nature.
- Ways humans can help meet the needs of plants or animals include...
 - Respecting environments





GRADE 2

Earth supports life

Landforms and Bodies
of Water

Lifecycles



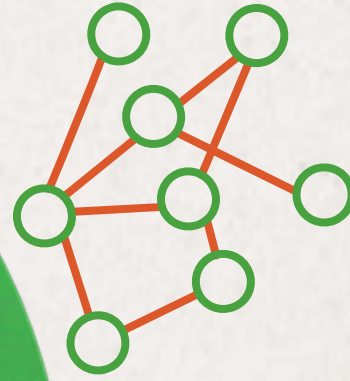
GRADE 2



- Identify landforms that are found locally or in Alberta
- Bodies of water include lakes, wetlands, rivers
- Identify similarities between offspring and their parents
- Life cycles: discuss and compare life cycles of various plants and animals



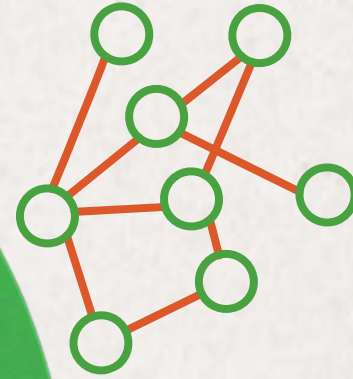
GRADE 2



- Discuss how the various components of Earth interact to support life
 - At this time, Earth is the only planet known to support life
- Earth consists of many components that support life
- First Nations, Métis, and Inuit relate to land, plants, and animals as equals



GRADE 2



- Some human behaviours can positively affect plants and animals, such as: Reduce/Reuse/ Recycle/Repurpose, recovering natural areas, protecting natural spaces, creating parks
- Discuss ways to respect plants and animals while interacting in various environments
- Care and consideration for land, plants, and animals can be demonstrated through cultural practices such as: taking only what is needed, using the whole plant or animal, protecting water and soil, treating land, plants, and animals as relatives.
- Discuss how humans might interact with land, plants, and animals if they see them as equals, Identify ways in which people show care for land, plants, and animals through cultural practices.





GRADE 3

Soil

Food chains

Plants and animals
rely on each other for
survival



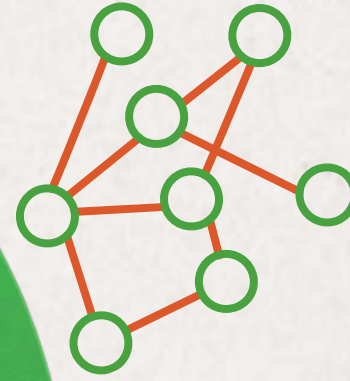
GRADE 3



- Examine soil and its components in the local community
- Identify local habitats provided by soil
- Represent various food chains in local and other Canadian environments
- Investigate and discuss how plants and animals respond to stimuli in their environments in order to survive



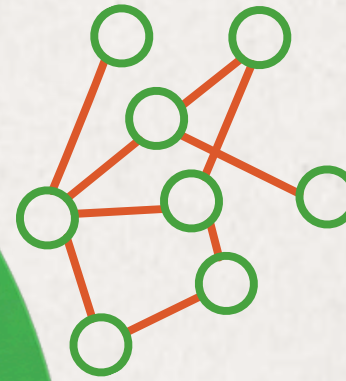
GRADE 3



- Describe how soil is changed by plants and animals
- Plants and animals may depend on each other and their environments for survival, such as for food and habitat
- First Nations, Métis, and Inuit knowledge of plants and animals within environments includes: animal behaviour, sources of food, migration patterns, seasonal patterns
- Explain interconnections in environments, including how plants depend on animals and how animals depend on plants to survive



GRADE 3



- Discuss the interconnectedness between human activities and responsibilities for maintaining Earth
- Plants and animals in local environments can be protected by actions such as: respectfully interacting with nature, minimizing disturbances to plants and animals, counting and tracking populations
- Awareness and consideration of the interactions of plants and animals in local environments helps humans protect them





GRADE 4

Earth sustains life

Biosphere,
atmosphere, etc.

Local plants and
animals



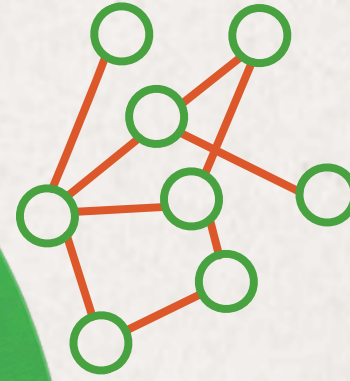
GRADE 4



- The atmosphere contains oxygen, which is used for breathing
- The biosphere includes all life on Earth
- Investigate natural resources found in Alberta and how they are used to meet human needs
- Find and classify examples of local plants and animals based on appearance, habitat, and structures
- Discuss how plants respond to sensory stimuli



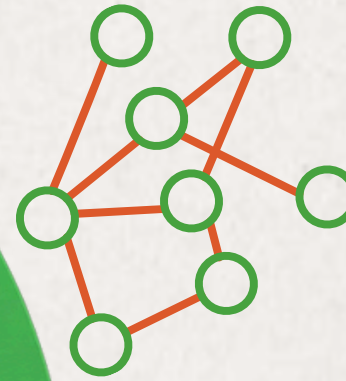
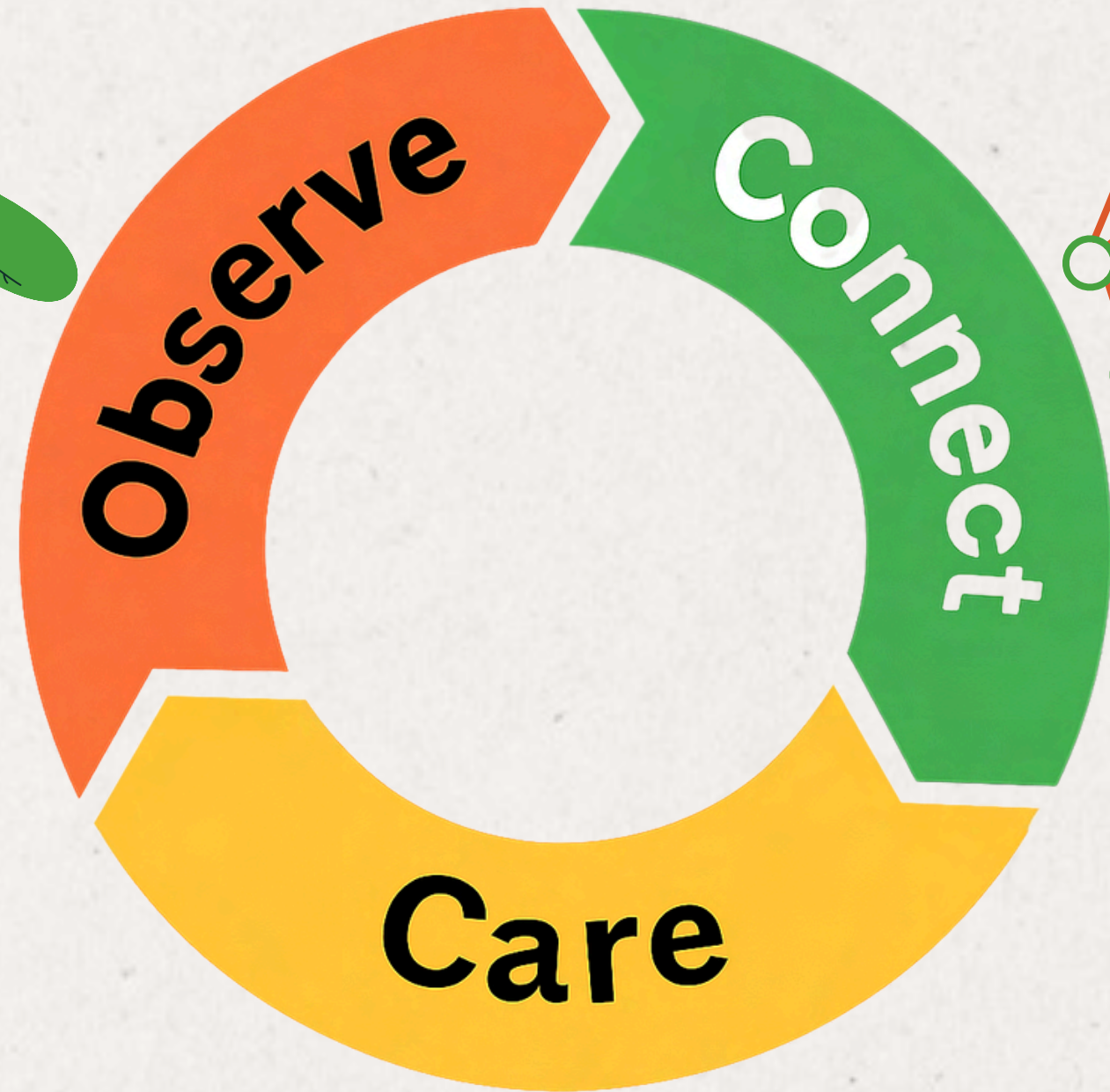
GRADE 4



- First Nations, Métis, and Inuit hold understandings of Earth systems that sustain life, including that all things are interconnected
- First Nations, Métis, and Inuit laws of nature
 - honour water as being sacred because water sustains life
 - include how nature provides gifts of life
 - include living in harmony with the land
- Earth's systems interact with one another, resulting in environments that sustain life
- Analyze the interconnectedness of Earth's systems
- Organisms sense and respond to their environments to support growth and survival



GRADE 4



- Make connections between human activity and Earth's systems
- Caring for water and water sources is a shared responsibility
- Many First Nations, Métis, and Inuit practise traditional methods of conservation, including taking only what is needed
- Conservation can be practised through personal actions, including: use of electricity, water, reducing waste
- Conservation can be practised through community or global actions such as solar panels, composting, etc.
- Conservation of Earth's systems involves personal, community, and global action



Avenues for Exploration in Every Schoolyard



General Nature



Avenues for Exploration in Every Schoolyard



Trees



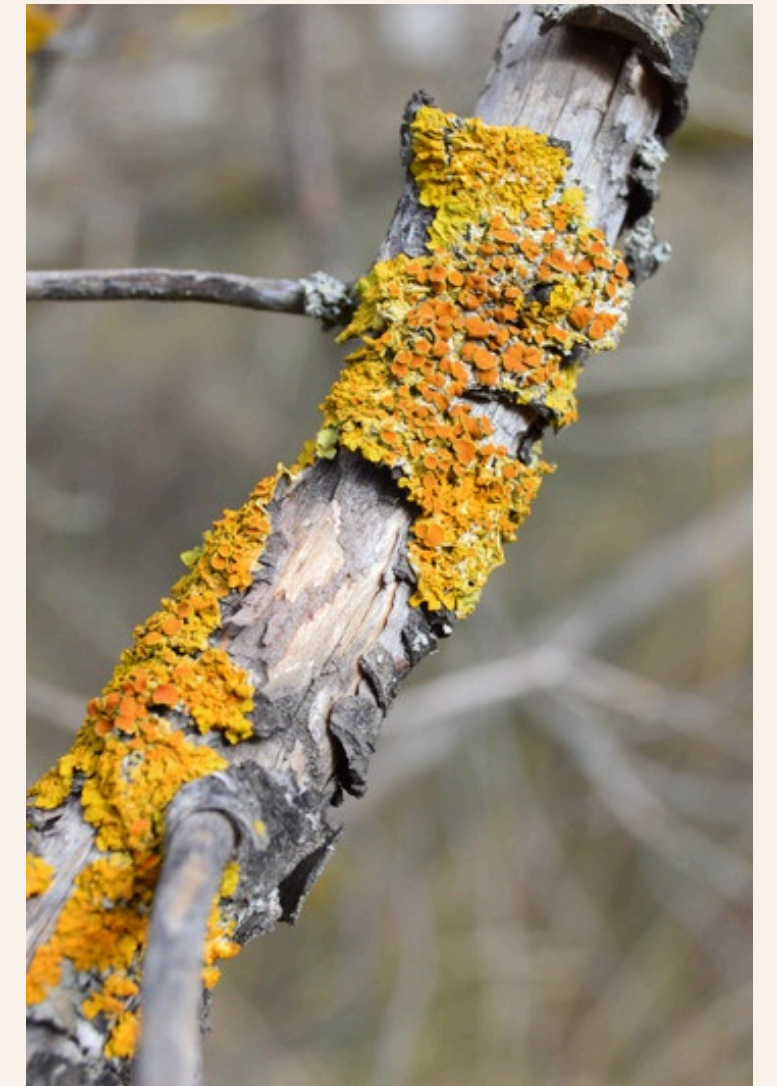
Birds



Pollinators



Wildflowers



Lichen



Repeatable Routines



Sit Spots



Talking Circles



Nature Journaling



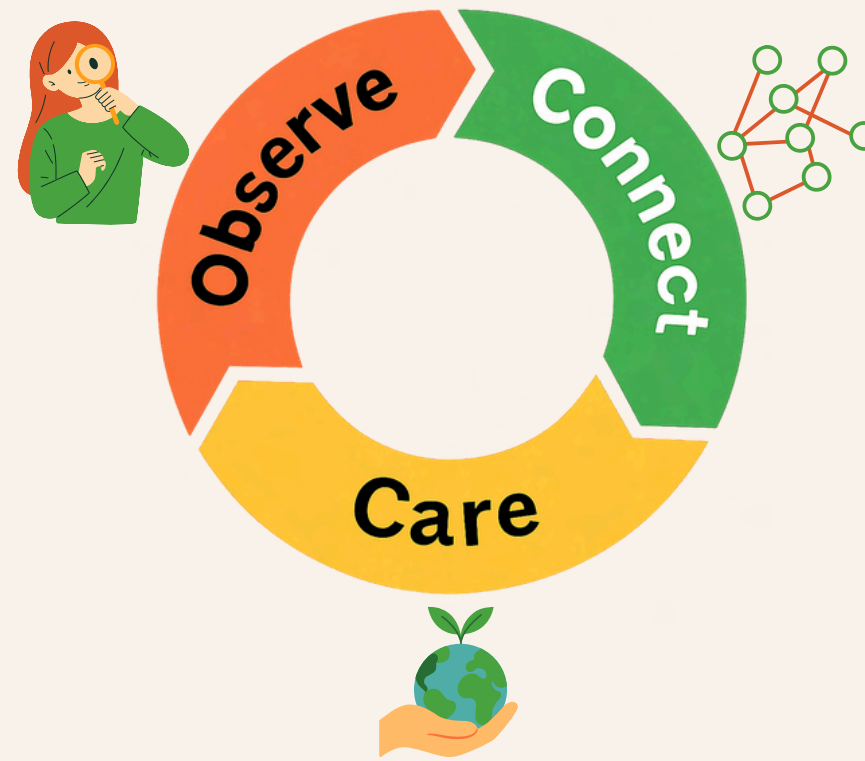
Wonder in the Schoolyard: A Flexible Framework

