

# Interconnectedness

The impact of living on, and learning from, the land

*How living things interact and influence each other*



A resource for grades 3, 4 and 5

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BIG IDEAS

Living things are diverse, can be grouped, and interact in their ecosystems.

All matter is made of particles.

Thermal energy can be produced and transferred.

Wind, water, and ice change the shape of the land.

Learning Standards

Curricular Competencies	Content
<p><i>Students are expected to be able to do the following:</i></p> <p><b>Questioning and predicting</b></p> <ul style="list-style-type: none"> <li>• Demonstrate curiosity and a sense of wonder about the world</li> <li>• Observe objects and events in familiar contexts</li> <li>• Identify questions about familiar objects and events that can be investigated scientifically</li> <li>• Make predictions based on prior knowledge</li> </ul> <p><b>Planning and conducting</b></p> <ul style="list-style-type: none"> <li>• Suggest ways to plan and conduct an inquiry to find answers to their questions</li> <li>• Consider ethical responsibilities when deciding how to conduct an experiment</li> <li>• Safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate</li> <li>• Make observations about living and non-living things in the local environment</li> <li>• Collect simple data</li> </ul> <p><b>Processing and analyzing data and information</b></p> <ul style="list-style-type: none"> <li>• Experience and interpret the local environment</li> <li>• Identify First Peoples perspectives and knowledge as sources of information</li> <li>• Sort and classify data and information using drawings or provided tables</li> <li>• Use tables, simple bar graphs, or other formats to represent data and show simple patterns and trends</li> <li>• Compare results with predictions, suggesting possible reasons for findings</li> </ul>	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> <li>• biodiversity in the local environment</li> <li>• the knowledge of local First Peoples of ecosystems</li> <li>• energy is needed for life</li> <li>• matter is anything that has mass and takes up space</li> <li>• atoms are building blocks of matter</li> <li>• sources of thermal energy</li> <li>• transfer of thermal energy</li> <li>• major local landforms</li> <li>• local First Peoples knowledge of local landforms</li> <li>• observable changes in the local environment caused by erosion and deposition by wind, water, and ice</li> </ul>

**Learning Standards (continued)**

Curricular Competencies	Content
<p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Make simple inferences based on their results and prior knowledge</li> <li>• Reflect on whether an investigation was a fair test</li> <li>• Demonstrate an understanding and appreciation of evidence</li> <li>• <b>Identify some simple environmental implications of their and others' actions</b></li> </ul> <p><b>Applying and innovating</b></p> <ul style="list-style-type: none"> <li>• Contribute to care for self, others, school, and neighbourhood through personal or collaborative approaches</li> <li>• Co-operatively design projects</li> <li>• Transfer and apply learning to new situations</li> <li>• <b>Generate and introduce new or refined ideas when problem solving</b></li> </ul> <p><b>Communicating</b></p> <ul style="list-style-type: none"> <li>• Represent and communicate ideas and findings in a variety of ways, such as diagrams and <b>simple reports, using digital technologies as appropriate</b></li> <li>• <b>Express and reflect on personal or shared experiences of place</b></li> </ul>	

**SCIENCE**  
Grade 3

Curricular Competencies – Elaborations
<ul style="list-style-type: none"> <li>• <b>Questioning and predicting:</b> Cause and effect is the basic principle that an action will result in a consequence. In science, this concept is closely related to the concepts of pattern and change. However, cause and effect may or may not have a predictable outcome. <i>Key questions about cause and effect:</i> <ul style="list-style-type: none"> <li>– What are some causes of biodiversity in BC's wetlands?</li> <li>– What is the effect of wind on mountains?</li> </ul> </li> <li>• <b>place:</b> Place is any environment, locality, or context with which people interact to learn, create memory, reflect on history, connect with culture, and</li> </ul>

establish identity. The connection between people and place is foundational to First Peoples perspectives of the world.

*Key questions about place:*

- How does what you know about place affect your observations, questions, and predictions?
- How does understanding place help you analyze information and recognize connections and relationships in your local environment?
- How does place connect with stewardship?
- How can you be a steward in your local environment?

## Content – Elaborations

## SCIENCE Grade 3

- **biodiversity:**
  - biodiversity: the variety of different types of living things in an ecosystem
  - characteristics of local plants, animals and fungi
- **the knowledge of local First Peoples:** the interconnection between living and non-living things in the local environment; our shared responsibility to care for the local environment (i.e., stewardship); information shared from the local First Peoples community and Elders
- **ecosystems:**
  - population: all the members of the same type of living thing (species) in an area
  - communities: different populations in an area living together
- **energy is needed for life:**
  - producers (plants), consumers (animals), and decomposers (bacteria and fungi) respond to their environment in energy pyramids (flow of energy in the community from the sun)
  - food chains: the flow of food energy from one organism to another (e.g., grass to rabbit to lynx)
  - food webs: interconnecting food chains (e.g., a rabbit may be eaten by a lynx or a wolf)
- **sources:** thermal energy can be produced by chemical reactions (e.g., hand warmers), friction between moving objects, the sun, etc.
- **thermal energy:** the energy that comes from the movement of particles within matter
- **transfer of thermal energy:**
  - conduction (touching — e.g., hold an ice cube)
  - convection (current — why do we hang mittens over a heat source?)
  - radiation (through space by a wave — e.g., heat from the sun)
- **landforms:** mountains, hills, plateaus, valleys, riverbeds, deltas, glaciers, etc.; oral narrative about landforms

**BIG IDEAS**

All living things sense and respond to their environment.

Matter has mass, takes up space, and can change phase.

Energy can be transformed.

The motions of Earth and the moon cause observable patterns that affect living and non-living systems.

**Learning Standards**

Curricular Competencies	Content
<p><i>Students are expected to be able to do the following:</i></p> <p><b>Questioning and predicting</b></p> <ul style="list-style-type: none"> <li>• Demonstrate curiosity about the natural world</li> <li>• Observe objects and events in familiar contexts</li> <li>• Identify questions about familiar objects and events that can be investigated scientifically</li> <li>• Make predictions based on prior knowledge</li> </ul> <p><b>Planning and conducting</b></p> <ul style="list-style-type: none"> <li>• Suggest ways to plan and conduct an inquiry to find answers to their questions</li> <li>• Consider ethical responsibilities when deciding how to conduct an experiment</li> <li>• Safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate</li> <li>• Make observations about living and non-living things in the local environment</li> <li>• Collect simple data</li> </ul> <p><b>Processing and analyzing data and information</b></p> <ul style="list-style-type: none"> <li>• Experience and interpret the local environment</li> <li>• Identify First Peoples perspectives and knowledge as sources of information</li> <li>• Sort and classify data and information using drawings or provided tables</li> <li>• Use tables, simple bar graphs, or other formats to represent data and show simple patterns and trends</li> <li>• Compare results with predictions, suggesting possible reasons for findings</li> </ul>	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> <li>• sensing and responding:             <ul style="list-style-type: none"> <li>– humans</li> <li>– other animals</li> <li>– plants</li> </ul> </li> <li>• biomes as large regions with similar environmental features</li> <li>• phases of matter</li> <li>• the effect of temperature on particle movement</li> <li>• energy:             <ul style="list-style-type: none"> <li>– has various forms</li> <li>– is conserved</li> </ul> </li> <li>• devices that transform energy</li> <li>• local changes caused by Earth's axis, rotation, and orbit</li> <li>• the effects of the relative positions of the sun, moon, and Earth including local First Peoples perspectives</li> </ul>

