

## MICRO-LESSON: Arctic

TITLE: *Discovering The Arctic: New Places, New Ideas, New Experiences*

CURRICULUM FOCUS: Social Studies, Science GRADE LEVEL: 6-8; 9-12

VIDEO SEGMENT:  The Lives of Polar Bears

VIDEO SEGMENT:  The Arctic Region

### PROGRAM DESCRIPTION:

These video chapters explore life and adaptation in the Arctic. The arctic region is too cold for farming; for example, temperatures may rise above freezing just a few weeks a year. Consequently, the soil remains frozen in a permafrost condition. As for inhabitants, aboriginals live here—the Inuit and Amer-Indians are the primary inhabitants of the Arctic region. While they have modern homes and conveniences, many of the Inuit and Amer-Indians choose to hunt seal, fish, and other animals.

Many animals exist in the Arctic region, such as the arctic fox, caribou, and the ptarmigan. Because they hibernate for an extended period of time and sometimes give birth during this time, female polar bears lose up to 40% of their body weight after hibernation. The mother polar bear monitors her cubs and keeps them inside the den for 10 days because the cubs have not adapted to the intense cold of the Arctic. Inside of the den the temperature averages sixty-eight degrees—perfect for the cubs. After the 10 days, the mother polar bear takes the cubs out, and she begins the task of helping the cubs adapt to their environment and to teach them how to search for food. A polar bear's favorite food is ring seals. In order to locate the ring seals, polar bears must use the most complex and sensitive part of their bodies—their noses. With her nose that is uniquely adapted for the Arctic, the mother polar bear can smell a seal under 3 feet of snow over half a mile away. All polar bears have a turbinate bone in their noses that is especially designed for this survival skill. The turbinate bone is packed with olfactory receptors. But, the polar bears are not always as successful in their hunt as they would like, for just as they have special features to help them survive the Arctic, so do the ring seals. The ring seals can detect movement above the ice and thereby avoid danger and the polar bears. The people and the animals have all learned how to adapt and survive in this barren, cold climate.

### LEARNING OBJECTIVES:

After viewing this video students will be able to:

- Compare and analyze societal patterns for preserving and transmitting culture while adapting to environmental or social change
- Understand an organism's behavior evolves through adaptation to its environment
- Understand that populations of organisms can be categorized by the function they serve in an ecosystem

### CLASSROOM CONNECTIONS:

- A.** Every creature—both human and animal—on the planet possesses physical features that aid in survival. The polar bear, for example, has a very unique nose that allows it to hunt and provide food for itself and its children.

Divide into five groups—each group taking a sense: sight, sound, touch, taste, and smell. Determine in your group how your chosen sense allows you to adapt to different environments quickly and efficiently. Be prepared to share your results with your class.

- B.** The Inuit and Amer-Indians have populated the Arctic for centuries; they are indigenous to the region. Conduct research on the Inuit and Amer-Indians so that you may know who they are and how they live. Learn about their history, their culture, their observances, their daily living. You may divide into groups to conduct your research; you may include images, articles, and video segments in your findings. When you have completed your research, present your results to your class. Be sure to include in the presentation what you found most interesting.

## INTERACTIVE TARGET VOCABULARY:

As you begin your exploration and research into the Arctic, create in your Digital Adventure Journal a section for Vocabulary. This compilation of vocabulary will not be the traditional seek and find definitions. You will collect images, parts of articles, video images, brochures, or any other helpful resources that define each of these terms not only to you but also to your classmates.

**Aboriginal:** 1: being the first or earliest known of its kind present in a region <aboriginal forests> <aboriginal rocks> 2 a: of or relating to aborigines b: often capitalized

**Inuit:** 1): the Eskimo people of North America and Greenland (2): the Eskimo people of Canada b: a member of such people 2 a: ESKIMO 2 b: the group of Eskimo dialects spoken from northwestern Canada to Greenland

**Amer-Indian:** a member of any of the aboriginal peoples of the western hemisphere except often the Eskimos; especially: an American Indian of North America and especially the United States

**Ring Seal:** \*\*lives in the Arctic year round; light grey with black spots with small heads and large bodies; the black spots have lighter rings around them; they can remain under water for extended periods; can detect movement even when under the water and ice

**Caribou:** a large gregarious deer (*Rangifer tarandus*) of Holarctic taiga and tundra that usually has palmate antlers in both sexes—used especially for one of the New World—called also reindeer

**Ptarmigan:** any of various grouses (genus *Lagopus*) of northern regions with completely feathered feet

**Arctic Fox:** a small migratory Holarctic fox (*Alopex lagopus*) especially of coastal arctic and alpine tundra

**Turbinate bone:** shaped like a top or an inverted cone: one of usually several thin plicated membrane-covered bony or cartilaginous plates on the walls of the nasal chambers

**Olfactory receptors:** of or relating to the sense of smell

All definitions from Merriam Webster Dictionary Online

\*\* Definitions are from video

## ASSESSMENT RUBRIC:

This rubric is on a four-point scale and uses as references *The Skillful Teacher* by Jon Saphier and Robert Gower and *Thinking Like a Historian: Rethinking History and Instruction* by Nikki Mandell and Bobbie Malone.

	4	3	2	1
<b>QUESTIONS</b>	<ol style="list-style-type: none"><li>1. Consistent use of multiple historical facts, perspectives, evidence</li><li>2. Uses variety of methods for supporting evidence</li><li>3. Relies on identification, evaluation, and comparison/contrast</li><li>4. Relies on historical context and change</li></ol>	<ol style="list-style-type: none"><li>1. Relies on multiple historical facts, perspectives, evidence</li><li>2. Use of supporting evidence</li><li>3. Use of differentiation between and among statements</li></ol>	<ol style="list-style-type: none"><li>1. Uses one historical fact or evidence</li><li>2. Limited support</li><li>3. Limited use of the historical context</li></ol>	<ol style="list-style-type: none"><li>1. States facts w/no support</li><li>2. Little or no use of the historical context</li></ol>
<b>EVIDENCE</b>	<ol style="list-style-type: none"><li>1. Relies heavily on primary and secondary sources from a variety of resources</li><li>2. Uses deftly research skills in documenting authorities and their impact on work/project</li><li>3. Uses analysis, evaluation, synthesis throughout the work/project</li><li>4. Uses comparison/contrast to weigh impact of sources on work/project</li></ol>	<ol style="list-style-type: none"><li>1. Uses some primary/secondary sources</li><li>2. Uses limited number of other resources</li><li>3. Uses research skills on work/project with limited assessment of evaluation of source</li><li>4. Uses identification and explanation from the sources on work/project</li></ol>	<ol style="list-style-type: none"><li>1. Uses very limited secondary sources—one or two</li><li>2. Uses very limited or no primary sources</li><li>3. No attention to research skills evaluating authorities and their impact on work/project</li></ol>	<ol style="list-style-type: none"><li>1. If secondary sources are used, they are traditional: encyclopedia, for example, and very limited use</li><li>2. One or no primary sources</li><li>3. No evaluation of credibility of sources</li></ol>

## INTERPRETATION

<ol style="list-style-type: none"><li>1. Uses analysis and synthesis of evidence completely supported from variety of sources and resources</li><li>2. Relies on explication of context for historical changes</li><li>3. Provides rationale for using multiple sources and resources to accomplish work/project</li><li>4. Evaluates and explains intricate connections between people, events, and ideas—both past and present</li></ol>	<ol style="list-style-type: none"><li>1. Addresses the essential questions: who, what, why, when, where</li><li>1. Will present one or two historical perspectives or historical events/timelines that are different to chart similarities</li><li>2. Uses limited multiple sources and resources to accomplish work/project</li><li>3. Does not evaluate and explain intricate connections between people, events, and ideas—both past and present</li><li>4. Presents in generalities, thereby avoiding any specificity or proof of thesis for work/project</li></ol>	<ol style="list-style-type: none"><li>1. Addresses in limited and cursory fashion the essential questions: who, what, why, when, where</li><li>2. Uses only identification and description</li><li>3. Little to no use of supporting evidence</li></ol>	<ol style="list-style-type: none"><li>1. No addressing of the essential questions: who, what, why, when, where</li><li>2. No use of supporting evidence</li></ol>
--	---	---	---

## CAUSE & EFFECT

<ol style="list-style-type: none"><li>1. Identifies, evaluates, and analyzes multiple causes/effects—both stated and inferred—intended/unintended—short term/long term</li><li>2. Differentiates and evaluates how different groups act differently and why</li></ol>	<ol style="list-style-type: none"><li>1. Identifies multiple causes/effects—both stated and inferred—intended/unintended—short term/long term</li><li>2. Identifies how different groups act differently and why</li></ol>	<ol style="list-style-type: none"><li>1. Addresses multiple causes/effects</li><li>2. Addresses only short term/long term causes/effects</li></ol>	<ol style="list-style-type: none"><li>1. Addresses only one or two causes and/or effects</li><li>2. Addresses only short term causes/effects that are obvious or intended</li></ol>
---	--	--	---