Seasons

-  Fall
-  Winter
-  Spring
-  Summer

Curriculum

-  K
-  1
-  2
-  3
-  4



Schoolyard Nature

-  Trees
-  Birds
-  Lichen
-  Pollinators
-  Wildflowers
-  General Nature

Routines

-  Nature Journal
-  Sit Spots
-  Talking Circles



Example 1: Colours at Sit Spots for K-2

Seasons

-  Fall
-  Winter
-  Spring
-  Summer

Curriculum

- K**
- 1**
- 2**
- 3**
- 4**



Schoolyard Nature

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Schoolyard Nature

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Example 1: Colours at Sit Spots for K-2

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Schoolyard Nature

- Trees
 - Birds
 - Lichen
 - Pollinators
 - Wildflowers
 - General Nature
- Routines

- Nature Journal
- Sit Spots
- Talking Circles



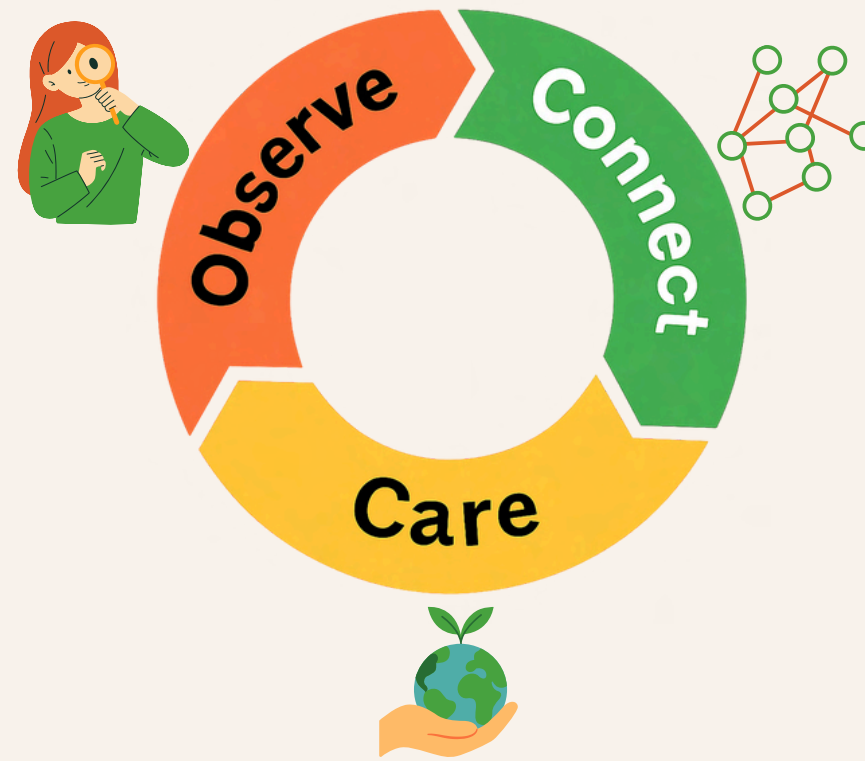
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Schoolyard Nature

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Colours at Sit Spots



At My Sit Spot

Observing Colour

Using your sense of sight, spend a few minutes looking around at the wide array of colours you can see from your sit spot. Using pencil crayons, fill in the circles below with some the different colours you see. In each corresponding box, describe what you saw with as many juicy, descriptive words as you can come up with!

| | |
|---|---|
|  |  |
|  |  |



Example 1: Colours at Sit Spots for K-2

Explore environments using senses (K/1)

Seasons

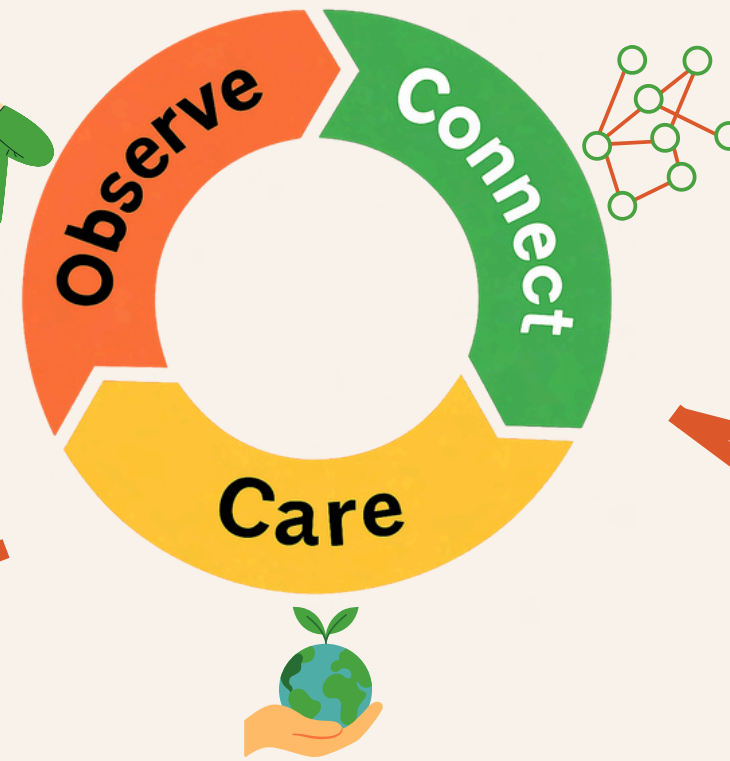
- Fall
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Schoolyard Nature

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Observe seasonal changes over time (1)

Discuss benefits of time in nature (K/1)

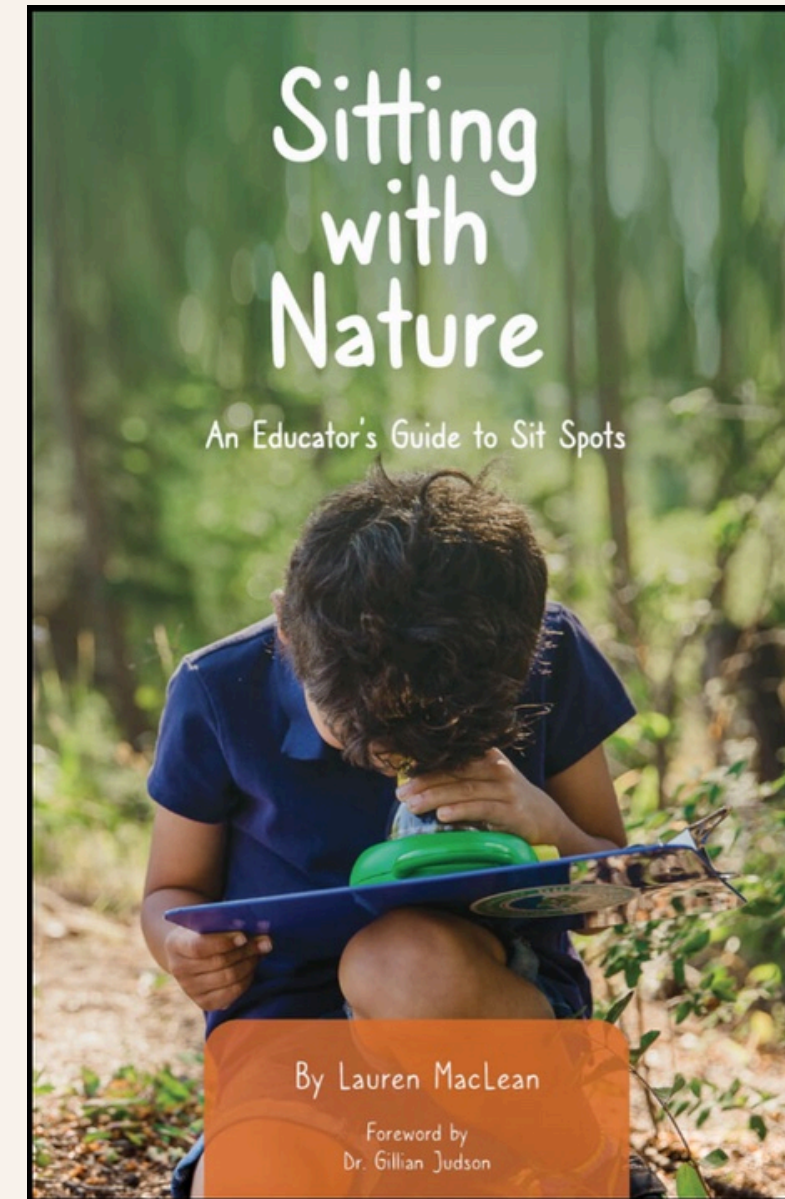
Discuss how various components of Earth interact to support life (2)

Routines

- Nature Journal
- Sit Spots
- Talking Circles



Sit Spots

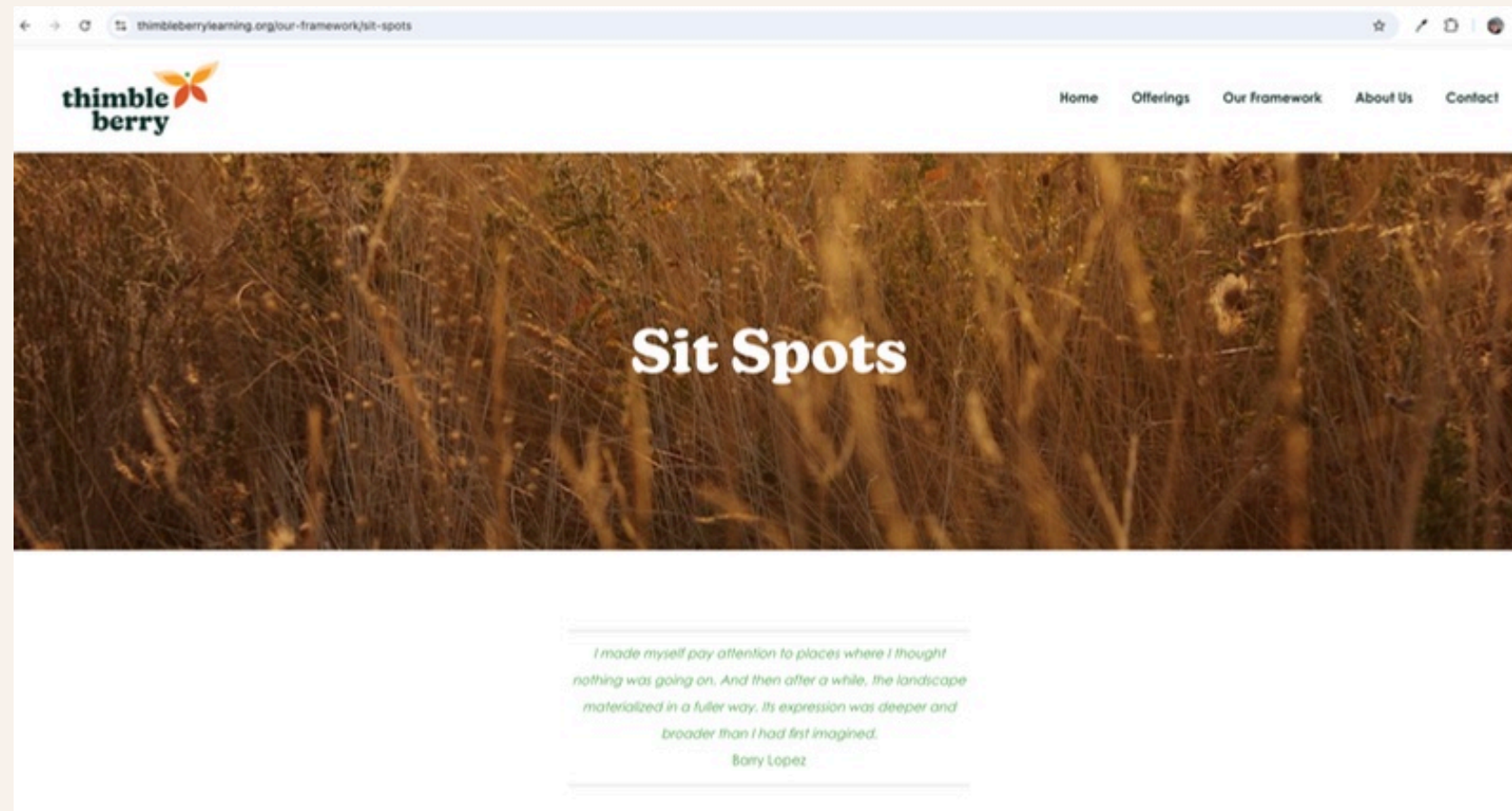


“Cultivating a generation who intimately understand, appreciate, and feel connected to the natural world.”