**Learning Standards (continued)**

Curricular Competencies	Content
<p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Make simple inferences based on their results and prior knowledge</li> <li>• Reflect on whether an investigation was a fair test</li> <li>• <b>Demonstrate an understanding and appreciation of evidence</b></li> <li>• <b>Identify some simple environmental implications of their and others' actions</b></li> </ul> <p><b>Applying and innovating</b></p> <ul style="list-style-type: none"> <li>• Contribute to care for self, others, school, and neighbourhood through individual or collaborative approaches</li> <li>• Co-operatively design projects</li> <li>• Transfer and apply learning to new situations</li> <li>• Generate and introduce new or refined ideas when problem solving</li> </ul> <p><b>Communicating</b></p> <ul style="list-style-type: none"> <li>• Represent and communicate ideas and findings in a variety of ways, such as diagrams and simple reports, using digital technologies as appropriate</li> <li>• <b>Express and reflect on personal or shared experiences of place</b></li> </ul>	
<p><b>SCIENCE</b> <b>Grade 4</b></p>	
<p><b>Big Ideas – Elaborations</b></p> <p><i>Sample questions to support inquiry with students:</i></p> <p><b>All living things sense and respond to their environment.</b></p> <ul style="list-style-type: none"> <li>• <b>How do living things sense, respond, and adapt to stimuli in their environment?</b></li> <li>• <b>How is sensing and responding related to interdependence within ecosystems?</b></li> </ul> <p><b>Matter has mass, takes up space, and can change phase.</b></p> <ul style="list-style-type: none"> <li>• How can you explore the phases of matter?</li> <li>• How does matter change phases?</li> </ul>	

### Big Ideas – Elaborations

- How does heating and cooling affect phase changes?

#### Energy can be transformed.

- What is energy input and energy output?
- What is energy conservation?
- What is the relationship between energy input, output, and conservation?

#### The motions of Earth and the moon cause observable patterns that affect living and non-living systems.

- How do seasons and tides affect living and non-living things?
- What changes are caused by the movements of Earth and the moon?

### Curricular Competencies – Elaborations

- **Questioning and predicting:** Order is a pattern that can be recognized as having levels—big to small, simple to complex—or as a process with a sequence of steps.

#### Key questions about order:

- How is order apparent in the adaptations of forest animals in BC?
- How does the order of seasons impact local plants and animals?

- **place:** Place is any environment, locality, or context with which people interact to learn, create memory, reflect on history, connect with culture, and establish identity. The connection between people and place is foundational to First Peoples perspectives of the world.

#### Key questions about place:

- How does what you know about place affect your observations, questions, and predictions?
- How does understanding place help you analyze information and recognize connections and relationships in your local environment?
- How does place connect with stewardship?
- How can you be a steward in your local environment?

### Content – Elaborations

- **humans:** e.g., the five senses
- **other animals:** e.g., echolocation, UV sensors, magnetoreception, infrared sensing, etc.
- **plants:** e.g., response to light, touch, water, gravity, etc.
- **biomes:** biomes are regions grouped by similar temperature and precipitation (e.g., climate: long-term weather patterns)
  - terrestrial biomes

**BIG IDEAS**

Multicellular organisms have organ systems that enable them to survive and interact within their environment.

Solutions are homogeneous.

Machines are devices that transfer force and energy.

Earth materials change as they move through the rock cycle and can be used as natural resources.

**Learning Standards**

Curricular Competencies	Content
<p><i>Students are expected to be able to do the following:</i></p> <p><b>Questioning and predicting</b></p> <ul style="list-style-type: none"> <li>• Demonstrate a sustained curiosity about a scientific topic or problem of personal interest</li> <li>• Make observations in familiar or unfamiliar contexts</li> <li>• Identify questions to answer or problems to solve through scientific inquiry</li> <li>• Make predictions about the findings of their inquiry</li> </ul> <p><b>Planning and conducting</b></p> <ul style="list-style-type: none"> <li>• With support, plan appropriate investigations to answer their questions or solve problems they have identified</li> <li>• Decide which variable should be changed and measured for a fair test</li> <li>• Choose appropriate data to collect to answer their questions</li> <li>• Observe, measure, and record data, using appropriate tools, including digital technologies</li> <li>• Use equipment and materials safely, identifying potential risks</li> </ul> <p><b>Processing and analyzing data and information</b></p> <ul style="list-style-type: none"> <li>• Experience and interpret the local environment</li> <li>• <b>Identify First Peoples perspectives and knowledge as sources of information</b></li> <li>• Construct and use a variety of methods, including tables, graphs, and digital technologies, as appropriate, to represent patterns or relationships in data</li> <li>• Identify patterns and connections in data</li> <li>• Compare data with predictions and develop explanations for results</li> <li>• Demonstrate an openness to new ideas and consideration of alternatives</li> </ul>	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> <li>• basic structures and functions of body systems:             <ul style="list-style-type: none"> <li>– <b>digestive</b></li> <li>– <b>musculo-skeletal</b></li> <li>– <b>respiratory</b></li> <li>– <b>circulatory</b></li> </ul> </li> <li>• <b>solutions and solubility</b></li> <li>• properties of <b>simple machines</b> and their <b>force effects</b></li> <li>• machines:             <ul style="list-style-type: none"> <li>– <b>constructed</b></li> <li>– <b>found in nature</b></li> </ul> </li> <li>• <b>power</b> – the rate at which energy is transferred</li> <li>• the rock cycle</li> <li>• local types of <b>earth materials</b></li> <li>• <b>First Peoples concepts of interconnectedness in the environment</b></li> <li>• the nature of sustainable practices around BC's resources</li> <li>• First Peoples knowledge of sustainable practices</li> </ul>



**Learning Standards (continued)**

Curricular Competencies	Content
<p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Evaluate whether their investigations were fair tests</li> <li>• Identify possible sources of error</li> <li>• Suggest improvements to their investigation methods</li> <li>• Identify some of the assumptions in <b>secondary sources</b></li> <li>• Demonstrate an understanding and appreciation of evidence</li> <li>• Identify some of the social, ethical, and environmental implications of the findings from their own and others' investigations</li> </ul> <p><b>Applying and innovating</b></p> <ul style="list-style-type: none"> <li>• Contribute to care for self, others, and community through personal or collaborative approaches</li> <li>• Co-operatively design projects</li> <li>• Transfer and apply learning to new situations</li> <li>• Generate and introduce new or refined ideas when problem solving</li> </ul> <p><b>Communicating</b></p> <ul style="list-style-type: none"> <li>• Communicate ideas, explanations, and processes in a variety of ways</li> <li>• <b>Express and reflect on personal, shared, or others' experiences of place</b></li> </ul>	

**Big Ideas – Elaborations**

*Sample questions to support inquiry with students:*

**Multicellular organisms have organ systems that enable them to survive and interact within their environment.**

- How do organ systems interact with one another?
- How do organ systems interact with their environment to meet basic needs?

