

6.3 Have You Met My Cousin?

Story Extension for This Lesson:

This lesson is used in “The Third Voyage: 1850 to 1853” section of the junior story. In this passage, Rae shares in his journal how dogs are used to help him and his team travel from Great Bear Lake to Wollaston Land. It is important to note that their distant cousin, the arctic fox, do inhabit areas of the arctic and how their influence has shaped local ecosystem.

Grade: 6

Strand: Biodiversity

Big Ideas:

- Biodiversity includes diversity of individuals, species, and ecosystems. (Overall expectations 2 and 3)
- Classification of the components within a diverse system is a beginning point for understanding the interrelationships among the components. (Overall expectations 2 and 3)

Overall Expectations:

2. investigate the characteristics of living things, and classify diverse organisms according to specific characteristics;
3. demonstrate an understanding of biodiversity, its contributions to the stability of natural systems, and its benefits to humans.

Specific Expectations:

2.4 use appropriate science and technology vocabulary in oral and written communication
3.2 demonstrate an understanding of biodiversity as the variety of life on earth, including variety within each species of plant and animal, among species of plants and animals in communities, and among communities and the physical landscapes that support them
3.3 describe ways in which biodiversity within species is important for maintaining the resilience of those species
3.5 describe interrelationships within species, between species and between species and their environment, and explain how these interrelationships sustain biodiversity

Inquiry Skills:

Observing, Inferring, Comparing, Contrasting

Instructions:

Introduce the photo of the arctic fox (refer to Picture of Arctic Fox) and ask students to make observations and list questions about what they see. Be sure not to judge their observations. Look out for students who make assumptions rather than observations.

Open-Ended Inquiry Question:

- What caused the arctic fox to be coloured this way?

Part 1:

Tell students the difference between an observation and an inference. An observation is made based on what you hear, see, taste, feel, and smell whereas an inference uses known data to "guess" what has happened.

This will be an appropriate time to introduce how the arctic fox and the wolf are part of the canine family. The interesting point about these two animals is their influence on other living animals and plants in local ecosystems. Discuss and investigate how the arctic fox benefits the arctic ecosystem.

Connections:

This activity can be used in the Arts curriculum. In Visual Arts, students are required to interpret and comment how the photographer used the elements of design to frame his picture.

Subject Area:

Environmental, Art

Connects to:

Grade 6

Assessment Strategy:

It is recommended that you focus your assessment on process skills. To help get you started on this path, a series of charts have been provided for you. Information provided in the charts are from Smarter Science: Introducing the Framework. For more information about Smarter Science, go to www.smarterscience.ca.

- Process-Skill-Observing-8
- Process-Skill-Infering-13
- Process-Skill-Comparing-17
- Process-Skill-Contrasting-15

Handouts/Assessments:

- Picture of Arctic Fox



“Picture of Arctic Fox”

Photo taken by Mr. Per Harald Olsen
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Process Skill - Observing

Process Skill	Students	Teachers	What This Skill Should Lead To
Observing	☐ using all five senses, as appropriate, to thoroughly understand an object's natural state ☐ detecting details in natural phenomena that go beyond that of the casual observer ☐ building understanding by connecting to past experiences	☐ prompting students to use all five senses ☐ encouraging students to use expansive, descriptive vocabulary, including scientific terms ☐ encouraging students to make connections to past experiences (e.g., what does this remind you of?) ☐ providing multiple opportunities to practise ☐ giving students problems that require them to decide what evidence (observations) are relevant, and to interpret the evidence	Systematic observation develops an enhanced descriptive vocabulary that becomes important as students practise other science skills, such as writing and reviewing. As students become better observers, they will become better able to detect patterns, classify information, predict events, and make inferences. Math skills will also improve, and students will have opportunities to integrate skills from the arts, including visual art, drama, and dance. Finally, observing leads to discussions of the role of bias when observations are interpreted by different observers.

Teacher Notes:

Process Skill - Inferring

Process Skill	Students	Teachers	What This Skill Should Lead To
Inferring	☐ deducing information from incomplete evidence using reasoning or logic. The information does not need to be factual or correct. (For example, “The grass is wet in the morning, so I infer that it rained overnight.” This is a valid inference, but not necessarily a correct one— the wet grass could be from morning dew or a sprinkler system.) ☐ clarifying observations as evidence ☐ making a connection between what is known and what is unknown ☐ creating a tentative understanding of the situation without knowing or being given the “answer”	☐ guiding students to make logical connections from available evidence ☐ encouraging students to consider alternative inferences ☐ scaffolded and deliberate ☐ using a modified K-W-L chart to show the process of making an inference: replace “What I know,” “What I want to learn,” and “What I learned” with “What I know,” “What I observed,” and “What I infer”	☐ improved observation and deduction skills ☐ the ability to identify and analyze available evidence ☐ improved literacy skills as inferencing skills are applied to make meaning of written texts

Teacher Notes:

Process Skill - Comparing

Process Skill	Students	Teachers	What This Skill Should Lead To
Comparing	☐ carefully examining two or more samples (objects, events, behaviours, or data) ☐ utilizing all five senses, as appropriate, to find similarities ☐ paying attention to finer details ☐ may involve graphic organizers to sort ideas ☐ may be influenced by prior knowledge, schema, or cultural perspective	☐ done by students, though you may need to provide prompts depending on their ages and abilities ☐ personal and individual to each student (consider previous experiences and cultural perspectives) ☐ differentiated for each student	Students will become better able to find patterns and commonalities, and thus become better and more keen observers of the natural world.

Teacher Notes:

Process Skill - Contrasting

Process Skill	Students	Teachers	What This Skill Should Lead To
Contrasting	☐ carefully examining and determining differences between two or more samples (objects, events, behaviours, or data) ☐ sorting samples in multiple ways ☐ using graphic organizers (e.g., T-chart, Venn diagram, fishbone diagram) with headings to help sort or using the Frayer Model (focusing on differences) to help organize thinking and improve understanding of scientific content and concepts ☐ using differences in data to analyze and interpret results	☐ giving students many opportunities to distinguish samples based on their differences ☐ using instructional strategies (e.g., gallery walk) so students can share their contrasting with other students ☐ allowing students to select samples and data that they can contrast. It is best if these come from student-directed inquiries ☐ differentiated for every student	Students will become better able to find subtle differences in samples and thus become better at making quality observations. They will also generate better conclusions based on differences found in their inquiries. Through contrasting, students will learn useful descriptive vocabulary as well as develop higher-order thinking skills, such as the use of similes and metaphors, to communicate their understanding.

Teacher Notes: