

Tundra Ecosystem Change Webquest

1. Lesson Overview

Resource Summary	This introductory activity will help students explore the International Tundra Experiment - Arctic Observatory Network (ITEX-AON) website and explore various parts of their research and the arctic ecosystem. ITEX-AON is an NSF funded collaborative research project between GVSU, FIU, UTEP, and UAA. The goal of the project is to document and understand terrestrial ecosystem changes occurring across Arctic landscapes and communicate the implications of the observed changes with the public. Learn more from the ITEX-AON website here. This is lesson 1 of a 3 lesson mini unit.
Grade Level/ Subject	Grades 6-8
Time Frame	1 lesson (50-60 minute class period)
Materials and Preparation Needed	• Computers • Pencil • Webquest (digitally or in print form)

2. Learning Goals

Lesson Objectives	<u>Students will be able to:</u> • <u>Explore</u> various parts of the ITEX-AON network by completing a webquest. • <u>Apply</u> information found on the website to answer questions about the polar region. • <u>Describe</u> the arctic ecosystem and research being done to gather information about climate change.
Standards	MS-ESS3-5 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. Key Concepts: Arctic Ecosystem, Climate Change, Research Techniques
Polar Literacy Principles	2B-1: Tundra is a treeless area with permanently frozen soil (permafrost) and low growing vegetation. 3B: Snow and ice in Polar Regions are involved in mainly positive feedbacks, which is why the Arctic region is annually warming faster than the rest of the planet. 7: New technologies, sensors and tools are expanding scientists' ability to study the land, ice, ocean, atmosphere and living creatures of the Polar Regions. View the Polar Literacy Principles here.

3. Procedure

Opening Activity	Introduce the Arctic by sharing the ITEX-AON website and the Polar Literacy website . Show this video from the Polar Literacy Website. Next, have students quickly explore the Polar Literacy website . Ask students to explain their <u>observations and inferences</u> from the homepage with all the photos. Lead a discussion with the students. You can use these slides to guide you through the lessons.
Activity Procedure	1. Introduce the lesson by asking these prediction questions (and then have students answer on their sheet): a. How do scientists study the arctic ecosystem? b. Why is the Arctic Region an important place to study? c. What are some things you would like to know about the polar region? 2. Next, introduce the ITEX-AON website and webquest. Working with a table partner, or their whole group, students will answer the questions from the webquest. 3. Circulate and help students, where necessary. Feel free to also ask questions about their work on the webquest and what they are discovering about the polar region and the ITEX-AON program. 4. If you have extra time, check out the research videos on the website here!
Reflection	<u>Closing</u> : At the end of class, have students answer this question: “What are you still <u>curious</u> about?”
References	• ITEX-AON: ITEX-AON a collaborative research project - Grand Valley State University (gvsu.edu) • North Slope Borough Wildlife Management: https://www.north-slope.org/departments/wildlife-management/ • Polar Literacy: https://polar-ice.org/ • Polar STEAM: https://polarsteam.info/ • Next Generation Science Standards (NGSS): https://www.nextgenscience.org/
Supporting Documents	Mini Unit PPT TeITEX-AON Webquest