**Solutions are homogeneous.**

- How are solutions homogeneous?
- What are their uses?

**Machines are devices that transfer force and energy.**

- How do machines (natural and human-made) transfer force and energy?
- What natural machines can you identify in your local environment?

**Earth materials change as they move through the rock cycle and can be used as natural resources.**

- How do we interact with water, rocks, minerals, soils, and plants?
- How can Earth be considered a closed material system?
- **How can we act as stewards of our environment?**

**Curricular Competencies – Elaborations**

- **Questioning and predicting:** A system is a set of interacting or interdependent pieces or components that come together to form a whole. A system occupies a physical or a temporal space within a set environment, has a representative form, and possesses a purpose or function.

*Key questions about systems:*

- How do the systems of the human body work together?
- How can you observe the concept of interconnectedness within ecosystems in your local area?

- **secondary sources:** secondary sources of evidence could include anthropological and contemporary accounts of First Peoples of BC, news media, archives, journals, etc.

- **place:** Place is any environment, locality, or context with which people interact to learn, create memory, reflect on history, connect with culture, and establish identity. The connection between people and place is foundational to First Peoples perspectives of the world.

*Key questions about place:*

- How does place influence your ability to plan and conduct an inquiry?
- How does your understanding of place affect the ways in which you collect evidence and evaluate it?
- How do the place-based experiences and stories of others affect the ways in which you communicate your findings and other information?
- Ways of knowing refers to the various beliefs about the nature of knowledge that people have; they can include, but are not limited to, Aboriginal, gender-related, subject/discipline specific, cultural, embodied and intuitive beliefs about knowledge. What are the connections between ways of knowing and place?

## Content – Elaborations

- **digestive:** mouth, stomach, intestines, etc.
- **musculo-skeletal:** muscles and skeleton
- **respiratory:** trachea, lungs and diaphragm
- **circulatory:** heart, blood, blood vessels
- **solutions and solubility:**
  - solutions (e.g., apple juice, coffee) that can be separated through distillation, evaporation, and crystallization
  - solubility of solids, liquids, and gases (e.g., salt [solid], honey [liquid], carbon dioxide [gas in water makes pop])
  - properties of solutions: concentration, pH, etc.
  - dissolving: process of forming a solution
- **simple machines:** levers, wedge, inclined plane, wheel and axle, pulley, and screw
- **force effects:** force effects include changing direction and multiplying force
- **constructed:** combinations of simple machines form complex machines
- **found in nature:** the lever is the basis of nearly every aspect of the musculoskeletal system
- **power:** examples include students racing up a hill, machine power ratings, motors
- **earth materials:** include mineral, rock, clay, boulder, gravel, sand, soil
- **interconnectedness:** everything in the environment is one/connected (e.g., sun, sky, plants and animals) and we have a responsibility to care for them

## ***Why Place-based Learning? What is the purpose?***

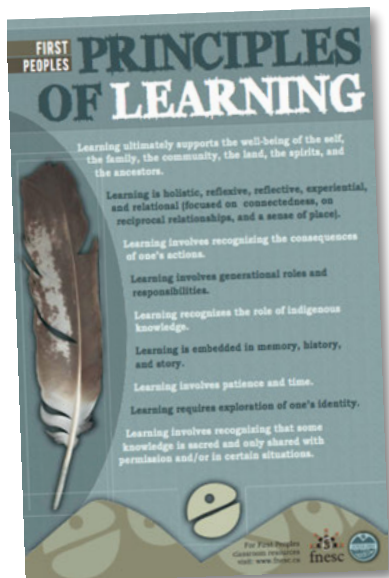
*The intent of place-based learning is to uncover the story of a place and experience it in different ways. Students take part in purposeful and repeated experiences that encourage different ways of knowing a natural place. We broaden our perspectives of a place by looking through different lenses (e.g., artistic, scientific, cultural, historical, and experiential lenses).*

*When we visit each place as a class we are building memories together. Each memory serves as a hook to hang new memories on. The more memories we have, the greater connection we have with that place. Calling a place home impacts our desire to care for and preserve it.*



***When students develop a sense of being home in nature, and understanding that places are inherently meaningful rather than viewing them as empty spaces, this may impact students' desire to take care of our earth.*** *Experiencing places through different ways of knowing not only creates quality learning experiences for our students, but also contributes to their overall well-being, sense of self, and identity formation. Our hope is that a focus on culture in connection with place will positively contribute to students understanding of who they are.*

### **First Peoples Principles of Learning connect to Place-based Learning:**



- *Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors*
- *Learning is holistic, reflective, experiential, and relationship (focused on connectedness, on reciprocal relationships, and a sense of place)*
- *Learning recognizes the consequences of one's actions*
- *Learning recognizes the role of Indigenous knowledge*
- *Learning is embedded in memory, history, and story*
- *Learning requires exploration of one's identity*

First Nations Education Steering Committee (FNESC). First Peoples Principles of Learning. [www.fnesc.ca](http://www.fnesc.ca) <https://bit.ly/1tiayxa>

## **Driving Questions:**

How does our connection to place, and local Aboriginal ways of knowing impact the way we view the world and create a sense of environmental stewardship?

In what ways are the First Peoples Principles of Learning embedded in this learning?

## **Foundational Priorities in the Redesigned Curriculum:**

- *Develop core competencies that support lifelong learning*
- *Focus on deeper, place-based learning*
- *Integrate the First Peoples Principles of Learning and Aboriginal perspectives and approaches*

## **The Personal and Social Responsibility Core Competency:**

- *Students develop awareness and take responsibility for their social, physical, and natural environments by working independently and collaboratively for the benefit of others, communities, and the environment*
- *Students can analyze complex social or environmental issues*
- *Students can recognize learning is continuous and the concept of self and identity continuously evolves*

## **The K-9 Science curriculum now features a strong focus on...**

- *First Peoples Principles of Learning*
- *Ecology and local places, ecosystems and environment*
- *Ecosystems and interdependence*
- *Sustainability, natural resources and interconnection*
- *Earth, interconnectedness and sustainable systems*
- *Place-based learning*



## Place-based Learning - The Process

### Place-based Learning is...

- *connecting with a specific outdoor place and getting to know it's unique attributes*
- *repeated visits and time spent in a place*
- *viewing places as rich in significance and meaning*
- *honouring Indigenous cultures and learning from the land through multiple ways of knowing, thinking, doing*
- *viewing the land and experiencing it through multiple lenses/frames*
- *uncovering the stories in a place and creating new stories together*
- ***a person-place connection that impacts sense of self, identity, and a desire to become stewards of the land***
- *interdisciplinary, cross-curricular, and develops competencies*