- Lauren MacLean



Sit Spots



www.thimbleberrylearning.org



Example 2: Trees in Winter with Nature Journals

Seasons

-  Fall
-  Winter
-  Spring
-  Summer

Curriculum

- K**
- 1**
- 2**
- 3**
- 4**



Schoolyard Nature

-  Trees
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Example 2: Trees in Winter with Nature Journals

Seasons

- Fall
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Example 2: Trees in Winter with Nature Journals

Seasons



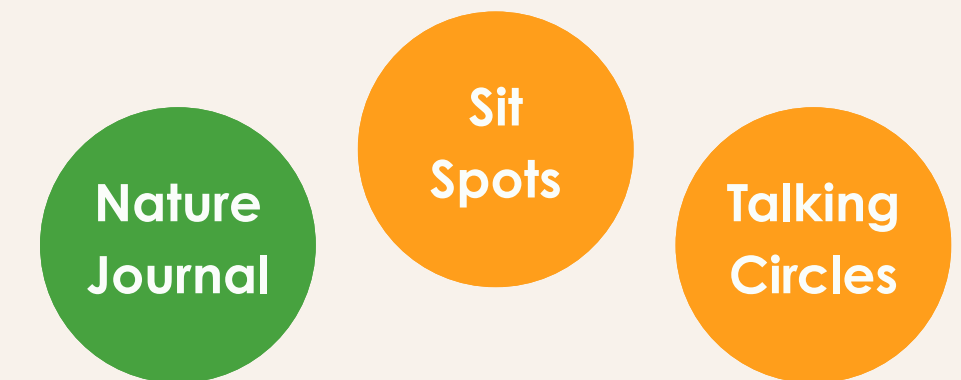
Schoolyard Nature



Curriculum



Routines

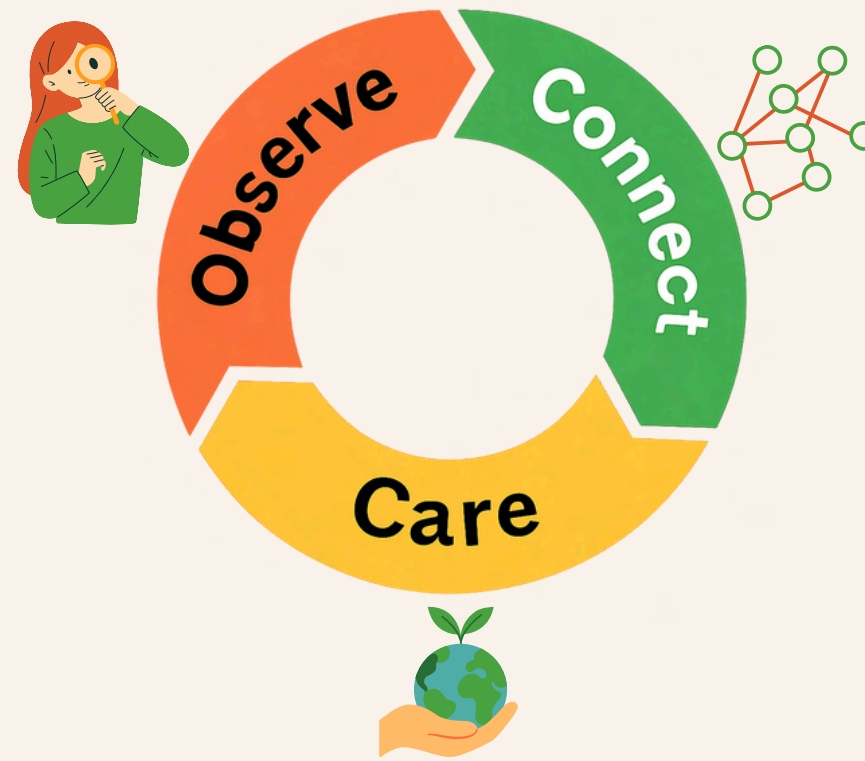


Example 2: Trees in Winter with Nature Journals

Seasons



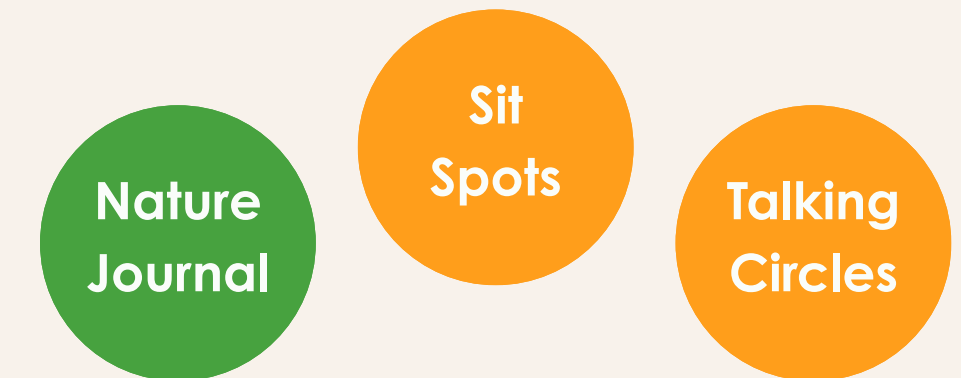
Curriculum



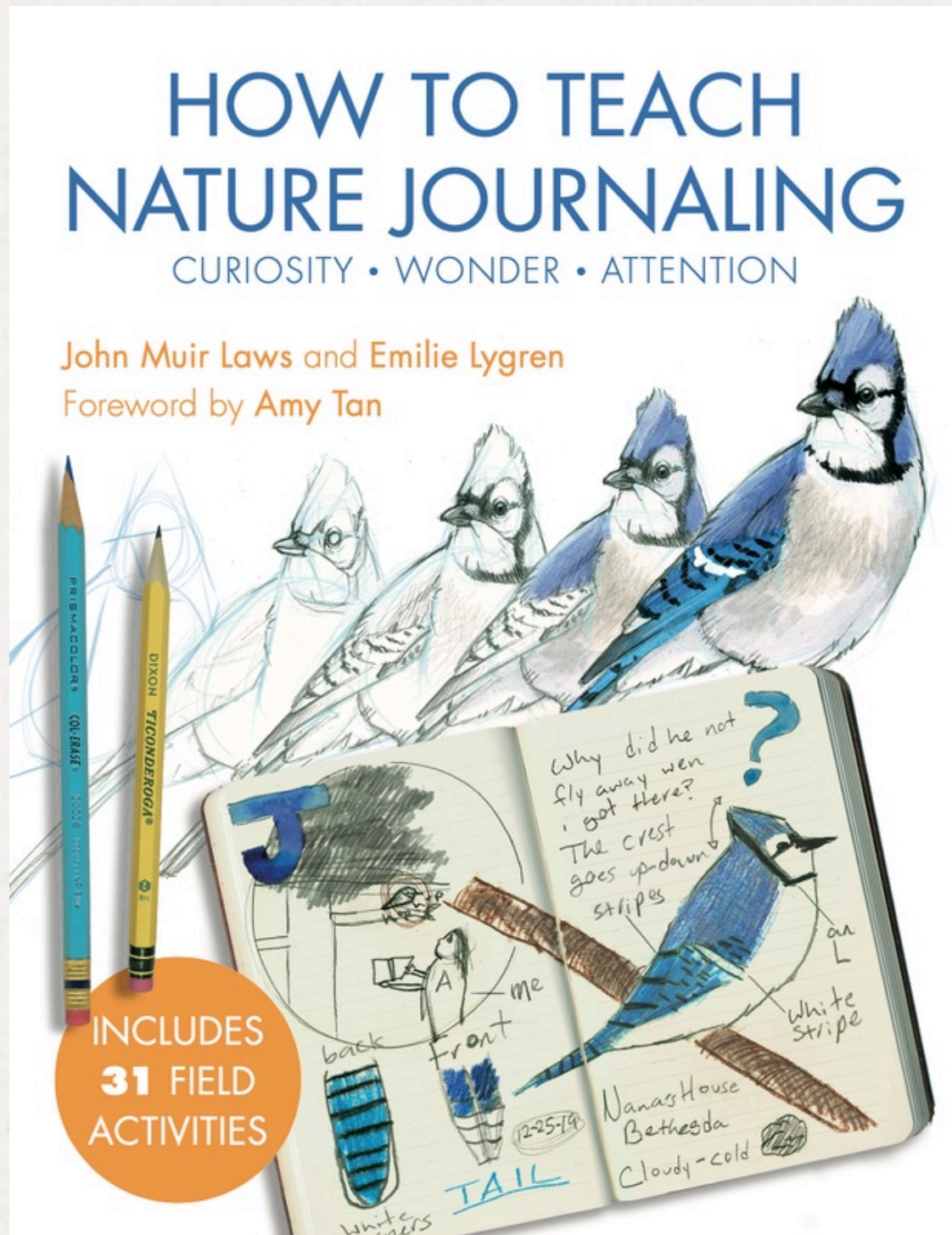
Schoolyard Nature



Routines



NATURE JOURNAL: QUESTIONING QUESTIONS



How to Teach Nature Journaling by John Muir Laws
p. 103 "Questioning Questions"



NATURE JOURNAL: QUESTIONING QUESTIONS

Nature Journaling - Questioning Questions
Lesson Plan, p. 103

1. Focus group on chosen tree - discuss
2. Record observations - words, pix, #s - 7 minutes
3. Generate questions. Write 5 Ws an H on page. Brainstorm with partner first.
4. Come up with as many questions as possible using your observations.
 - a. you can shift focus
 - b. If you get stuck say "I Wonder"
5. Don't worry about doing it right
6. Don't worry about answers - focus on the curiosity.

I WONDER... (QUESTIONS)
Get curious and find mysteries. Ask questions about your observations, and use this list to come up with more questions:

Who Identification: Who is it? Who was it? Who will it be? Whose song is that? Who made these tracks?

What Process: What happened? What is happening? What will happen next? What does it do? What causes this? What does that do?

Where Space and location: Where is it? Where was it? Where will it be? What is the territory of this animal? Where does it rest, feed, or complete its life cycle? Where does this kind of animal live?

When Time: When did it happen? When will it happen? How long will it stay underwater? When does the migration start/end? When did river otters arrive in this area? When do the birds begin to sing each morning?

How Structure, function, and process: How does it work? What are the parts? How do they work together? How does this flower?

Why Cause and effect, meaning, and purpose: Why did this happen? Why is it this way? What events led to this outcome?

Process for asking varied and interesting

Time
Introduction: 10 minutes
Activity: 30-50 minutes
Discussion: 10-15 minutes

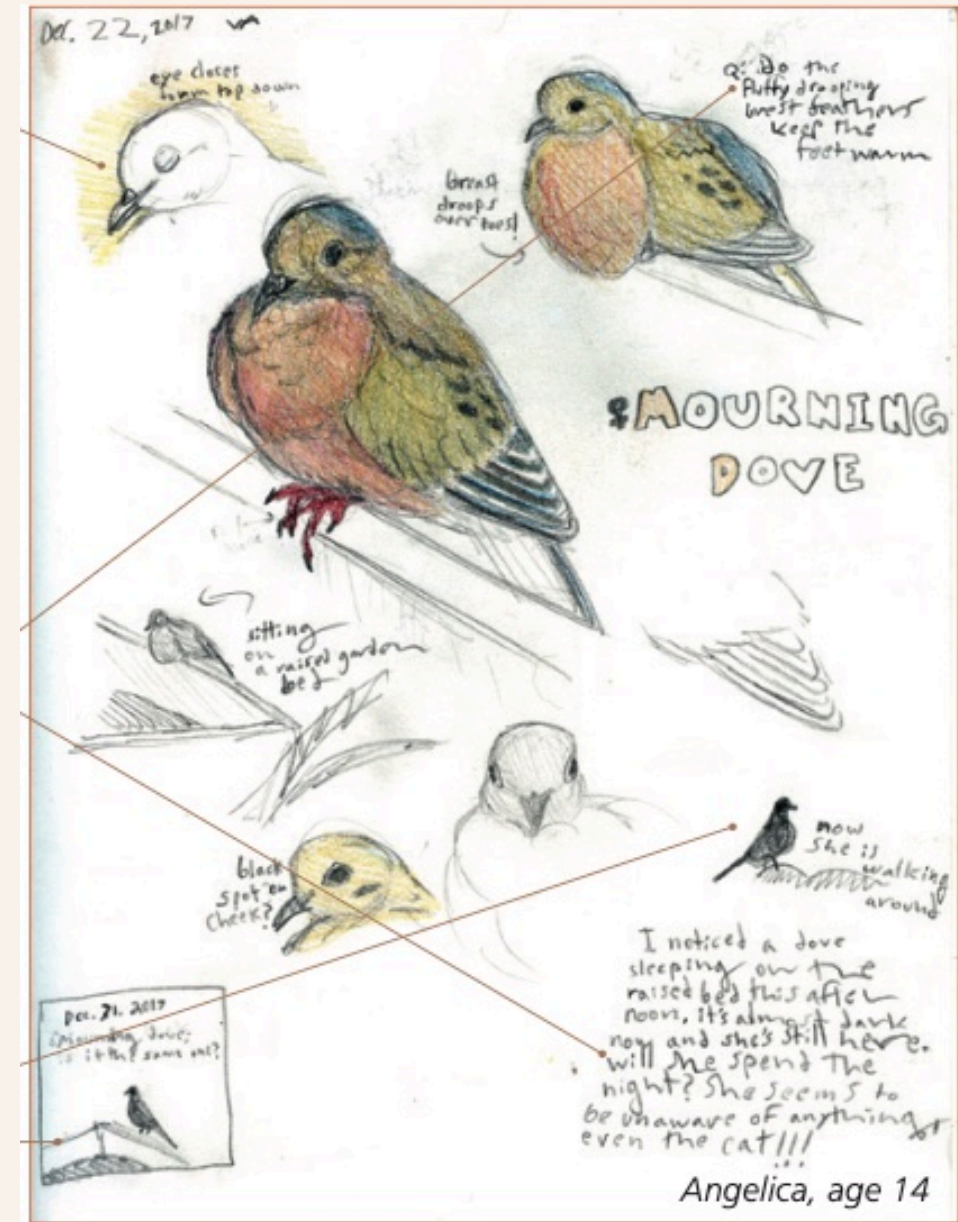
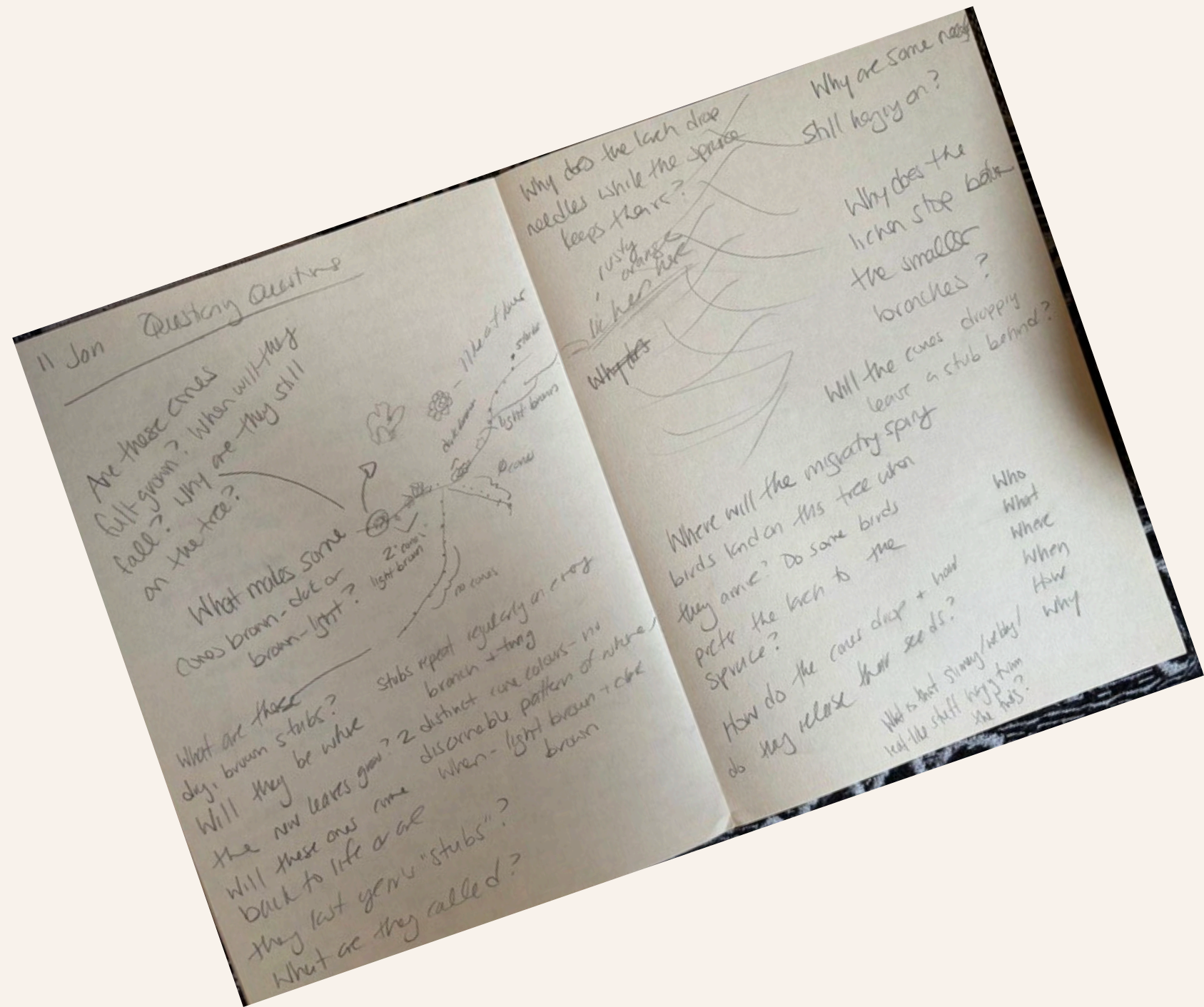
Materials
 Journals and pencils
optional
 Cut-and-Paste Journal Strategies (p. 273)

Teaching Notes
The procedure introduces a curiosity scaffold: Who, What, Where, When, How, and Why as a tool for generating questions. The wrap-up section explains how you substitute one or more of the following Concepts or questions from the International Create Key Concepts p. 92 activity. It's important to use the questioning part of the activity before students "run out of time" so if your students are short on time, make their journaling time count by having them write out copies of the Nature Journal Essential and having students write the back page of their journal. The "Who, What, When, Where, Why, and How" questions.

