

6.1 There is No Place Like the Canadian Arctic

Story Extension for This Lesson:

This is a lesson where students are required to gather data by researching the animals that live in the arctic. The text passage that links this lesson is found at the beginning of the junior story. Here is the direct passage:

"So he was a doctor, an explorer, a master snowshoer and he knew how to live off the land like Survivorman?" Sam asks excitedly.

"Pretty much!" the teacher says. "But he wasn't perfect. They didn't know a lot about plants, animals, and ecosystems like we do now. I'll tell you about his first attempt to discover the fate of Franklin's expedition."

Grade: 6

Strand: Biodiversity

Big Ideas:

- Classification of the components within a diverse system is a beginning point for understanding the interrelationships among the components. (Overall expectations 2 and 3)
- Because all living things are connected, maintaining diversity is critical to the health of the planet. (Overall expectations 1 and 3)

Overall Expectations:

1. assess human impacts on biodiversity, and identify ways of preserving biodiversity
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:

- 2.2 investigate the organisms found in a specific habitat and classify them according to a classification system
- 2.3 use scientific inquiry/research skills to compare the characteristics of organisms within the plant or animal kingdoms
- 3.1 identify and describe the distinguishing characteristics of different groups of plants and animals, and use these characteristics to further classify various kinds of plants and animals

Inquiry Skills:

Searching, Gathering Data, Comparing, Contrasting

Instructions:

This purpose of this activity is to research and identify living things in the Canadian Arctic. Refer to The Five Kingdoms, Invertebrates, and Vertebrates. It is important students know what lives in the Canadian arctic before helping Alex and Sam plan for their trip to recreate Rae's arctic adventure.

It is recommended students work in small groups while completing their research. Chart paper can be used to lieu of backline masters for data collection as there may not be enough space for students to record their data. All backline masters provided are examples of how to organize data.

Materials List:

Suggested Resources:

- books from the library about the arctic
- Canadian Geographic
www.canadiangeographic.com
- National Geographic
www.nationalgeographic.com
- Word Wildlife Fund www.panda.org
- Kids Do Ecology kids.nceas.ucsb.edu/biomes/tundra/html

Assessment Strategy:

It is recommended you focus your assessment on process skills. To help get you started on this path, a series of charts have been provided for you.

- Process-Skill-Gathering-Data-7
- Process-Skill-Comparing-16
- Process-Skill-Contrasting-14
- Process-Skill-Searching-3

Connections:

This lesson requires literacy skills. It is important time is given for students to read, comprehend, and sort information they will need for this program.

Subject Area:

English

Connects to:

Grade 6

Handouts:

- The Five Kingdoms
- Invertebrates
- Vertebrates

Name: _____

The Five Kingdoms

Complete the chart listing living things that are found in the Canadian Arctic.

Monera	Protists	Fungi	Plant	Animal
Moneras are one celled lifeforms (e.g., bacteria)	Protists are one celled life forms that are both plant and animals (e.g., amoebas)	Fungi cannot make their own food. They break down materials as food (e.g., mushrooms)	Plants produce their own food from the sun (e.g., trees).	Animals cannot produce their own food and must rely on other living things to sustain them (e.g., humans)

Name: _____

Invertebrates

Complete the chart classifying living things that are found in the Canadian Arctic.

Arthropods	Molluscs	Worms	Sponges
Characteristics:	Characteristics:	Characteristics:	Characteristics:
Found in the arctic:	Found in the arctic:	Found in the arctic:	Found in the arctic:

Name: _____

Vertebrates

Complete the chart classifying living things that are found in the Canadian Arctic.

Amphibians	Birds	Fish	Mammals	Reptiles
Characteristics:	Characteristics:	Characteristics:	Characteristics:	Characteristics:
Found in the arctic:	Found in the arctic:	Found in the arctic:	Found in the arctic:	Found in the arctic:

Process Skill - Gathering Data

Process Skill	Students	Teachers	What This Skill Should Lead To
Gathering Data	☐ working independently or in groups to collect and record data for inquiry ☐ using a wide variety of data-gathering tools (e.g., scientific instruments/equipment, surveys, observation checklists, statistics, online databases, interviews) to collect data ☐ locating data through research and organizing it for their purposes ☐ using appropriate strategies (e.g., tables, checklists) to organize and record data so it can be easily retrieved and analyzed at a later time ☐ ensuring the information collected is accurate; using proper data collection methodologies ☐ taking steps to minimize bias in the data collected (e.g., randomly choosing samples)	☐ making available scientific instruments/equipment and technology for students to select and use in their inquiries ☐ instructing students on the importance of accuracy (e.g., using a thermometer is superior to using touch) and quantity (e.g., multiple replications increase the reliability of the data) ☐ introducing data-gathering techniques. These can be modeled and explored before being used independently in investigations.	Students will be more engaged and will develop better data management skills.

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:

Process Skill - Searching

Process Skill	Students	Teachers	What This Skill Should Lead To
Searching	☐ locating their own sources of information based on their own questions ☐ re-framing their current understanding in light of new evidence ☐ evaluating the reliability of sources of information ☐ identifying potential sources of error and/or bias ☐ developing and using criteria to establish relevance, accuracy, and reliability of information ☐ discussing research with peers and teachers to gain additional perspective and construct new meaning ☐ developing and using strategies to collect, organize, and communicate relevant research ☐ developing and using strategies to interpret scientific vocabulary	☐ giving students sufficient time and resources for research ☐ giving students guidance and activities to develop research skills ☐ developing criteria for reliability ☐ giving students opportunities to discuss and question their research ☐ guiding the development of strategies to interpret scientific text	☐ critical literacy skills that enable assessment of information for accuracy, reliability, and relevance ☐ strategies for interpreting and understanding scientific text ☐ cooperative learning (through discussion of research with peers)

Teacher Notes: