

6.4 Ents in the Arctic?

Story Extension for This Lesson:

This lesson is used in "An Introduction to John Rae" section of the junior story. A good place to connect this lesson to the story is this passage:

Fortunately a piece of wood had gotten entangled amongst the willows. This was cut up for a fire, and a cup of tea made us comfortable.

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:

2.1 follow established safety procedures for out-door activities and field work
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
2.4 use appropriate science and technology vocabulary in oral and written communication
2.5 use a variety of forms to communicate with different audiences and for a variety of purposes
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

Materials List:

- Ents that Live in my Community
- Ents that Live in Arctic
- Comparing Ents From My Community and the Arctic

Connections:

The data collected in this lesson can be used in the Grade 6 Data Management strand where students are required to interpret their results.

Subject Area:

Mathematics

Connects to:

Grade 6

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-Searching-4
- Process-Skill-Gathering-Data-9
- Process-Skill-Comparing-18
- Process-Skill-Contrasting-16

Handouts/Assessments:

- Ents that Live in my Community
- Ents that Live in the Arctic
- Comparing Ents From my Community and the Arctic
- Steps to Inquiry Level 1-3

Name: _____

The Ents that Live in my Community

Use the Coniferous Trees and Deciduous Trees identification charts to help clarify the type of trees that are in your area.



Sketch of Leaf	Description of Leaf	Tree Identification

Name: _____

Sketch of Leaf	Description of Leaf	Tree Identification

Name: _____

Comparing Ents From my Community and the Arctic

From your Ents data sheets, compare the similarities and differences between the trees in your community and the trees in the arctic.



Similarities of Ents in my Community and the Arctic	Differences of Ents in my Community and the Arctic

Name: _____

Similarities of Ents in my Community and the Arctic	Differences of Ents in my Community and the Arctic

Planning Our Investigation

Step 1: Observing & Questioning

Place sticky notes of the same colour in the space below.

Place sticky notes of a new colour in the space below.

OBSERVE

See

Smell

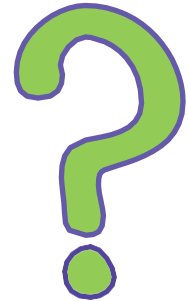
Hear

Touch

Taste



WONDER



Level: 1

Planning Our Experiment

Step 2(a): What could we measure or observe about the object, or event?

Brainstorm (Place sticky notes of the same colour in the space below.)

Measure or Observe

Step 2(b): What could we change or vary about the object or event that may affect what we could measure or observe?

Brainstorm (Place sticky notes of a new colour in the space below.)

Variables

Level: 1



Planning Our Experiment

Step 3(a): What will we change?

ONE VARIABLE WE WILL CHANGE:

Changed Variable

(Place a sticky note from Step 2(b))

WE WILL MEASURE OR OBSERVE THIS RESULT:

Measure or Observe

(Place a sticky note from Step 2(a) here)

Step 3(b): What will we not change?

VARIABLES WE WILL NOT CHANGE:

What conditions will be held constant so it is a fair test? Place remaining sticky notes from Step 2(b) here.

Unchanged Variables

Level: 1

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:

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 - Reviewing

Process Skill	Students	Teachers	What This Skill Should Lead To
Reviewing	☐ picking out key facts and information ☐ perusing information carefully and thoroughly ☐ making connections between key content and concepts ☐ listing new questions that have arisen as a result of their investigation ☐ identifying directions for future investigation	☐ to be done independently, in pairs, and/or in small groups ☐ encouraging students to justify their choices of key points ☐ encouraging students to use multiple reviewing strategies e.g., mnemonic devices, acronyms, music, concept maps ☐ encouraging students to make personal jot notes identifying key points ☐ encouraging students to make connections between key elements	Students will become more able to recognize key concepts and ideas. They will hone their ability to make connections—concept to concept, self to concept, concept to world—and thus become more aware of their own understanding (metacognition). This in turn will make them more independent learners.

Process Skill - Reporting

Process Skill	Students	Teachers	What This Skill Should Lead To
Reporting	☐ sharing ideas, based on facts and evidence, with others ☐ using creative and original presentation formats ☐ using an extensive vocabulary, yet writing or speaking succinctly ☐ giving others the opportunity to understand the world as the reporter does	☐ encouraging connections, inferences, and predictions ☐ promoting the sharing of ideas and evidence in a logical and concise manner ☐ encouraging creativity and the use of technology ☐ differentiated. Permitting and encouraging different presentation formats allows all students to successfully communicate their findings. ☐ scaffolding the process for students. Students can start by using a structured report format which evolves into a more sophisticated self-structured format. ☐ a natural literacy link	Students acquire research, speaking, and presenting skills through reporting. It is this step in an inquiry that establishes the factual and investigative background that informs their investigation. They gain an improved sense of logical sequences and often improve their ability to use vocabulary. A skilled reporter knows how to summarize background information and present it in a manner that piques the audience's interest.

Teacher Notes