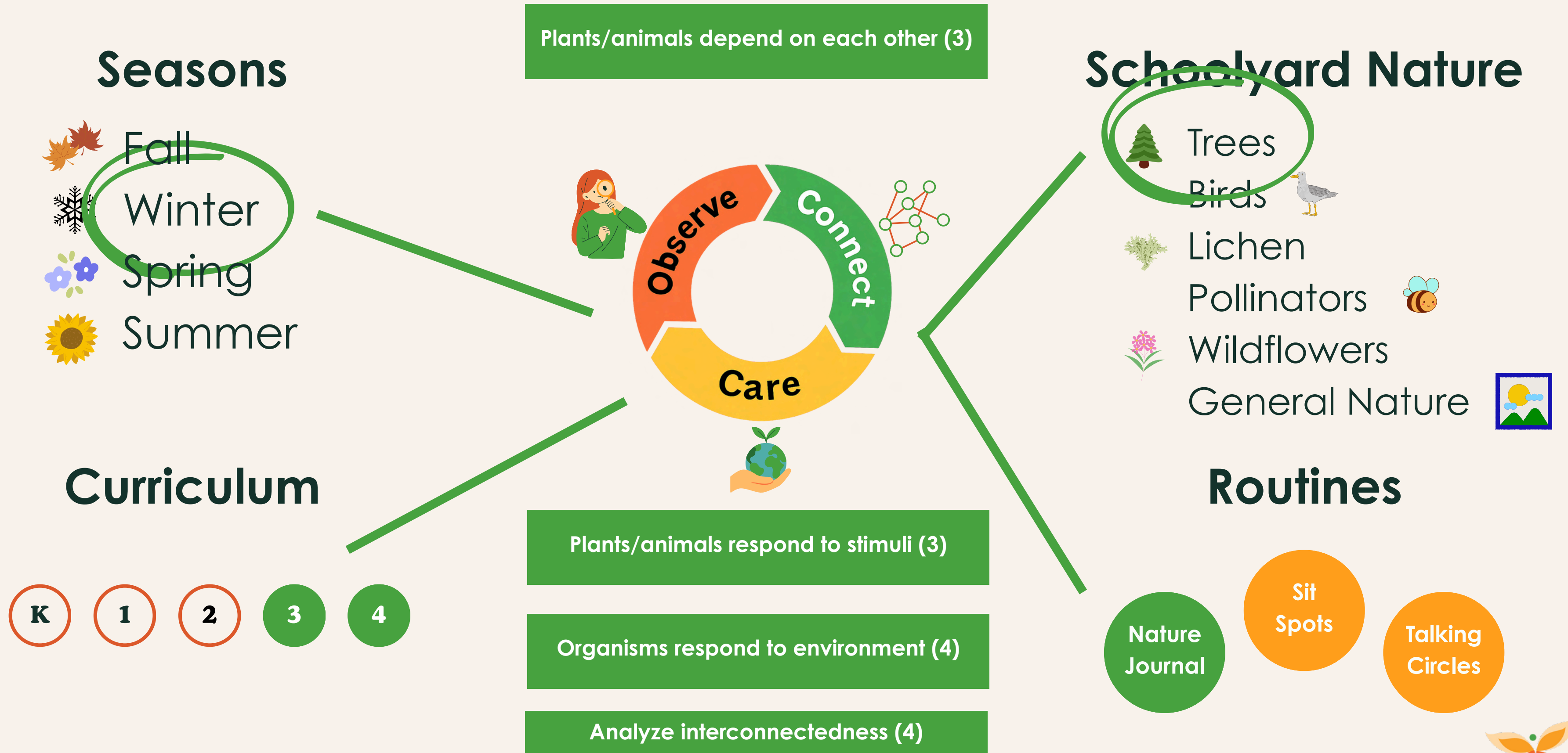
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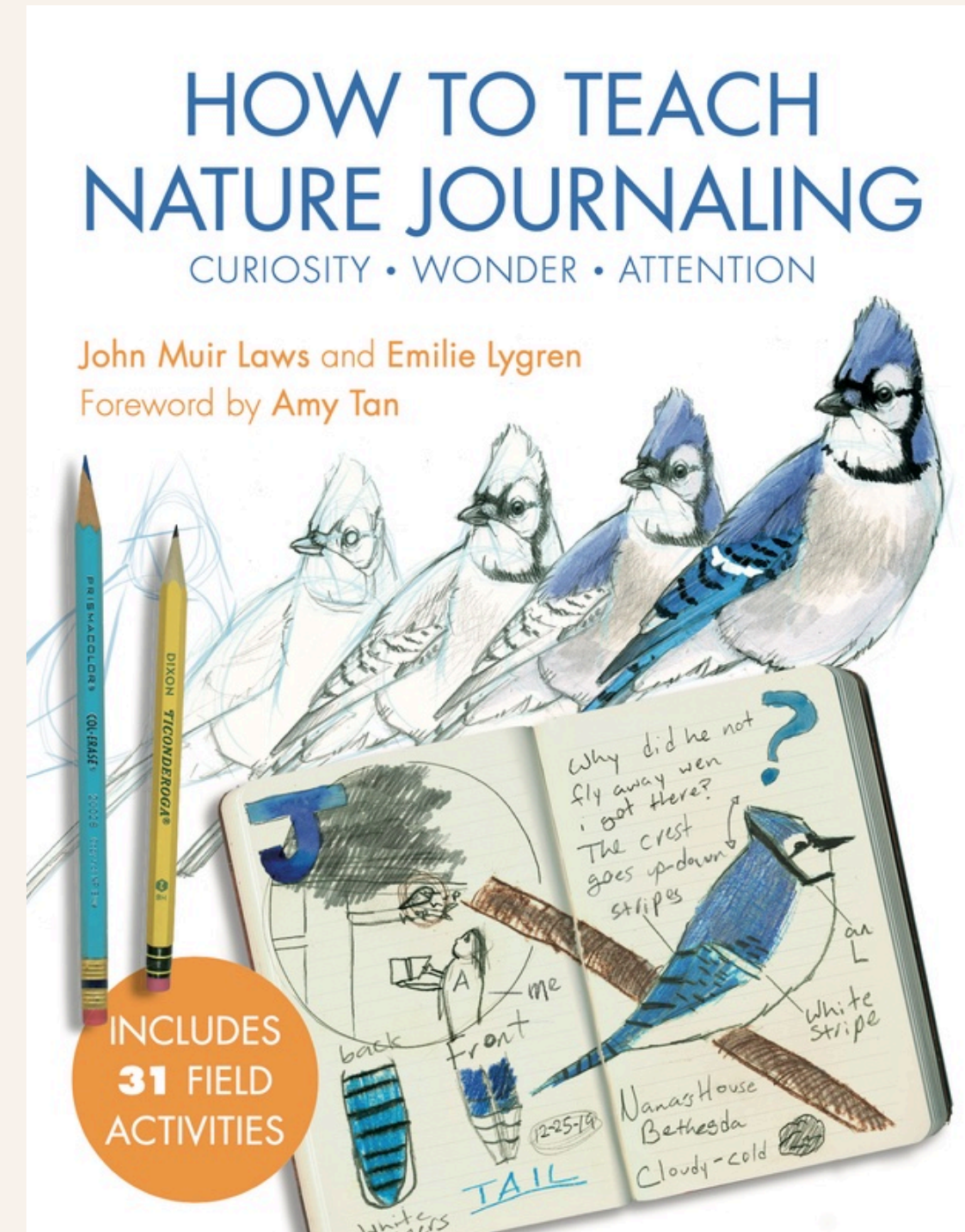
NATURE JOURNAL: QUESTIONING QUESTIONS



Example 2: Trees in Winter with Nature Journals



Nature Journaling



Free Download!

<https://johnmuirlaws.com/product/how-to-teach-nature-journaling/>



Nature Journaling



“Keeping a nature journal is a way to rediscover the thrill of science...At the core of all science are insatiable curiosity and deep observation, qualities that lead you to the best kind of learning: learning motivated by your intrinsic wonder, hunger to understand, and ability to observe.”

-The Laws Guide to Nature Journaling, p.3



Nature Journaling



THE BASICS

WORDS
Describe, make observations, ask questions, write poetry

PICTURES
Sketch pictures, maps, diagrams, cross sections, comics, different views

NUMBERS
Measure, count, estimate how many or how far, time a process

I NOTICE ...
Be specific. What do you see? Hear? Feel? Observe?

I WONDER ...
Get curious and write down questions: who, what, where, when, how, why?

IT REMINDS ME OF ...
Connect your observations to things you already know.

The image shows a hand-drawn nature journal page titled "Western Sycamore". The page is filled with handwritten notes and a central drawing of a leaf. The notes include: "I notice... bumpy margin!", "I wonder... did some of the leaves have...", "It reminds me of... a hand! fireworks!", "Counts: 12 leaves: 114 11 11 flowers: 114 11", and a color key: "leaf=green", "stem=yellow", "flowers=red". The drawing shows a large green leaf with a yellow stem and red flowers. A scale bar indicates 10-5 cm. The page is surrounded by green wavy lines connecting it to the text blocks.



Nature Journaling



“Many mindfulness practices centre on the act of noticing, separating the observations from interpretations of them. This use of the routine can become part of students’ social emotional learning, helping them slow down and develop self-regulation.” – How to Teach Nature Journaling, p. 38



TREES



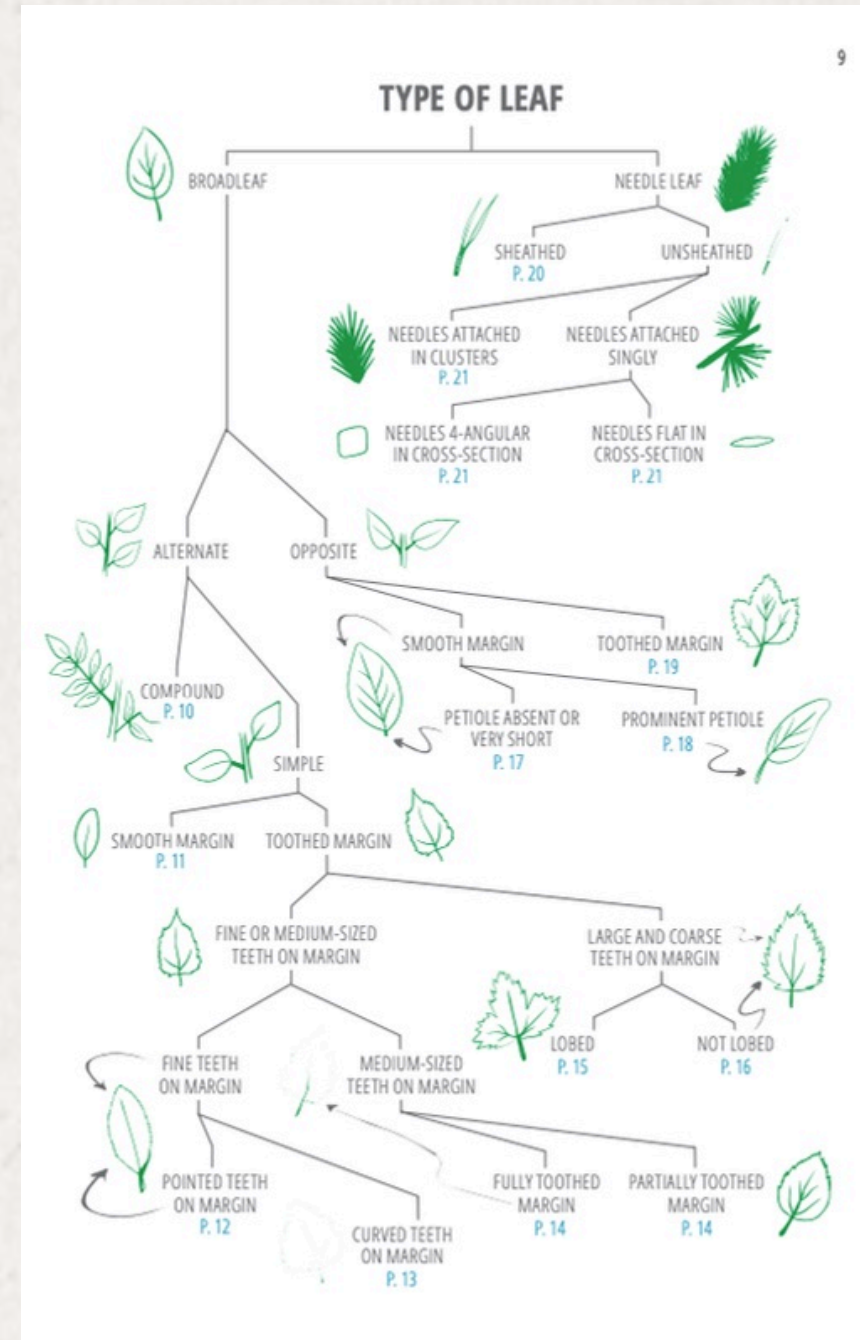
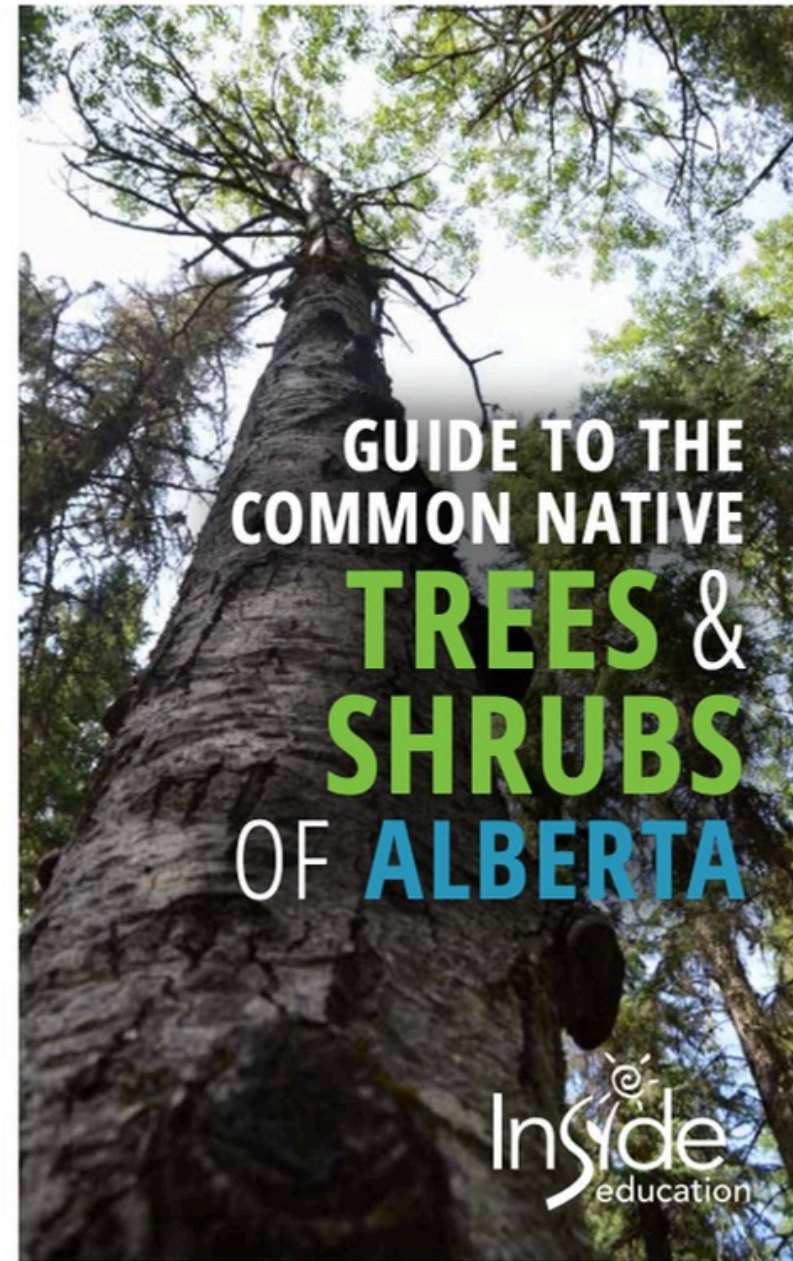
- One of the easiest ways in:
 - They stand still!
 - Great for all seasons
- Schoolyard and environs will contain both native and cultivated species of trees and shrubs
- What if I don't know a larch from an aspen?