### Key Questions to ask throughout the process:

*What's going on for our learners?*

*How do we know?*

*Why does it matter?*

(Halbert & Kaser, 2013)



A Framework to look to:

**The Spiral of Inquiry** (Halbert & Kaser, 2013).

### Scanning:

**Start by getting to know the students you are working with.**

- *What do you notice when you go outdoors?*
- *How do they interact with the land?*
- *Are they hesitant to go outside or are they happy to be in nature?*
- *Are they using their senses and able to engage in free play in the forest?*
- *How comfortable are they outdoors?*
- *Without asking them explicitly, do they see the interconnectedness of all living things? Do they see how their learning is all connected, at school and outside of school?*
- *Do they share stories about their favourite places?*
- *What is their perspective on being environmentally friendly? Do they take ownership over being stewards of the earth and being eco-friendly?*

### Focusing:

- *Consider your findings from "scanning," and then explore the BC Curriculum and First Peoples Principles of Learning.*
- *Choose a focus (does not have to be a question).*

### **Example Focus Questions:**

- *How do purposeful and repeated experiences that encourage different ways of knowing a natural place deepen person-place connections and contribute to a person's sense of self/identity?*
- *How will these experiences and connections impact students' desire to take care of the earth (environmental stewardship)?*



### **Developing a Hunch:**

- *Think about your own perspective on learning, being outdoors, traditional schooling, and your personal connection to nature and places you have visited repeated times. How does your perspective shape how you interact with your students, and how you plan for learning experiences?*
- *Think deeply about any assumptions you might have made in the past and then check those assumptions for accuracy before moving ahead.*



### **Professional Learning:**

- *Collaborate with your Aboriginal Support Worker and/or Aboriginal Curriculum Support Teachers*
- *Invite Elders to meet you outdoors to learn about the Land, or into the classroom*
- *Read books to learn different wilderness awareness activities*
- *Collaborate with other educators*
- *Find a buddy class to visit and experience places with (often younger buddies help older buddies engage in childhood passions and let go of inhibitions)*
- *Become familiar with the BC curriculum big ideas & competencies connected to "place"*
- *Get a copy of the First Peoples Principles of Learning for your classroom*
- *Read literature around place-based learning*

## **Taking Action:**

### **Step One: Find a special place (or a couple places) to visit regularly**

- *Choose one or two natural places within walking distance of your school that you can visit regularly (e.g., forest on or off school grounds)*
- *If you choose a place that you need transportation to get to, you will just visit that place fewer times (a few times a year instead of every week)*

### **Step Two: Plan when you will visit those places**

- *At least once a week is ideal for developing a connection to a place (e.g. every Thursday afternoon)*
- *Visit those places numerous times throughout the year in order to develop a connection, experience different ways of knowing that place, and see the changes that occur over time*

Note: One-time visits are great for different purposes but not for the purpose of place-based learning. Repeated visits are necessary to develop connections to place.

### **Step Three: Prepare your Students**

- *Make sure students have appropriate outdoor gear*
- *Ask for donations- always have extra jackets and rain gear available*
- *Remind students and email parents the day before*
- *Go over outdoor safety rules (make your own or choose from this list):*
  - *Students stay behind the lead teacher when hiking*
  - *Listen carefully to the teacher and follow instructions*
  - *Always know where your buddy is and stay close by them (never leave the group, we will do a buddy check)*
  - *Watch out for hazards (animals, dangerous objects, rivers, cliffs, harmful plants)*
  - *Stay within boundaries*
  - *Respect nature (don't leave litter, don't pick things unless allowed)*
  - *Gather together quickly (listen for the signal)*
  - *3 whistles means emergency - find teacher right away*
  - *Respect outdoor gear and supplies*



### **Prep students with the learning intention for the first visit:**

For example, *We will visit an outdoor learning site and get to know the area. Students will demonstrate appropriate outdoor learning behaviour, notice their surroundings, and reflect on their experience of this place afterwards.*





**Questions for students to consider:**

- *What did you see? Hear? Touch? Smell?*
- *What did you find interesting?*
- *What do you wonder? What questions do you have about things in that place?...about the place in general?*
- *How has this place changed over time? (for later visit)*
- *What memories do you have here? (for later visit)*

**Step Three: Experience your special place through multiple ways, using different lenses.**

Get to know each place for what it is. Get to know the stories in that place. Develop new stories. Below are just a few examples:

**Historical and cultural Lens:**

- *Ask an Elder or Aboriginal Support worker to tell a traditional story*
- *Learn about the history of the land (Who lived here? How did they live?)*
- *Learn about the culture of the First People who were here*
- *Learn the traditional place names*

**Scientific Lens:**

- *Traditional Ecological Knowledge*
- *Learn the traditional plants used as food and medicine*
- *Learn how to harvest different things in season (cedar, devil's club, stinging nettle, berries, leaves for tea)*
- *Learn about the animals that live in this place*
- *Learn about hunting practices in this area*
- *Contact local environmental groups that do wilderness awareness workshops*



**Math Lens:**

- *Look for obtuse, acute, and right angles in roots, branches, and leaves*
- *Create different polygons using natural materials*
- *Look for examples of the fibonacci sequence in nature*

**Experiential Lens:**

- *Embodied Knowing - using your senses, your body to experience a place (getting back into your body, break from the mind)*
- *Touch - the earth, the plants, the water...*

- *See* - notice the camouflaged frog in the leaves, the bug on the twig, the bird in the tree, the tadpole in the water
- *Hear* - the birds chirping, the river rushing, the twigs breaking
- *Taste* - the salmonberries, the Salal berries, the licorice root
- *Smell* - the mud, the flowers, the salt water, the dying leaves

#### **Artistic Lens:**

- *Create an Andy Goldsworthy inspired art piece using natural found materials*
- *Find a “Sit Spot” and paint/sketch what you see*
- *Write poetry about your special place*



#### **Naturalist/Outdoor Survival Lens:**

- *Build a shelter*
- *Learn how to use a compass*
- *Mapping*

#### **Engage in Childhood Passions:**

- *Play a variety of wilderness awareness games in your special place. Students will naturally connect with the land when they are engaged in play and in a state of flow*
- *Adventuring, discovering, exploring, hiking, seeking, hiding, getting found, asking questions, listening to stories, telling stories, acting out, making music, laughing, whistling, clapping, stomping, shouting, throwing things, blowing bubbles, touching things, catching little critters, seeing animals close up, climbing, swinging, splashing, flying, jumping, racing, chasing, playing tag, pretending, imagining, imitating, acting, performing, show-and telling, dressing-up, painting faces, making-up characters, being animals, eating, tasting, cooking, gathering, smelling, painting, drawing, sculpting, building, decorating, burning, breaking, dissecting, making messes, trapping things, collecting, helping, carrying things, helping each other, surprising, giving and receiving, shocking, sneaking, hiding, hunting, shooting, carving, making tools, constructing shelters, making dams, building tree houses, playing forts, whispering, joking, tricking, seeking treasure, detecting clues, pursuing mysteries, making dares, taking challenges, seeking adventure (Coyote’s Guide to Connecting with Nature, Young, Hass & McGown, 2010, p. 83).*

**NOTE:** As the lead teacher, be on the lookout for interesting/cool things. Notice your surroundings while keeping track of students and making sure everyone is safe/present. Point out things you notice, comment on the changes that you see. Encourage students to look closely and to ask questions. They will amaze you with their discoveries.