## CHANGE & CONTINUITY

<ol style="list-style-type: none"><li>1. Understands that change and continuity are inextricably linked to specific events and/or developments</li><li>2. Evaluates change and continuity from variety of perspectives, including but not limited to social, political, economic, cultural levels</li><li>3. Includes in the analysis trends, movement, patterns</li></ol>	<ol style="list-style-type: none"><li>1. Understands that change and continuity are inextricably linked to specific events and/or developments</li><li>2. Addresses change and continuity in terms of trends and patterns</li><li>3. May address one of the following perspectives: social, political, economic, cultural levels</li></ol>	<ol style="list-style-type: none"><li>1. Links change and continuity to one event or series of developments</li><li>2. Limited discussion and exploration of one of the following: social, political, economic, cultural levels</li></ol>	<ol style="list-style-type: none"><li>1. Addresses change or continuity but not both</li><li>2. Relationship between change or continuity to an event or series of developments not clearly developed or supported</li></ol>
--	--	---	--

## USING THE PAST

<ol style="list-style-type: none"><li>1. Distinguishes, analyzes, synthesizes elements and patterns in historical periods that compare and contrast to the present</li><li>2. Uses knowledge of a past event or period to infer and thereby draw conclusions about a modern event or period</li></ol>	<ol style="list-style-type: none"><li>1. Chronicles the developmental relationship throughout time and space between patterns and contemporary events</li><li>1. Identifies which factors contributed to historical changes over time</li></ol>	<ol style="list-style-type: none"><li>1. Makes linear connections between past event and modern issues</li><li>2. May see similarities and/or differences</li><li>3. Will not address the import of these connections or intervening developments</li></ol>	<ol style="list-style-type: none"><li>1. Sees and therefore cannot make any connections between the past and the present</li></ol>
---	---	---	--

## ACADEMIC STANDARDS

The following standards are from Washington State Learning Standards:

[http://www.k12.wa.us/CurriculumInstruct/EALR\\_GLE.aspx](http://www.k12.wa.us/CurriculumInstruct/EALR_GLE.aspx)

In addition, this Micro-Lesson includes national standards from The National Council for the Social Studies (NCSS), the National Council of Teachers of English (NCTE), and National Science Teachers Association (NSTA). NCSS and NCTE have developed national standards to provide guidance for teaching social studies and English/Language Arts. The National Research Council created the standards for NSTA:

<http://www.nsta.org/publications/nses.aspx>

- Understands and applies knowledge of historical thinking, chronology, eras, turning points, major ideas, individuals, and themes in local, Washington State, tribal, United States, and world history in order to evaluate how history shapes the present and future —(middle school)
- Understands and applies knowledge of historical thinking, chronology, eras, turning points, major ideas, individuals, and themes in local, Washington State, tribal, United States, and world history in order to evaluate how history shapes the present and future —(high school)
- Understands and applies reasoning skills to conduct research, deliberate, form, and evaluate positions through the processes of reading, writing, and communicating— (middle school /high school)
- Uses listening and observation skills and strategies to gain understanding. —(middle school)
- The student uses communication skills and strategies to interact/work effectively with others. —(middle school/ high school)
- Uses communication skills and strategies to effectively present ideas and one's self in a variety of situations. —(middle school/ high school)
- Understands and applies reasoning skills to conduct research, deliberate, form, and evaluate positions through the processes of reading, writing, and communicating —(middle school/high school)

## NCSS

- Understand and experience the study of culture and cultural diversity
- Explain the origins and continuing influence of key ideals of the democratic republican form of government, such as individual human dignity, liberty, justice, equality, and the rule of law
- Understand how people create and change structure of power, authority, and governance
- Describe and compare how people create places that reflect culture, human needs, government policy, and current values and ideals as they design and build specialized buildings, neighborhoods, shopping centers, urban centers, industrial parks, and the like

## NCTE:

- Students read and view a wider range of print and nonprint texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
- Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features.
- Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g. print and nonprint texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.
- Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities

## NSTA:

- Appreciate that for some needs, the cultural backgrounds and beliefs of different groups can affect the criteria for a suitable group
- Understand that scientific investigations require the contributions of individuals from different disciplines, including engineering
- Understand that science and technology are pursued for different purposes—scientific inquiry driven by the desire to understand the natural world and technology design driven by the need to meet human needs and solve human problems. Technology, by its nature, has a more direct effect on society than science because its purpose is to solve human problems, help humans