The trees act not as individuals, but somehow as a collective. Exactly how they do this, we don't yet know. But what we see is the power of unity. What happens to one happens to us all. We can starve together or feast together.

-Robin Wall Kimmerer



TREES



A screenshot of the "Urban Forestry Management" web application. The browser address bar shows "maps.calgary.ca/TreeSchedule/". The page title is "Urban Forestry Management". On the left, an "Info" panel displays details for a tree: "MAPLE, MANITOBA", a leaf icon, "Trunk Diameter (CM): 35", "Scientific Name: ACER NEGUNDO", "Size at Maturity: MEDIUM", "Maintained by: CALGARY PARKS", "Tree ID #: T-32459935", and "Estimated Value: Please call 311 for further information for trees where no appraised value is available." Below this is a "Google Street View" disclaimer. The main area is a map showing a street grid with numerous colored dots representing trees. Labels on the map include "western canada high ...", "15-AV-SW", "16-AV-SW", "17 AV SW", "18-AV-SW", "19-AV-SW", "ROYAL AV SW", "COLLEGE LN SW", "7-ST-SW", "5-ST-SW", "6-ST-SW", "8-ST-SW", "PE-ST-SW", and "7-ST-SI".

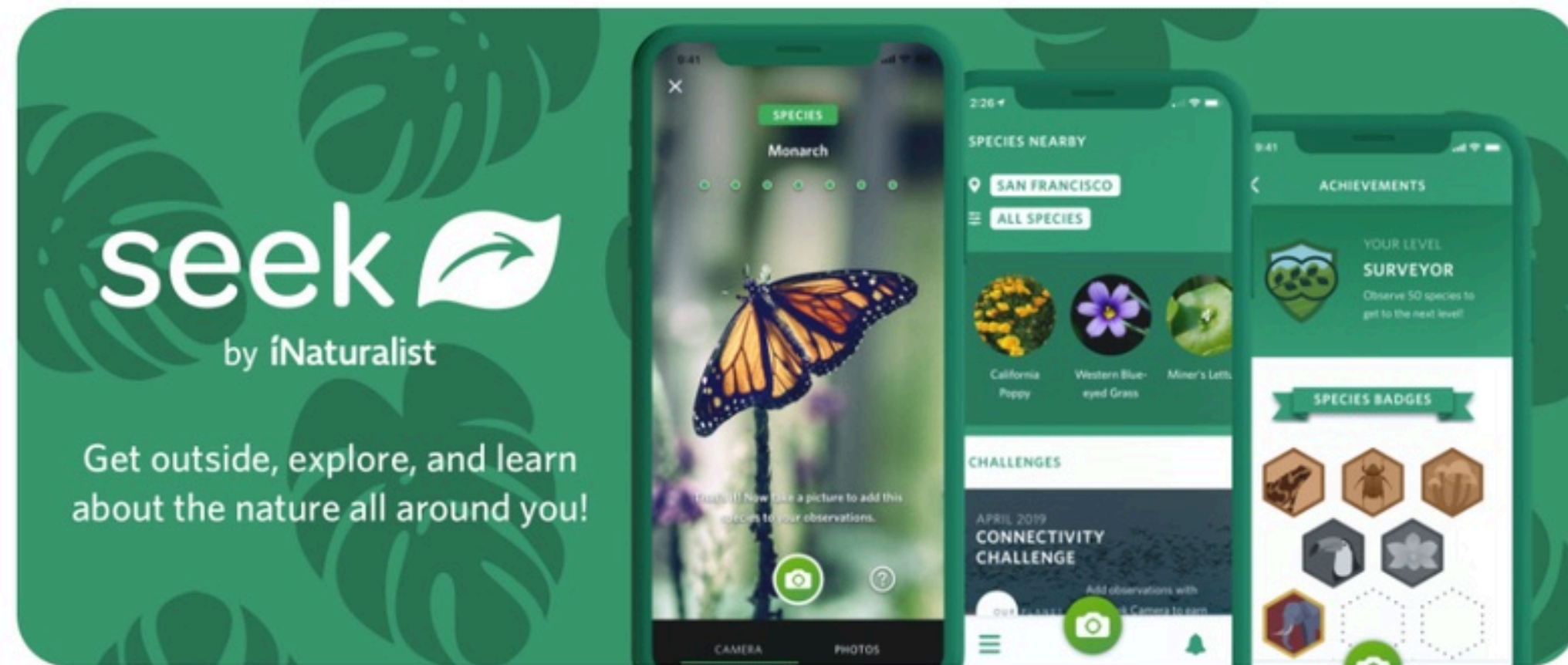
City of Calgary Tree Map



TREES

There's an app for that!

Seek by iNaturalist



SCHOOLYARD TREES



Spruce



Aspen



Green Ash



SCHOOLYARD TREES

Larch



Lodgepole Pine



TREES - SIT SPOT PROMPTS



5 Days of Sit Spot Prompts:

- What do you notice about the shape of trees?
- What do you notice about the bark?
- Habitat: who might live on or near this tree?
- What do you notice and wonder about the fruit and seeds on this tree?
- How do the branches contribute to the overall shape of the tree?



TREES - HABITAT LESSON



Habitat Lesson Plan:

- Read a Tree-themed Picture Book
- Nature walk and sketch trees - pay special attention to leaf shapes, bark textures, signs of wildlife
- Create a tree ID guide together for your school grounds
- Circle discussion: How do trees help support other plants and animals?
- Sit Spot: Who might live in or near this tree?



TREES - HABITAT LESSON



Habitat Lesson Plan, cont'd:

- Formative Assessment: Are the learners able to demonstrate the importance of trees in our ecosystem?
- Teacher reflection: What were the learners passionate about this week?
How can we carry the excitement/momentum forward?



TREES - NATURE JOURNALING

ZOOM IN, ZOOM OUT

Students investigate and draw an object in three scales (magnified, life size, and distant) and reflect on the kinds of observations made at each level.

Getting close to a subject reveals different details than those you see from a distance. Close up, micro textures and fine details stand out. Standing back from a subject in nature, you begin to notice where it is in the environment, its relationship to other things around it, and its overall shape. This activity gives students a framework to intentionally record observations at close, medium, and long range. In the process, they will make varied observations about the subject and pick up the valuable tool of changing perspective, which they can apply in future journaling entries.

NATURAL PHENOMENA

Any natural object can be used for this activity, including trees or other plants, rocks, fungi, or any animal that does not move too much. *Zoom In, Zoom Out* is best completed in the field, where students' "zoomed-out" view can include the environment and context around their subject. Pick subject matter that supports other lessons you are doing with your class. If your goal in doing this activity is to support a lesson about a certain topic (e.g., plant structures or a fungus's relationship to its environment), make sure the whole class does the activity focused on that part of nature. Although it is ideal to do this activity with an object in its natural environment, if students are working with an object that has been removed from its surroundings (e.g., a seashell in a classroom), they can skip the zoomed-out view and focus more on their life-size diagrams and enlargements.

PROCEDURE SUMMARY

1. Record observations at three scales: close up, life size, and far away.
2. Use circles to show magnified views for the "zoom in." In the zoomed-out view, you can include details such as growth forms, where the subject is, or a small map.
3. Use writing, drawing, and numbers to record your observations.

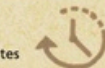
DEMONSTRATION

When the whiteboard icon appears in the procedure description: Make a quick example sketch of a plant (or other subject) at life size; circle a feature you want to enlarge, and draw the enlargement within a larger circle. Then add a more distant view of the plant (perhaps showing the entire plant if it is large, e.g., a tree) or where the plant is in the environment, in a side-view diagram, map, or landscape sketch. Add sets of lines to suggest written notes.



Time

Introduction: 5 minutes
Activity: 10–30 minutes
Discussion: 10–15 minutes



Materials

- Journals and pencils



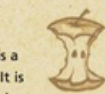
optional

- Loupes, hand lenses, or magnifying glasses
- Paper cups (to trace circles)

Teaching Notes

Zoom In, Zoom Out is a stand-alone activity. It is also an approach students can use in any journal entry to spark observations and questions. The discussion questions will help students recognize opportunities to use changing scale in the future. Taking the time to reflect in this way transforms a one-time activity into a transferable skill.

(Optional) Bring some paper cups or other round objects to help students trace crisp, round circles for the magnified "zoomed-in" view on their journal page.



47

MY SECRET PLANT

Students record observations of a plant using words, pictures, and numbers, then challenge a partner to find the plant using their notes.

This activity helps students develop essential journaling skills: focusing on details; selecting relevant and useful observations to record; using words, pictures, and numbers; and communicating ideas on a data-rich page. Knowing that the journal entry will have an audience helps students focus on the task.

NATURAL PHENOMENA

Find an outdoor area with a diversity of plants and enough room for students to spread out. This could be a natural area; vacant lot; or the "weeds" growing around a lawn, an unmanaged margin of a sports field, or a playground.

PROCEDURE SUMMARY

1. Use words, pictures, and numbers to describe a plant.
2. Record unique features, such as growth forms, holes, and colors.
3. When I call "time," give your journal to a partner and challenge them to find your plant by using your notes.

DEMONSTRATION

When the whiteboard icon appears in the procedure description: Draw a plant and add written notes. As students suggest elements that would help their partner find their plant (color notes, scale, location map, details about insect bites or other unique markings), add the ideas to the demonstration.



PROCEDURE STEP-BY-STEP

1. Tell students that they will create a treasure hunt for a classmate in their journals, using words, pictures, and numbers to describe a plant.
 - a. "In a moment you are going to create a treasure hunt for one of your classmates. We will spread out in this area, and each of you will choose one plant, then describe it as accurately as you can using words, pictures, and numbers."
 - b. "You'll need to include enough information so that another person will be able to pick out your individual plant (not just the species or type of plant) from the

Time

Introduction: 5 minutes
Activity: 15–30 minutes
Discussion: 15 minutes



Materials

- Journals and pencils



optional

- Rulers

Teaching Notes

The scaffolding and instructions for this activity are essential to students' success. Don't skip over the steps where students brainstorm ways of showing information and details to include in their journal entry. This is not cheating; it is clarifying your expectations and setting students up to succeed.



39

CHANGE OVER TIME

Students describe a developing organism (e.g., a bean plant in a cup, a marked wildflower); a changing object (e.g., a decomposing orange); or a landscape feature (e.g., a sandy stream bank) as it changes over multiple observation sessions.

Time

Introduction: 10 minutes
Activity: 30-minute initial observation, with 10–20-minute follow-up sessions over the period of change (which may be months, with more frequent sessions during periods of intense change)
Discussion: 10–15 minutes



Materials

- Journals and pencils
- Twist ties to loosely mark plants or other objects in the field
- Rulers or measuring tapes



Teaching Notes

Students will be most successful with this activity if they have an approach or plan for structuring the page to facilitate data collection over time. If necessary, guide students through the process of planning how to arrange sequential observations on the same page or a spread of pages, and how to add symbols (such as arrows) to show the progression of observations over time.



220

Most times when we go outside to look at nature or record observations in our journals, we just see snapshots of longer processes. Yet the fruit on the trees, the spit of sand by the river, and the leaves just fallen are all in states of change. This activity gives students the experience of observing and recording changes in a phenomenon over time, leading to deeper understanding of the subject, the forces that cause it to change, and change as a general process.