#### **Step Four: Reflect on your Experiences (students and teachers)**

- *Use correct Circle protocol to share (e.g., talking piece moves in appropriate direction, acknowledge the territory, only person with talking piece speaks)*
- *Choose one good spot to have your circle every time you visit your special place. This routine eliminates uncertainty and helps students who thrive off of routine*
- *Have circle each morning at school*
- *Do a “Check-in” to see how students are feeling (physically and emotionally)*
- *Discuss what your special-place visit will look like, expectations, learning intentions*
- *Use a variety of methods for reflection other than circle:*



*Journal entries*

*Art - sketch/paint your special place, create a sculpture, write a song*

*Print photos of students on the field study - students write about their experience*

#### **Step Five: Connect the Learning**

- *Learning back in the regular classroom can be connected to experiences in your special outdoor place. For example, you see a beaver dam and notice how each visit it looks different. Back at school you study beavers and base the learning on questions that the students have generated. Your Aboriginal Support worker tells the students a Beaver story and about what the beaver represents. Students write a fictional story about a beaver that shows specific character traits and teaches a moral lesson....etc.*
- *Make sure students see the connection between their learning experiences outdoors, back in the classroom, and in their daily lives outside of school.*



#### **Step Six: Embrace the uncertainty**

Let go of over-planning. You cannot plan for what will happen naturally on these visits. Nature is full of surprises and endless opportunities for learning. You will be surprised at the meaningful learning that occurs and the positive impact this learning has on your students, including their overall sense of self and wellbeing.

## Learning is Holistic



**Question Focus:** Project the image “Separate Subjects ≠ Learning in Finland Schools” and invite students to ask questions.

**Driving Questions:** Where does learning take place? How does what you are learning at school connect across subjects AND to your learning beyond school? What are you curious about?

**Learning Targets:** Students can reflect on and share their thoughts about learning experiences, sharing examples of what they are learning in and out of school, and considering how learning is holistic; connected.

**Establishing a need to Know:** with the lens “notice/think/wonder” invite students to consider the question, “Where does learning take place?” and share the video clip *Learn*. (1:14) <https://www.youtube.com/watch?v=Nkqsd4ITJjY>

Invite students to share a notice, a think and/or a wonder in response to the video clip.



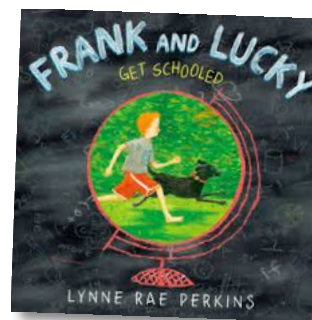
**Co-constructing ideas:** Where does learning take place?

Invite students to consider the activities they participate in both in and out of school and how / what they learn. “Think of everyday experiences - the learning that happens for you in school AND the learning that happens for you outside of school and write down your ideas...”

Invite students to jot down their ideas on post-it notes and post them on the two column chart:

<i>What I'm learning in school:</i>	<i>What I'm learning outside of school:</i>

**Whole group shared read:** Share select pages of the book *Frank and Lucky Get Schooled*. (It's a lengthy book with lots of detail...lots to explore and consider...Frank and Lucky Get Schooled shares countless examples of learning outside of school (while using the framework of the traditional school structures to frame examples).



This book can be used as part of a discussion of how learning happens inside and outside of school. Invite students to consider the structures, materials, and activities that shape their learning experiences both in school and outside of school.

**Digging deeper:** What are you curious about learning?

Invite students to consider and jot down the topics that they are most curious about both in school and beyond school on post-it notes.

After students have an opportunity to consider and jot down the topics they are curious about on post-it notes, invite them to consider how they could learn more about each topic. (We may want to have begin discussion about the process of learning and different vehicles for learning, such as: first hand exploration, research and reading, talking with experts, etc.)

<i>What I'm curious about learning:</i>	<i>How I can learn more about these topics:</i>



*Learning in Finland Schools*



*Separate Subjects*

## *Exploring Interconnectedness*

**Driving Questions:** How are we connected to the land here? What is a special place you return to?

**Learning Targets:** Expressing and reflecting on personal or shared experiences of place. Students explore and consider the Courtenay River Estuary as a special place.

**Connecting:** Invite students reflect on and illustrate a special place they have visited repeatedly; a place they feel connected to here in the Comox Valley. Invite students to consider what stands out about this special place, the unique/indelible characteristics, and what their 5 senses 'experience' in this special place.

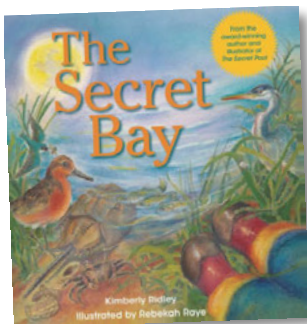


**Building from Clues:** A special place in the Comox Valley - the Courtenay River Estuary. Invite students, working in teams, to look carefully at this photograph, to make connections and ask their own questions. Project the remaining 3 photographs as a way to zoom in on this special place.

**Digging Deeper:** Invite students to consider the questions, “What did you see? What did you hear? What do you wonder? What questions do you have about things in this place” and share the video clip *The Courtenay River Estuary*. (4:15) <https://www.youtube.com/watch?v=G2-wspfe0ZE>

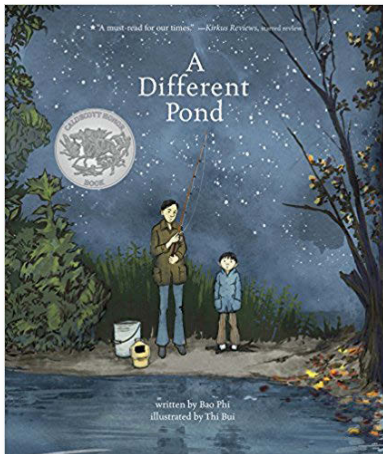


Pause the clip intermittently (0:56, 1:30, 2:31, 3:20) to allow time for students to jot down their ideas on post-it notes in words/pictures. Invite students to share their thinking in response to the video clip.



**Whole group shared read:** Share select pages from the book *The Secret Bay* by Kimberley Ridley (It's a lengthy book with lots of detail.... lots to explore and consider...