NATURAL PHENOMENA

Look for objects that change over time at a rate that can be regularly observed and documented. This might include developing plants in a nearby garden or natural area, a potted plant or sprout in a cup; butterfly caterpillars (or eggs if you can find them; separate and place individuals in labeled containers to keep track), frog eggs in an aquarium (avoid releasing invasive species into the wild), a section of a branch of a deciduous tree (beginning when the tree is in bud), a decomposing vegetable in a compost bin (mark with a nondegradable tab so that you can find it as it rots), or a dead animal.

PROCEDURE SUMMARY

1. Use writing, drawing, and numbers to describe the subject.
2. Take detailed notes, especially about parts of the object that you predict will change the most.
3. Measure the object and create a table to record future measurements.
4. Leave space on the page for future observations, and label this 1.

DEMONSTRATION

When the whiteboard icon appears in the procedure description: Draw a bud of a plant (not the species that the students will be working with). Draw sets of horizontal lines to suggest written notes. Number the drawing 1. Then add and number subsequent stages until you fill the page. Then explain that you would continue your notes on other pages in your journal as the plant continued to develop.



MORE TREE ACTIVITIES

TREE FRIENDS



Meet your school's tree friends! In this sensory activity, partners take turns exploring a tree with eyes closed, using touch, smell, and hearing to create a memory map. Then comes the challenge—can you find your tree friend once your eyes are opened?

LIKE A TREE IN THE WIND

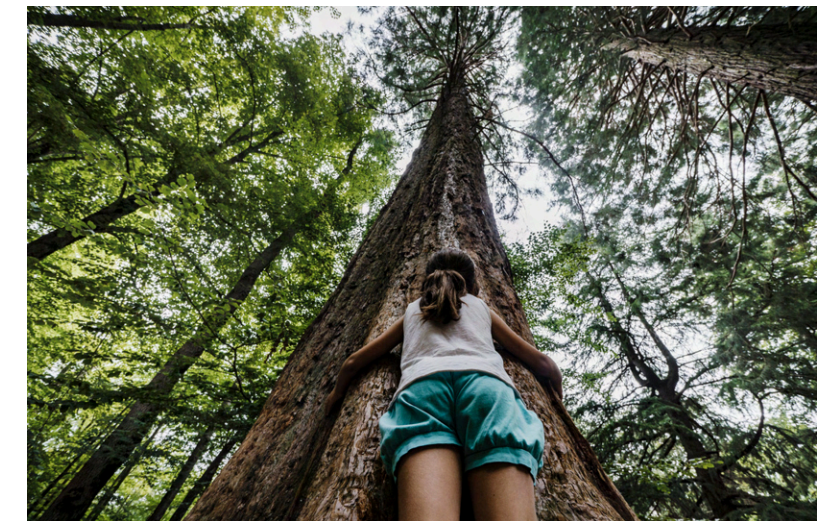


This is a great activity to do on a windy day near a mature tree in the schoolyard. Even on the windiest of days, when the tree's branches are flailing wildly, its trunk stays rooted, calm, and grounded. We, too, can access our own inner "trunk", finding a sense of calm.

Activity credit: Kaira Jewel Lingo

HOW IS A TREE LIKE ME?

Take your students outside into the schoolyard to get to know a tree. How are we like trees? How are we different? Use this as a launchpad for a deepening relationship with and appreciation of one of the trees at your school.



GENERAL NATURE IN THE SCHOOLYARD



GENERAL NATURE IN THE SCHOOLYARD

SOUND MAP

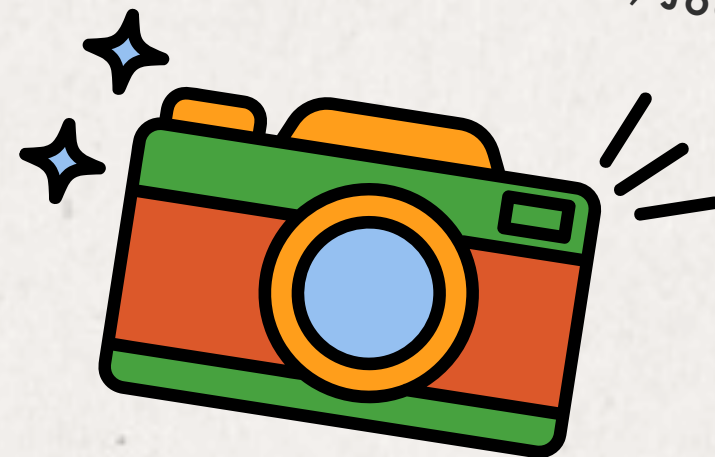
Tuning into our sense of hearing brings us into the present moment. It also sharpens our observation skills. As an added bonus - it helps us feel more connected to the natural world!



HUMAN CAMERA

Take students outside into the schoolyard for this simple and fun activity. It will support them to notice some of the natural beauty visible from the schoolyard. It will also help them to develop gratitude. It feels good to be thankful!

Activity credit: Thich Nhat Hanh, Joanna Macy



GENERAL NATURE IN THE SCHOOLYARD

GRATITUDE ART



**EMOTIONS LIKE
CLOUDS**



GENERAL NATURE IN THE SCHOOLYARD



- How does looking closely help me investigate the world around me?
- Sit Spot Prompts:
- Zoom in and observe as much as possible in one small square
- Shapes and Lines - what shapes and lines do you see near your feet?
- Textures - how does nature feel?
- Colours - identify the most common colour around sit spot.

Credit: Sitting with Nature: An Educator's Guide to Sit Spots, Lauren MacLean



GENERAL NATURE - NATURE JOURNALLING

EVENT MAP

Students draw a treasure map as they hike, highlighting discoveries and features along the trail and making quick sketches of plants, animals, or other surprises and writing notes to record memories.

Have your students ever come back from a nature hike and been unable to give a vivid report of their experience? "How was your hike?" "Good." "What did you see?" "Trees and stuff." Externalizing thinking (getting our ideas and observations down on paper) is a good way to enhance attention and memory. Making an event map, or a physical chart of experiences in time and space, is a way of intentionally recording memories. In this activity, students make a map of hidden treasure. The treasure is not buried at the end of the trail; it is all along it. When they return from the hike, students will not only remember the sequence of events along the trail but also have a spatial memory of where they were and the distances between the discoveries. An optional extension guides students to write a narrative of their "treasure hunt." This is valuable practice in storytelling and an opportunity for students to strengthen their writing skills.

NATURAL PHENOMENA

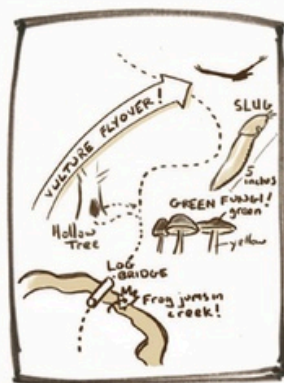
Lead this activity on a level mile- or half-mile-long trail in a natural area. Ideally students should be able to see the whole route from the start and be able to track their progress as they walk. (We are halfway there; we are three-quarters of the way, etc.) The trail should be clearly marked and free from hazards so that students can make the hike at their own pace.

PROCEDURE SUMMARY

1. Make a treasure map of things you find along the trail, using writing and drawing.
2. After each trail treasure, add a dashed line to show the section of trail you traveled.
3. Take your time, and do not disturb others in the group.
4. (In the field, or when students return) Using your map to guide you, write a story of your adventures.

DEMONSTRATION

When the whiteboard icon appears in the procedure description: Draw a dotted line that represents the shape of the route (loop, winding trail, etc.). Show the locations of a few prominent landmarks



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TEAM OBSERVATION

Students observe the same subject and work together to discover as much as possible. As they do, they see the variety and depth of the observations that can be made.

Science is a team sport. Rarely does a lone scientist, working in isolation, contribute much to our understanding of the world. Scientists work together to solve complex problems. They share ideas, read one another's work, replicate one another's studies, and build on what is already understood. Everyone has different strengths, and having more eyes on any problem means there will be more ways of thinking about potential solutions. We can see examples with NASA (it takes a village to get to the moon—and back) or any group engineering effort that has produced many of the modern products we take for granted. Any lab at a university comprises a cohort of graduate students at various levels, and just about any scientific paper was written by a team of authors. Your students will go further in their understanding of science if it is a collaborative effort, not a competition to see who gets the best grade. Use this activity to set the tone of teamwork and enable your students to see how much they can learn when they work together.

NATURAL PHENOMENA

Find a natural object, organism, or species that all students can simultaneously observe. The possibilities are limitless. Students could focus on an abundant species of flower in a field; a colony of ants; a tide pool; a large, spreading tree; a small pond; or a stream. A tall, narrow tree (such as a pine) is more challenging for a large group. Even though everyone would be able to see the tree, it might be difficult for everyone to get up close and examine the bark or lower branches. Choose the phenomenon, or set it up so that the group of students can decide what they want to explore. If you want to use this activity to help students build understanding of specific science concepts, then choose the phenomenon and suggest a couple of categories for observations that meet your learning goals.



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MAPPING

Students study patterns in the landscape and create maps of vegetation patterns, wildlife evidence, landscape features, and other characteristics.

Plants, geological features, and animal evidence are not randomly distributed. They occur in patterns on landscapes in response to environmental conditions and such factors as light exposure, soil type, geological forces, or disturbances. Because the focus of the map is showing distribution and not drawing exact representations of a part of nature, creating maps helps students quickly identify patterns in distribution and sets students up to think about possible causes for the distribution. It also sets them up with a new skill and frame to include in future journaling experiences; once students know how to make a map, they can record a small one for context in journal entries focused on other subjects.

NATURAL PHENOMENA

Plan ahead of time what students will map. You don't find ideal subjects for mapping everywhere. Look for phenomena with strong patterns. Any interesting part of nature that has a spatial component (e.g., otter trails at the edge of a marsh, vegetation zones around a small pond, spider webs in a bush, erosion and deposition patterns where a stream feeds into a lake, fresh and old gopher mounds on a lawn, areas of high- and low-intensity burn after a forest fire, a portion of a creek showing alternating zones of ripples and pools with an overlay of animal evidence, or ant trails in a kitchen).

To determine a focus for mapping, you could use your learning goals to decide what phenomenon you would like students to map, then scout good nearby locations for it. Or you could go explore with mapping in the back of your mind and see what features have strong patterns. Identify the boundaries of the mapping location and major landmarks within it as you scout, so that you can point them out to students as you give the group instructions. After students have some practice with mapping, they could select the features for mapping themselves.

PROCEDURE SUMMARY

1. Make a map of the subject in this area within the boundaries described.
2. Use symbols to show where things occur, and make a key to what each symbol means.
3. Include a North arrow and a scale.
4. Start by recording a few landmarks.

DEMONSTRATION

When the whiteboard icon appears in the procedure description: Draw a simple map. Model using landmarks to guide the placement of major features on



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SMALL GROUP DISCUSSION

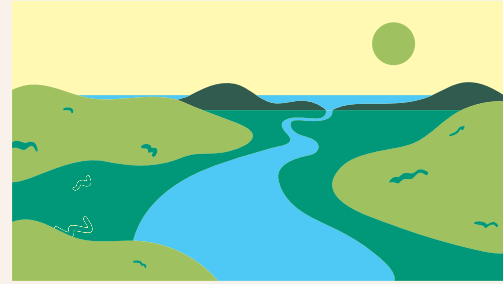
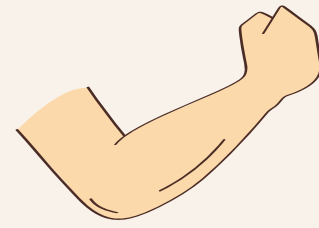


- What is working well as you implement this curriculum?
- What is a challenge for you in implementing this new curriculum?



VOLCANO BREATHING





Niitsitapi or Blackfoot Confederacy

Siksika, Piikani, & Kainai

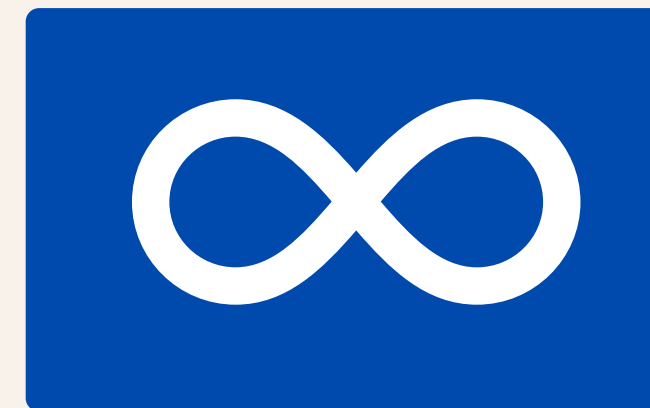


Tsuut'ina



Îethka or Stoney Nakoda

Chiniki, Good Stoney, & Bearspaw



Métis People of Alberta

Districts 5 & 6



Îethka or Stoney Nakoda
Chiniki, Good Stoney, & Bearspaw





Îethka or Stoney Nakoda
Chiniki, Good Stoney, & Bearspaw



BIRDS



- The more time you spend outside, the more you'll see and notice birds
- They can fly - wow! A great avenue for wonder and curiosity.
- Winter can be a great time to get to know the birds

In order to see birds, it is necessary to become part of the silence.