## Books to Explore



### A Different Pond

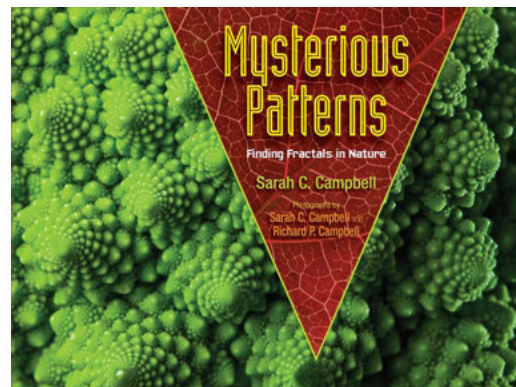
Written by Bao Phi Illustrated by Thi Bui

*As a young boy, Bao Phi awoke early, hours before his father's long workday began, to fish on the shores of a small pond in Minneapolis. Unlike many other anglers, Bao and his father fished for food, not recreation. Between hope-filled casts, Bao's father told him **about a different pond in their homeland of Vietnam.***

### Mysterious Patterns: Finding fractals in nature

By Sarah C. Campbell

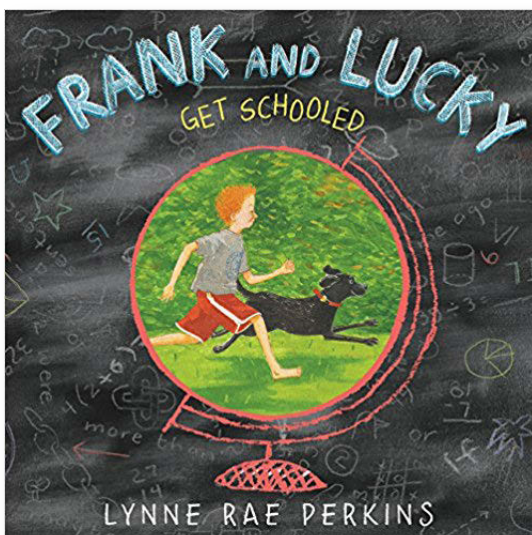
*Nature's repeating patterns, better known as fractals, are beautiful, universal, and explain much about how things grow. Fractals can also be quantified mathematically. Here is an elegant introduction to fractals through examples that can be seen in parks, rivers, and our very own backyards. Leads to heading outside and place-based exploration with a camera or sketch pad. **Seeing nature in our place.***



### Frank and Lucky Get Schooled

By Lynne Rae Perkins

*On a rainy day, Frank's parents take him to the shelter to get a new dog. That's how Frank finds Lucky, and from that moment on, they're inseparable. As Frank and Lucky venture out into the world around them, they discover they both have a lot to learn. **Exploring their neighborhood** teaches them about biology: Lucky learns all about squirrels, deer, and—unfortunately for Frank—skunks. Sharing a bed teaches them about fractions—what happens when one dog takes up three-quarters of the bed, or even the whole thing? They even learn different languages: Frank makes a friend who speaks Spanish and Lucky tries to learn Duck!*

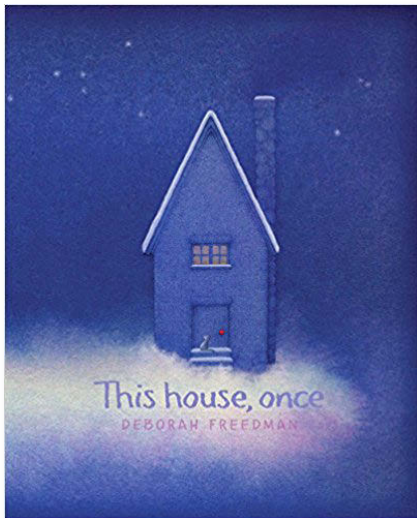
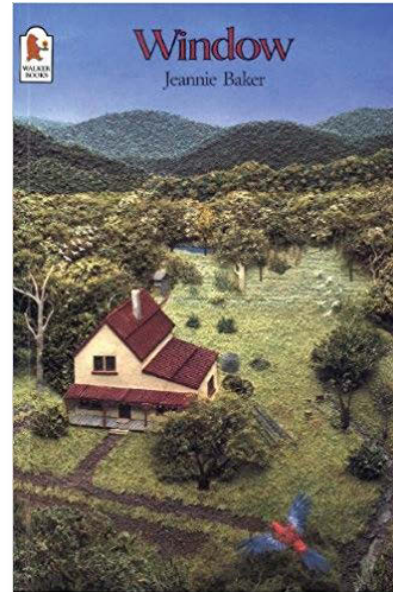




## Window

By Jennie Baker

*Window is a simple book with deep resonances. (While it has no text, it does not lack words; what words there are, are incorporated into the visual images; some of the scenes are 'immersed' in print.) The central image is a window. Each of the thirteen double-page spreads shows the window frame and the view outside the window – the reader is always standing inside, looking out.*



## This house, once

By Deborah Freedman

*Before there was this house there were stones and mud and a colossal oak tree – three hugs around and as high as the blue.*

*What was your home, once?*

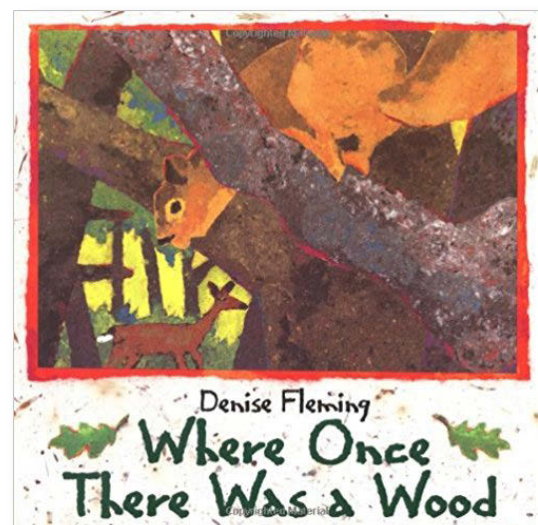
## Where Once There was a Wood

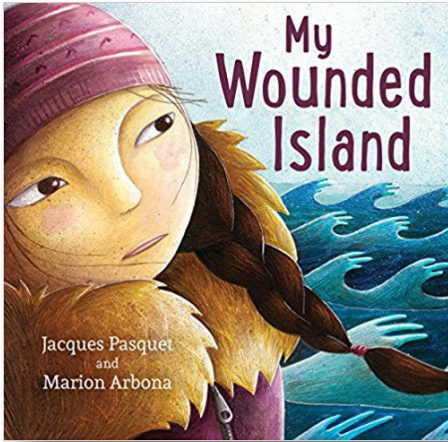
By Denise Fleming

*A powerful poem and stunning, handmade-paper art encourage children to protect nature.*

*"Where once there was a wood,  
A meadow and a creek . . ."*

*Inspired by events in her own backyard, award-winning author and illustrator Denise Fleming creates a poignant yet hopeful portrait of our disappearing natural environment. The last pages of the book teach children how to make a more "creature friendly" backyard, including information about what types of food, trees and flowers attract different kinds of animals.*