-Robert Lynd



BIRDS

Black-capped Chickadee



House Sparrow (M) (F)

Black-billed Magpie



BIRDS

Gull



Canada Goose

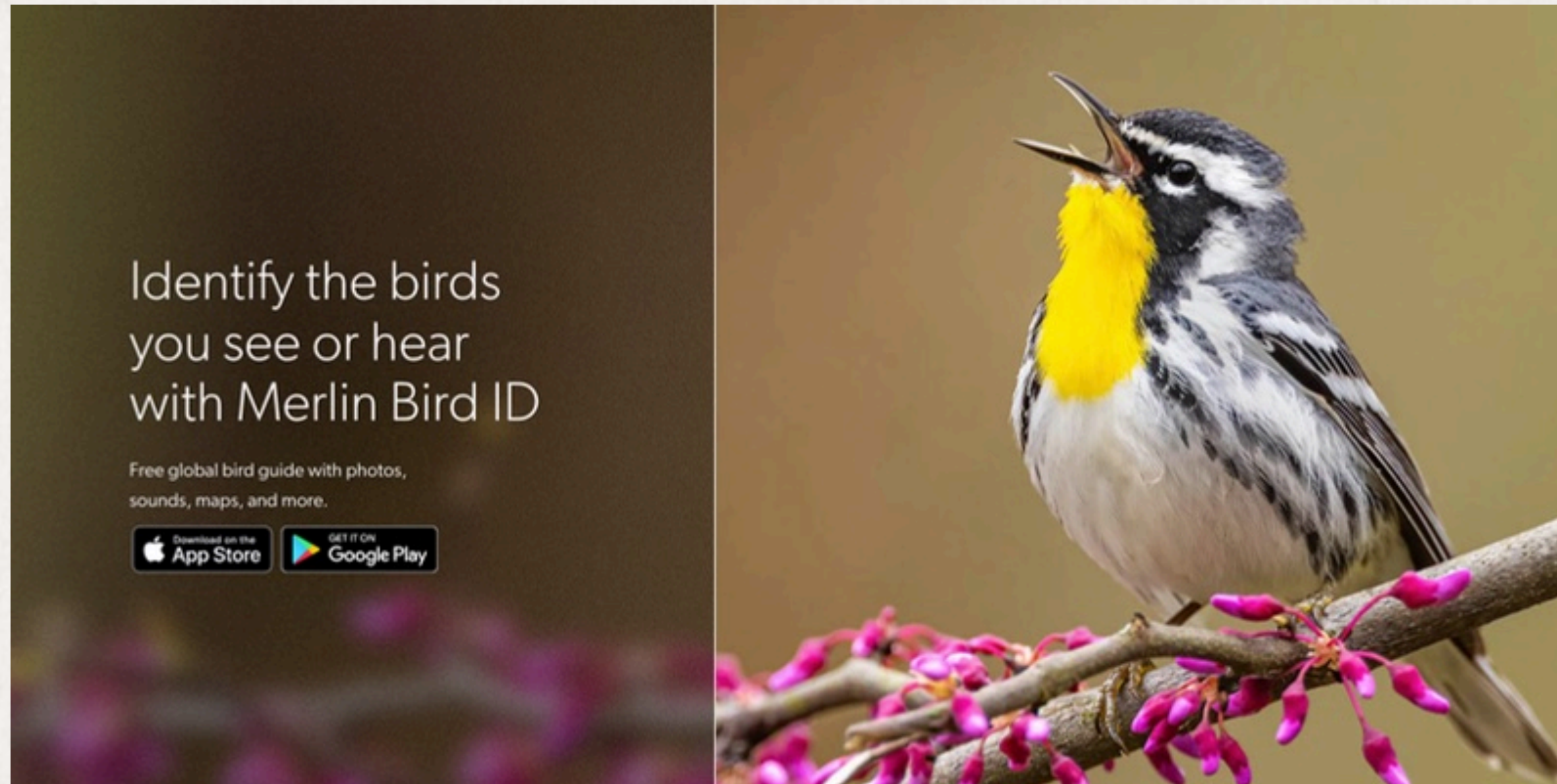


Raven



BIRDS

There's an app for that!



Identify the birds
you see or hear
with Merlin Bird ID

Free global bird guide with photos,
sounds, maps, and more.

Download on the
App Store

GET IT ON
Google Play

A photograph of a yellow throated vireo perched on a branch with pink flowers, with its beak open as if singing. The bird has a bright yellow throat and chest, with black and white streaked wings and back. The background is a soft, out-of-focus green.



BIRDS - PROJECT FEEDERWATCH



Project
FeederWatch

Join thousands of people in
watching, learning, and contributing
observations about the natural world

[Learn How FeederWatch Works](#)



BIRDS



Cedar Waxwing



Ruby-crowned Kinglet



BIRDS

Caring for the Gulls

Some of Calgary's Gulls

These are three of the most abundant Gull species in Calgary. The differences can be subtle and identifying the species can be tricky! Don't get too caught up in trying to tell them apart. Just enjoy knowing that they're here!



Franklin's Gull

You'll know a Franklin's Gull by their characteristic black head.



Ring-billed Gull

Look for a pale eye and a black ring on the bill.



California Gull

Notice the dark eye and the red spot on the bill.

Caring for the Gulls

Colouring Sheet

Draw a picture of your schoolyard. In your picture, include one thing you can do to keep the birds safe! Don't forget to draw the birds!

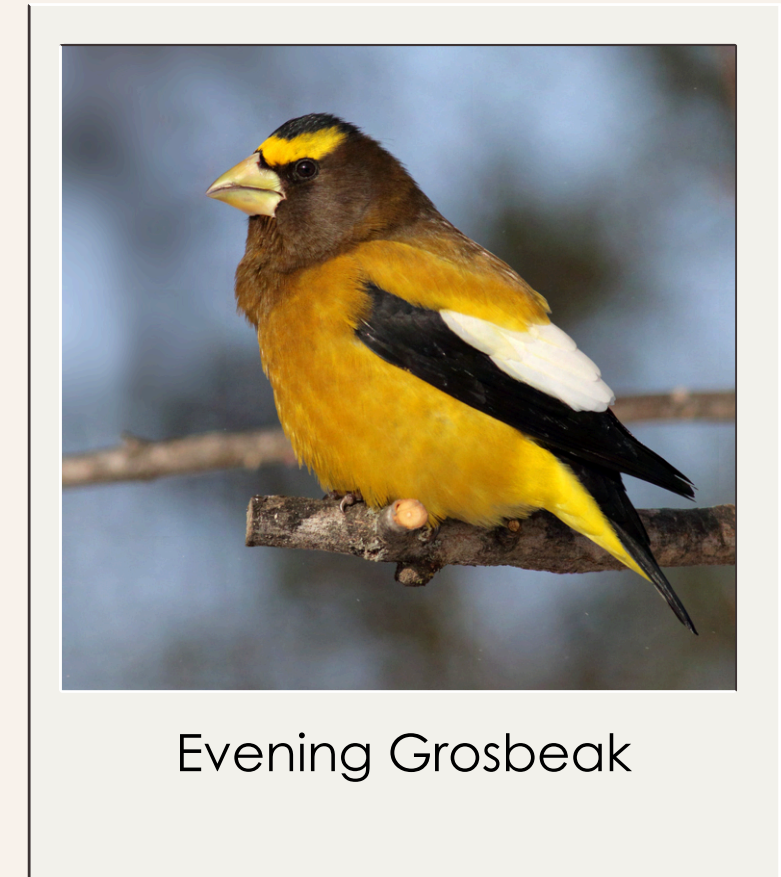


BIRDS



design your own

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WILDFLOWERS



- Fascinating, colourful, present in your schoolyard.
- Look for them along the edges, nearby back alleys
- A delightful sign of spring

If dandelions were hard to grow, they would be most welcome on any lawn.
attributed to Andrew Mason



SCHOOLYARD WILDFLOWERS



Dandelion



Wild Rose



Shrubby Cinquefoil



SCHOOLYARD WILDFLOWERS



Buffalo Bean



**Wolf Willow/
Silverberry**



Yarrow



WILDFLOWERS



Nitsitapiisinni
Stories and Spaces

Exploring Kainai Plants and Culture



www.galileo.org/kainai



WILDFLOWER WONDERS

A Big Day Out in the Schoolyard

Designed to be experienced in Spring & Summer.
Incorporates the Kindergarten Alberta Program of Study.
Easily adaptable to other grade levels.

Season Charades

In small groups, work together to act out a scene depicting one of the four seasons. Come back together with the class and see if the others can guess!

pg 4

Circle Discussion

Learn the word for Earth in the  ethka, or Stoney Nakoda language: m koche. Brainstorm ways the land cares for us all, every day.

4-5

Wildflower Journeys

Play with the names of the many wildflowers that call this place home: Rosy pussytoes, showy milkweed, bearberry. Then act out their journey through the seasons

5-7

Sit Spot

Go to your sit spot and look around for some of nature's gifts that surround you. Draw what you see in your journal.

7

The Tiny Seed

Sing together this action song to the tune of "Do You Know the Muffin Man". Curl up like a tiny seed, tiny seed, tiny seed...

7-8

Wildflower Walk

Take a walk together around your schoolyard looking for blooming wildflowers. Perhaps you'll see white clover and dandelions. Perhaps something more! Stop and sketch.

8-9

Bumblebee Freeze Tag

Bumblebees are great helpers to the wildflowers! And wildflowers help the bumblebees! In this tag game, the running wildflowers need the bees to unfreeze!

10

Talking Circle

Review the learnings from the day. Pass around the talking stick and take turns reflecting on what you want to remember about our Big Day Out - Wildflower Wonders.

10



WILDFLOWERS

Îethka (Stoney Nakoda) Connections

- For the Îethka, the land is more than just a place to play and learn, it is alive and takes care of us just like our big brothers and sisters or mothers and fathers do.
- Mâkoche - Îethka work for Earth means “older brother land”
- The land takes care of us by providing food and medicine.
- After a long winter, the Îethka welcome back the plants and flowers.
- To thank the plants, the Îethka people offer tobacco.
- This shows respect for the earth - to always give an offering before taking something from the land.



Sticky Geranium



WILDFLOWERS AND NATURE JOURNALLING

TIMELINE

Students explore plant development through sorting and drawing stages of budding, flowering, and fruiting. Then they discuss possible functions of plant parts.

This activity focuses students on life cycles of plants. As students search for flowers in different stages of growth and attempt to put them in order, they will recognize the major structures and notice how they change. Students will not only learn about that individual plant but also make meaning about the function of different plant parts and how this corresponds to the plant's life cycle.

NATURAL PHENOMENON

This activity should be conducted in an outdoor space where students can observe plants and flowers in different stages of growth, such as a school garden or natural area. Look for species that show stages from bud to flower to fruit or seed at one time. Students could also make a timeline of fungi if you find mushrooms in different stages of development, or of leaves in different phases of decomposition.

PROCEDURE SUMMARY

1. Find a flower in the peak of its bloom and describe it in the center of the page with words and pictures.
2. Find the oldest and youngest versions of this flower and draw them on the left and right sides of your page.
3. Find as many intermediate stages as you can and draw them, arranging them sequentially on the page.
4. Write down any questions that come to you, and include written notes.

DEMONSTRATION

When the whiteboard icon appears in the procedure description: Demonstrate finding and adding stages of flower development, sorting them, and adding notes or questions. Start with one flower in full bloom and show how you can work backward or forward as you add stages. Add stages out of sequence, showing how to leave space for other elements later.



Time

Introduction: 10 minutes
Activity: 20–50 minutes
Discussion: 10–20 minutes



Materials

- Journals and pencils



Teaching Notes

This activity won't work in every season. Plan to do it at a time of year when you know there will be enough plants in different stages of growth for students to observe, and scout a location ahead of time.



Certain flowers with complex structures or curling petals can be challenging to draw. If your group is newer to drawing, encourage students to pick a flower with a simple structure to draw, or offer students strategies for drawing complex flowers efficiently.

See instructional videos on johnmuirlaws.com and *The Laws Guide to Nature Drawing and Journaling* for more details about specific strategies for drawing different types of flowers.



SCHOOL GARDENS

Dr. Megan Zeni Buy my book! Home About Learn with Me Research Media Requests Blog Contact

School Garden Basics

Teaching outdoors is nothing new. As a species, humans have evolved to learn outdoors. For thousands of years, we have actively learned from experience alongside our elders. It is only recently in our evolutionary path that we have asked children to learn under florescent lighting, within four walls. Teaching Outside Transforms a Child's Experience of...

- 10 Tips For Teaching Outside The Classroom
- How To Start Seeds In Paper Pots
- School Garden Soil Resources
- School Garden Weed Resources
- What Seeds Need To Grow: A Seed Inquiry
- Online School Garden Resources
- Cool Plants Facts For Kids
- How To Plant A Butterfly Garden

www.meganzeni.com



POLLINATORS



- Great for connections and relationships - plants need pollinators
- Spring, Summer, and Fall
- Bumblebees, Solitary bees, butterflies

We delight in the beauty of the butterfly, but rarely admit the changes it has gone through to achieve that beauty.