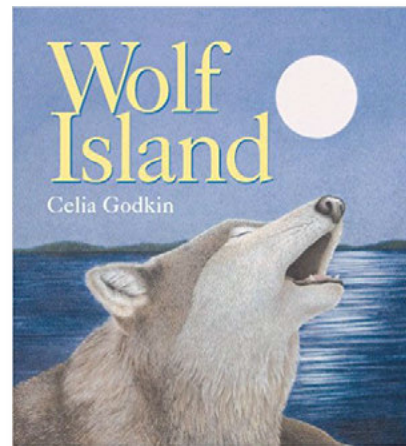
## **My Wounded Island**

By Jacques Pasquet and Marion Arbona

*There's an invisible creature in the waves around Sarichef. It is altering the lives of the Iñupiat people who call the island home. A young girl and her family are forced to move to the center of the island for refuge from the rising sea level. Soon the entire village will have to relocate to the mainland. Heartbroken, the young girl and her grandfather worry: what else will be lost when they are forced to abandon their homes and their community?*

## **Wolf Island By Celia Godkin**

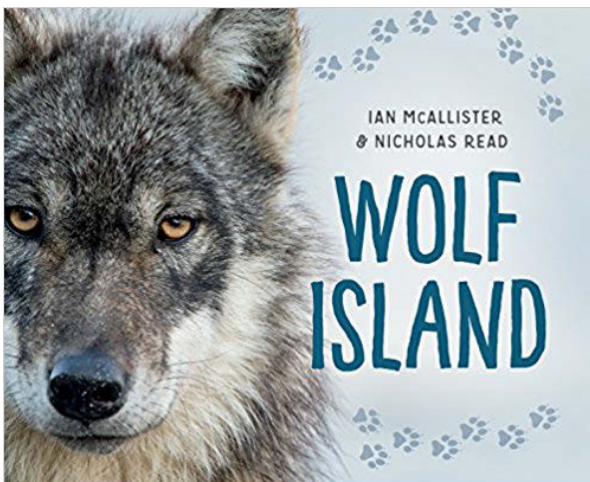
*Set on an island in Northern Ontario, the Wolf Island story based on an actual event, is a moving chronicle of what happens when the highest link in a food chain is removed. Although, at first, their absence is unnoticed, nature's delicately balanced ecosystem comes undone over a period of months, and the mice, rabbits, squirrels, and even owls fight for survival. Finally, the accidental return of the wolf family to their home restores the island habitat to health.*



## **Wolf Island**

By Ian McAllister & Nicholas Read

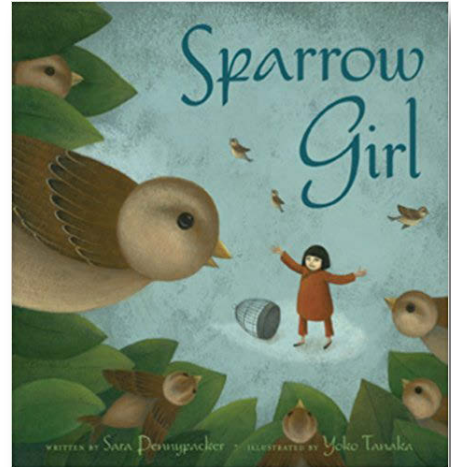
*The Great Bear Rainforest is a majestic place full of tall trees, huge bears and endless schools of salmon. Award-winning photographer and author Ian McAllister's luminous photographs illustrate the story of a lone wolf who swims to one of the small islands that dot the rainforest's coast. The island provides him with everything he needs—deer, salmon, fresh water—everything, that is, but a mate. When a female wolf arrives on the island's rocky shores, she and he start a family and introduce their pups to the island's bounty.*



## Sparrow Girl

By Sara Pennypacker

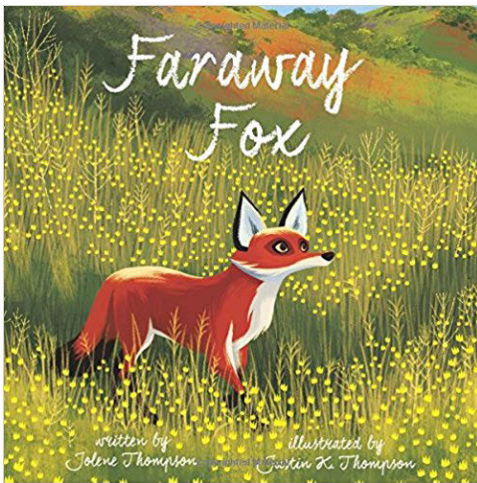
*Ming-Li looked up and tried to imagine the sky silent, empty of birds. It was a terrible thought. Her country's leader had called sparrows the enemy of the farmers--they were eating too much grain, he said. He announced a great "Sparrow War" to banish them from China, but Ming-Li did not want to chase the birds away. Quietly, she vowed to save as many sparrow as she could, one by one....*



## Pax

By Sara Pennypacker

*A beautifully wrought, utterly compelling novel about the powerful relationship between a boy and his fox.*



## Faraway Fox

By Jolene and Justin Thompson

*As Fox wanders through a strange landscape, he cannot help but be reminded-at every corner-of the streams, the trees, and the family he once knew. Fox would like nothing more than to return to his home, but it seems the cityscape has built up around him. Follow Fox as he looks for a way back home to the wild green land where every fox belongs. Back matter shows readers the creative ways humans are helping to mitigate habitat encroachment in our towns and cities.*

## Creeking: A true story

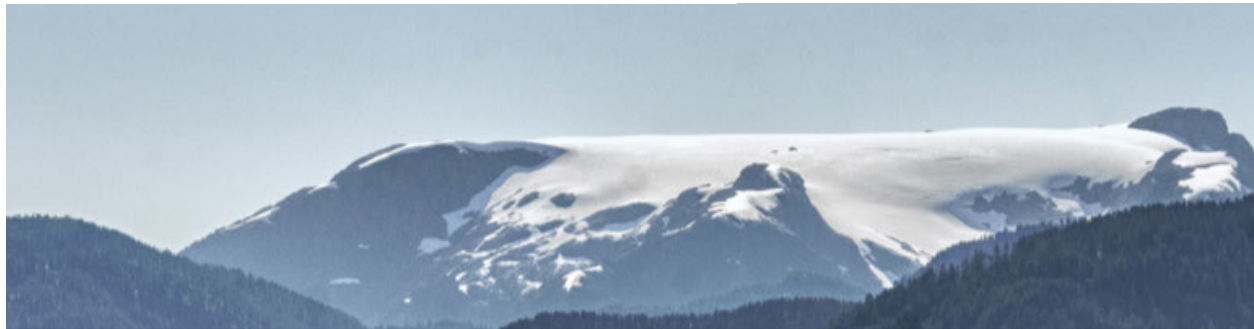
By Jacqueline Briggs Martin

*Once upon a time a creek burbled up and tumbled across a prairie valley. It was filled with insects and brook trout that ate them, frogs that chirruped and birds watching for bugs and fish. This is a true story about a man named Mike who went looking for that creek long after it was buried under fields of corn. It is the story of how a creek can be brought back to life, and with it a whole world of nature.*





This website offers an incredible collection of field trip ideas and contact information, classroom lesson plans, resources, activities, video links and community connections for exploring local place-based learning.



## GLACIER TO ESTUARY

### KEEPING IT LIVING WITH STUDENTS IN THE COMOX VALLEY

Supplemental education materials including field trips, lessons, maps and other resources. This information including the course overview and the grades recommended are just a suggestion. Please feel free to tailor these lessons and activities to your class. Also we appreciate any feedback you have - whether it be changes to what is here or additions to it. If you do use some on these resources please fill out the [EVALUATION FORM](#).

Upper Watershed

Middle Watershed

Lower Watershed

<https://projectwatershed.ca/glacier-to-estuary/#lower>

#### Funders

The Comox Valley Project Watershed Society's Seniors Keeping it Living with Students in the Comox Valley project is being funded in part by the Government of Canada's New Horizons for Seniors Program.



#### For more information, contact:

[projectwatershed@gmail.com](mailto:projectwatershed@gmail.com), 250-703-2871

*What Math can be found at the Courtenay River Estuary?*

Check out the photo gallery at

[https://  
cvns.smugmug.com/  
NatureViewingGuide/  
Comox-River-Estuary-  
and/i-QjZjzhL](https://cvns.smugmug.com/NatureViewingGuide/Comox-River-Estuary-and/i-QjZjzhL)



**Set a purpose for viewing** ~ students are invited to notice, think and wonder.

After viewing the each photograph, use the following prompts to frame a whole-group conversation:

What did you **notice**? ~ Paying close attention to the evidence in the clip and communicating exactly what you saw.

What do you **think**? ~ Inferring and connecting. Sharing connections, background knowledge, and ideas based on the evidence in the photograph (evidence + my thinking = inference).

What do you **wonder**? ~ Asking questions. After closely examining the evidence in the photograph, what are you wondering? What questions do you have?



*What Math can be found at the Courtenay River Estuary?*

The **Courtenay River Estuary & Courtenay Riverway Airpark** is a special and unique area featuring an estuary, lagoon, tidal flats and a salt marsh. Low tide exposes an extensive tidal flat encompassing the entire estuary. The area provides habitat for 145 bird species (more than 70,000 birds, including Trumpeter swans), 218 plant species, 29 fish species (including all five species of pacific salmon) and innumerable species of intertidal animals (clams, worms, bacteria, viruses, etc.).

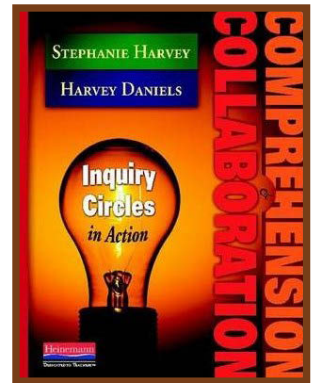


Eagles, herons and various water birds can be seen year-round and seals regularly travel and fish for salmon in the river. Shooting stars and marsh hollyhock also grow in the marsh. **Simms Park, Lewis Park** and the lower Puntledge trail provide scenic riverside walks just steps from downtown Courtenay. South of the Old Island Highway just before the Fifth Street Bridge, Simms Park borders the Courtenay River and Slough.

<https://comoxvalleynaturalist.bc.ca/nature-viewing-guide/1-courtenay-rivercomox-bay-area/courtenay-river-estuary-riverway-and-airpark/>

## ‘What learners can do during inquiry time’

*pg. 286*



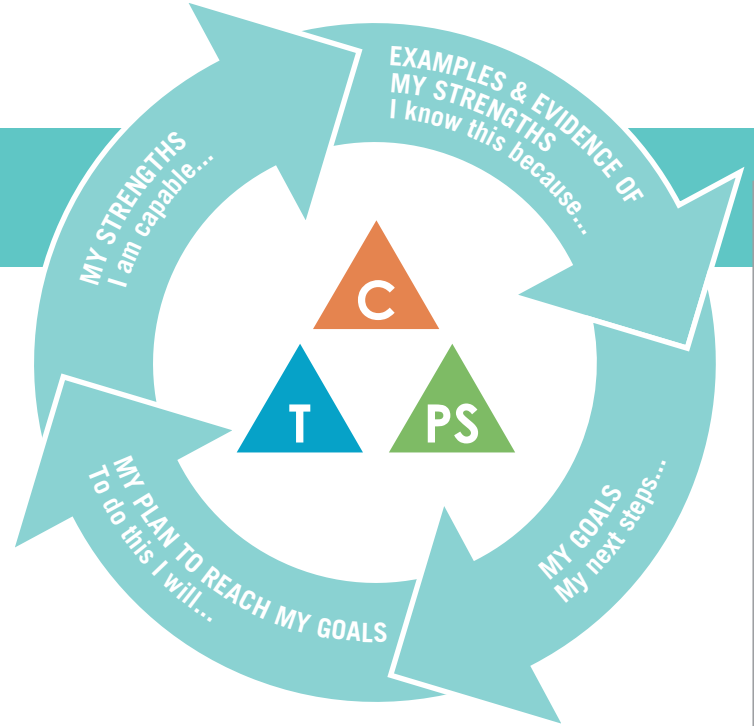
- ◆ **Read to themselves** ~ nothing correlates more highly with reading achievement than reading volume. Reading provides the most direct route to finding information and answering questions. So just plain, independent reading is one of the most important things kids can do during inquiry circle time.
- ◆ **Read to each other** ~ reading together with an inquiry circle partner or the entire inquiry circle can spur conversation and lead kids to discoveries they might not make when reading alone.
- ◆ **Conduct research online** ~ choosing sources which are accurate and authoritative. Is the source up to date? Consider EBSCO and other Destiny based links.
- ◆ **Respond in writing and/or drawing** ~ jotting and drawing thinking is especially useful when reading to find information and answer questions. Keeping track of thoughts and questions helps students clarify their understanding and synthesize information. Students are encouraged to write and/or draw about their research, whether in books, online, watching a video, or scrutinizing an artifact .
- ◆ **Respond by talking** ~ talking with groups or partners goes a long way toward learning and understanding. Explicitly set and co-construct criteria for ‘quiet conversation’.
- ◆ **Develop interview questions and conduct practice interviews**~ students come up with some interview questions and practice interviewing with an inquiry partner.
- ◆ **Contact specialists and experts** ~ Students work with partners to come up with a list of people they might want to contact to get more information.
- ◆ **Maintain a research notebook** ~ We remind students to sort through their written and drawn responses and write up important findings in their notebooks so they don’t lose track of them Often these discoveries lead to more questions.
- ◆ **Plan to actively use knowledge and take action** ~ Students can discuss how they plan to actively use the knowledge which they have acquired. They might decide to simply share it with the class or they may be moved to take a more public advocacy position. They can talk with each other and then make a collaborative plan.

# CORE COMPETENCIES SELF-ASSESSMENT

Name: \_\_\_\_\_

Date: \_\_\_\_\_

I can reflect on my learning and describe or draw how I have demonstrated or developed my competencies.



*Self-assessment can take many forms and may focus on one, a few, or all of the core competencies.*