-Maya Angelou



SCHOOLYARD POLLINATORS



Bumblebees



Solitary Bees



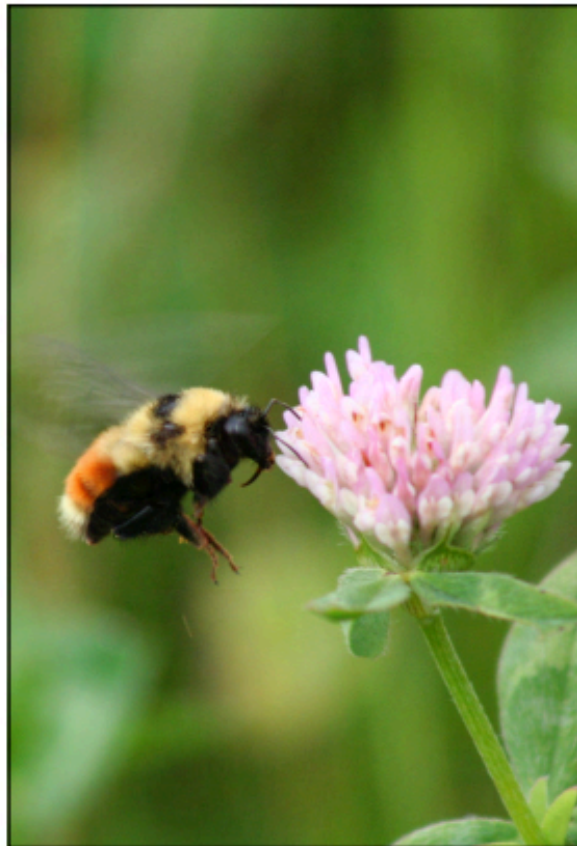
**Butterflies
(Mourning Cloak)**



BUMBLEBEES

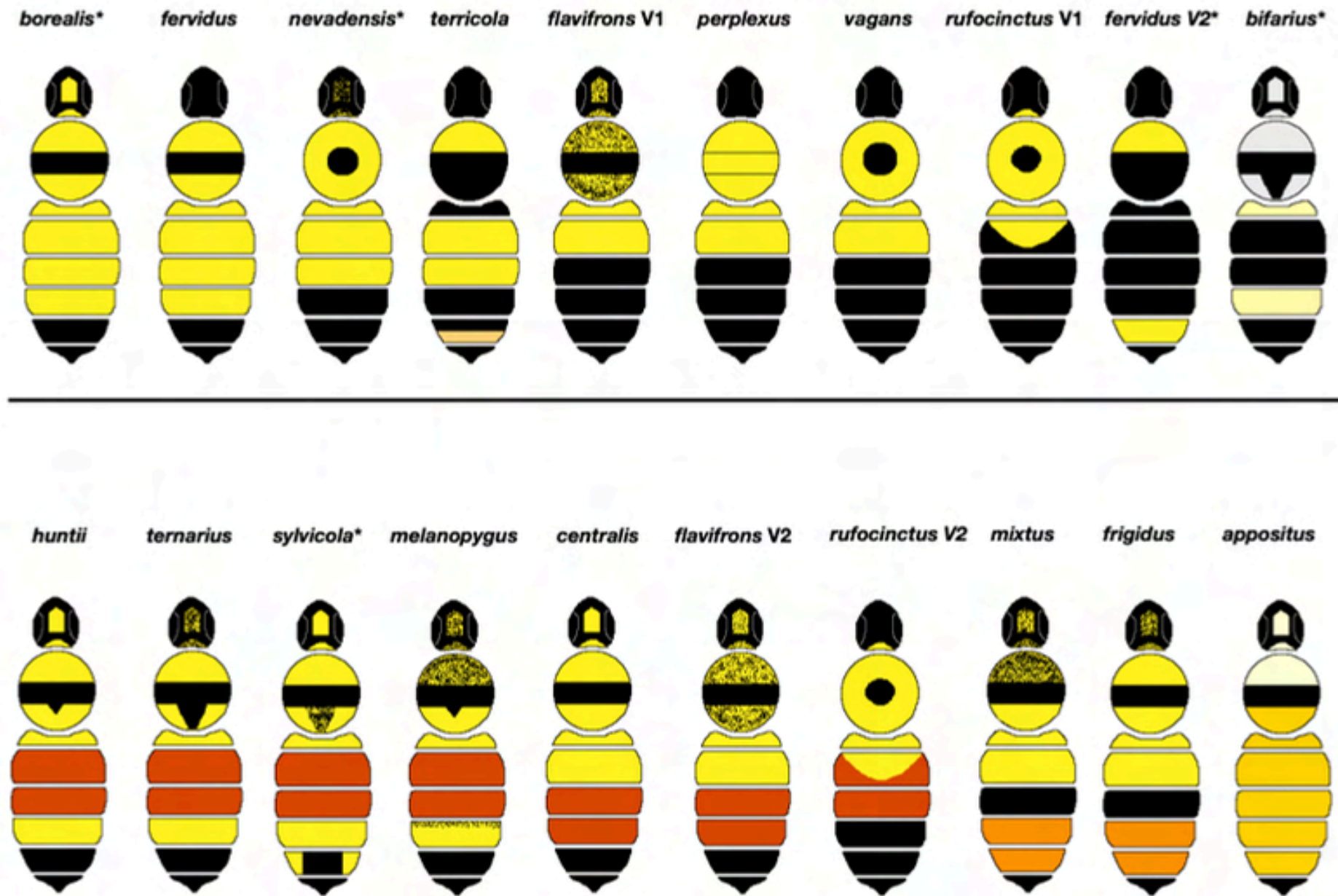
Bumble Bees of Southern Alberta

An Identification Guide to Queens



Developed By Megan Evans © 2017
megan.evans@albertanativebeecouncil.ca

Yellow and Black Bumble Bees



* species marked with an asterisk are easily identified



BUMBLEBEES



mixtus

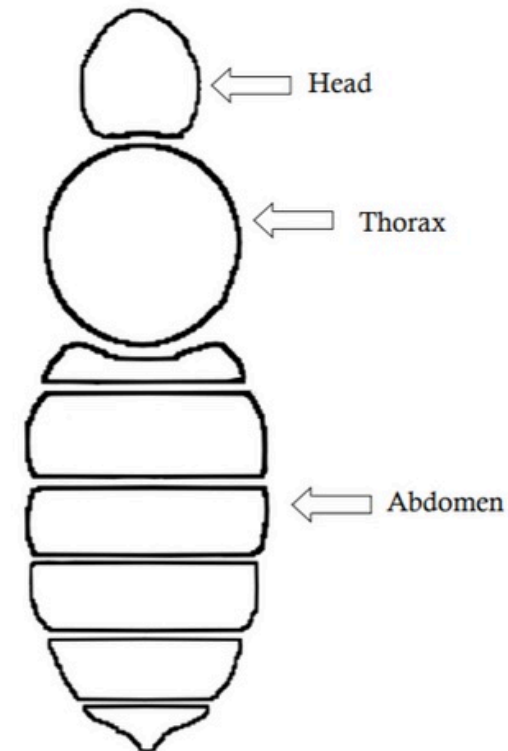
(Fuzzy-horned Bumble Bee)

BECOME A BUMBLE BEE EXPERT:

Fill in Your Focus Bumble Bee

Write the common and scientific name of your focus bumble bee. Fill in the head, thorax, and abdomen with the correct colours and patterns.

| | |
|-----------------|--|
| COMMON NAME | |
| SCIENTIFIC NAME | |



Adapted from University of Minnesota's Driven to Discover

BECOME A BUMBLE BEE EXPERT:

Focus Bumble Bee Facts






To become an expert on your focus bumble bee, you will need to know basic facts about it and how to identify it. Fill in the table below, using a Bumble Bee Field Guide or an internet search to help you.

| | |
|--|--|
| COMMON NAME | |
| SCIENTIFIC NAME | |
| HABITAT eg. Forest, wetland, mountains | |
| RANGE eg. Western N. America, Eastern United States | |
| DIET eg. clover (trifolium), thistles (cirsium) | |
| NEST LOCATION eg. underground, surface | |
| INTERESTING FACTS | |




Adapted from University of Minnesota's Driven to Discover



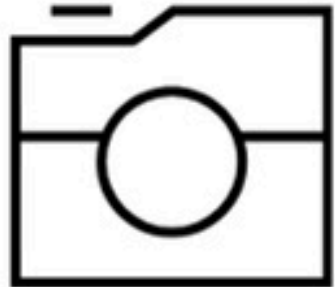



BUMBLEBEE WATCH

 **Bumble Bee Watch**   Donate   Your Account ▾

Welcome To Bumble Bee Watch

| Sightings | Contributing Users | Active States / Provinces |
|--|---|---|
| Last 30 Days | Last 30 Days | Last 30 Days |
|  321 |  52 |  26 |
| Add Sighting(s) | Explore Sightings | Explore Maps |

How to Submit a Bumble Bee Sighting

- 
Take a photo of a bumble bee
- 
Log in and upload your photo
- 
Identify your species
- 
Your sighting will be verified by an expert

[Add Your Sighting Now](#)



LICHEN



- Fascinating, colourful, present in your schoolyard.
- They embody connection and relationship. Lichen = Fungi + Algae
- They occupy places we might not always see as inviting
- They play an important role in the ecosystem: nitrogen, soil moisture, habitat, food

The beauty of lichens with their scalloped leaves, the small attractive fields, the crinkled edge! I could study a single piece of bark for hours.

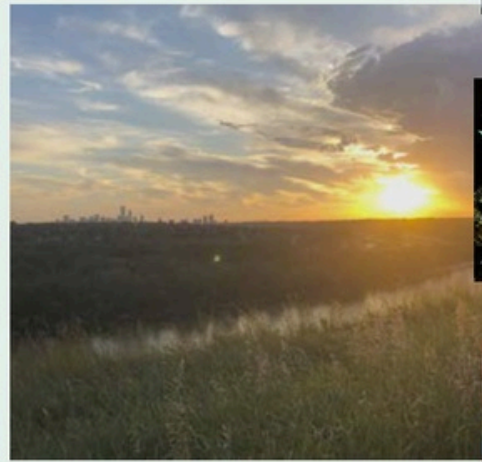
Henry David Thoreau



LICHEN

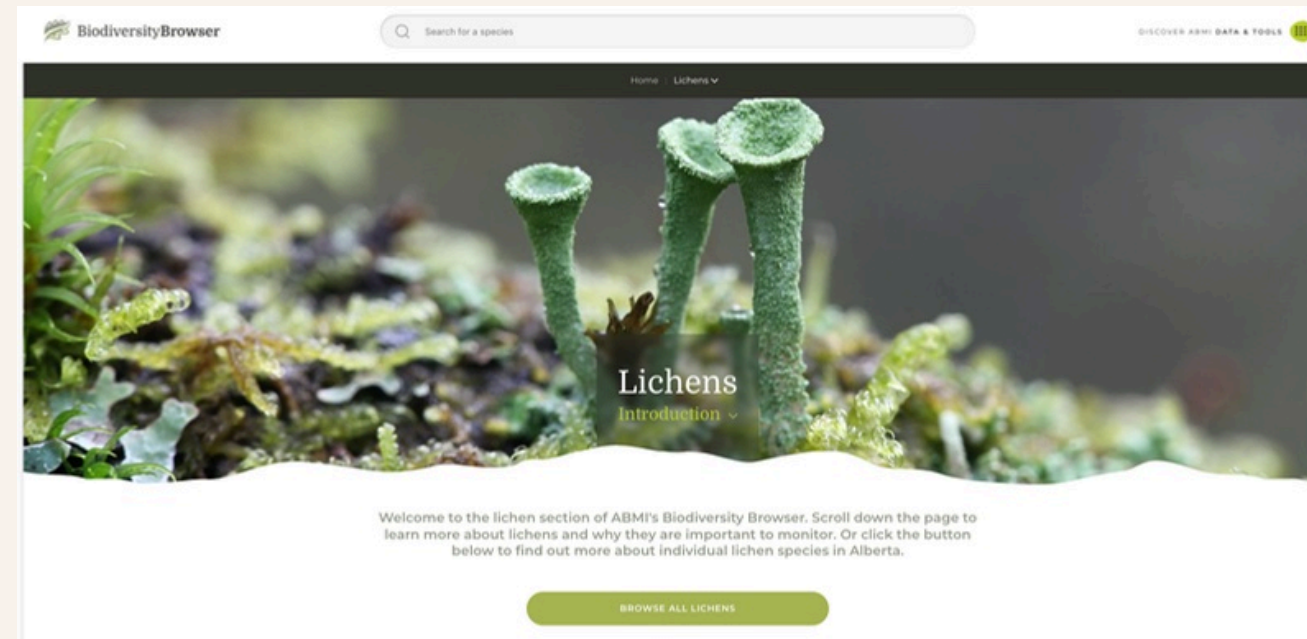
Getting to Know Your Neighbours

Common Lichens of Edmonton Alberta



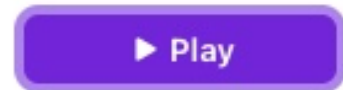
Diane L. Haughland

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05/28/2024 · S2, E18 · 14 MIN

**Moss and lichen Unveiled:
Nature's Tiny Wonders**
Teach Outdoors



LICHEN - NATURE JOURNALLING

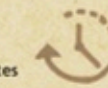


SPECIES ACCOUNT

Students choose one species that they can readily observe, and document as many details as they can about it through direct observation.

Time

Introduction: 5 minutes
Activity: 10-45 minutes
Discussion: 10-15 minutes



Materials

- Journals and pencils
- optional
- Binoculars
- Example species account field notes from local scientists



Teaching Notes

Scientists in many disciplines of life science make focused species accounts. These thorough records describe species, including markings of individual organisms, where they were found, what was nearby, and interesting behaviors. This is a simple and powerful approach to learning in nature, one that students can continue to use in their journaling. This is also a great jumping-off point for studying the species in more depth, giving students the background to dive into relevant research or to think about the species' interactions with its environment.



Much of what we know about nature started with direct observation and experimentation. There are many species that have been deeply studied, but there is always more to learn and discover. Each observation, if recorded and shared, becomes part of a growing understanding of the world. Species accounts are a common approach to cataloguing organisms and building a database of information. In a species account, the observer attempts to learn as much as they can about the type of organism, using words, pictures, and numbers to record details about structures, behaviors, and location in and interaction with the surrounding environment. Once students learn and develop an approach for doing a focused species study, they can apply the skills anywhere they go.

NATURAL PHENOMENA

Any plant or animal that can be observed for a sustained period can be used for a species account. If you think an animal might scamper away, use the *Animal Encounters* protocol instead. Students don't necessarily need to focus on the same organism, unless you want the whole group to build a base of observations to use to reach specific learning goals. Find an area with enough plants, animals, or fungi that individual students could choose their own subject to observe. Plants are very cooperative and will not walk away. Animals are fun because they exhibit behavior that can also be recorded. Encourage students to choose animals that will not crawl or fly away halfway through the observation period. Catching small insects, macroinvertebrates, or other critters in clear plastic cups is a way to deal with this issue. Captive animals are often easy to observe, but may exhibit behavioral and structural differences compared to wild animals.

PROCEDURE SUMMARY

1. Record as many observations and questions about this species as you can, using words, pictures, and numbers.
2. Include information about how the organism looks, its behaviors and feeding habits, where it was found, and the like.
3. Focus on specific observations, not explanations.

DEMONSTRATION

When the whiteboard icon appears in the procedure description: As you suggest things to include in a species account, create a sample page that reflects those suggestions. Do not worry about making a pretty picture. Your bunny can be a circle with two lines for ears. Demonstrate making more than one sketch, to show different



LICHEN



Prompts and Activities:

- Lichen Scavenger Hunt
 - Magnifying glasses
 - Colour Palettes
- Where do they thrive? Where do they not?
- Similarities and differences: how do different lichens differ, how are they the same?



RAINBOW BREATHING



Talking Circles



Talking Circles



Kindergarten

- Discuss connections First Nations, Métis, and Inuit have with nature.
- Environments can be respected in many ways, such as: Not littering, Caring for nature.

Grade 1

- Discuss and reflect on First Nations, Métis, and Inuit teachings that demonstrate a sense of responsibility to care for nature.



Talking Circles



Grade 2

- Discuss how the various components of Earth interact to support life.
- Discuss ways to respect plants and animals while interacting in various environments

Grade 3

- Discuss the interconnectedness between human activities and responsibilities for maintaining Earth.



Talking Circles

Grade 4



- First Nations, Métis, and Inuit practise traditional methods of conservation, including taking only what is needed.
- Conservation of Earth's systems involves personal, community, and global action.





**LET'S PLAY
OUTSIDE!**





CROSS-CURRICULAR APPLICATIONS

- Language arts
 - Poetry of Place
- Physical Education and Wellness
 - SEL
- Art
- Math
- Social Studies



BUILDING EMOTIONAL RESILIENCE IN THE FACE OF CLIMATE CHANGE



- Offering alternatives to screen time
- Power of deep connection and belonging
- Learning from nature how to be with difficulty

What's important is that children have an opportunity to bond with the natural world, to learn to love it and feel comfortable in it, before being asked to heal its wounds.

David Sobel





TEACHER SUSTAINABILITY





MOVING TOWARD JOY

- It's so easy to get locked into feeling grim, overwhelmed, resentful.
- With mindfulness we can acknowledge and care for the worry, overwhelm, and see that behind it is the capacity for joy.
- Can these teaching practices help us to rediscover our joy through teaching and learning in nature?



“...you could just relax and realize that, behind all the worry, complaint, and disapproval that goes on in your mind, the sun is always coming up in the morning, moving across the sky, and going down in the evening. The birds are always out there collecting their food and making their nests and flying across the sky. The grass is always being blown by the wind or standing still. Food and flowers and trees are growing out of the earth. There’s enormous richness. You could develop your passion for life and your curiosity and your interest. You could connect with your joyfulness. You could start right now.” - Pema Chödrön

