

Where Have All the Creatures Gone?

An Investigation of Climate Change the in the Hudson Bay

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Grade Level	2
Duration	1-2 class periods

National Standards

GEOGRAPHY

Element 2: Places and Regions

4. The physical and human characteristics of places

Element 3: Physical Systems

7. The physical processes that shape the patterns of Earth's surface

8. The characteristics and distribution of ecosystems and biomes on Earth's surface

Element 5: Environment and Society

14. How human actions modify the physical environment

Element 6: The Uses of Geography

17. How to apply geography to interpret the past

18. How to apply geography to interpret the present and plan for the future

AZ Standards

ELA

Reading

Key Ideas and Details

2.RI.3 With prompting and support, describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

MATHEMATICS

Measurement and Data

2.MD.D.9 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units

SCIENCE

Life Science

2.L2U1.9 Obtain, analyze, and communicate evidence that organisms need a source of energy, air, water, and certain temperature conditions to survive.

Arizona Social Science Standards

GEOGRAPHY

Human-environment interactions are essential aspects of human life in all societies.

2.G2.2 Describe how human activities affect the communities and the environment of places or regions.

Global

interconnections and spatial patterns are a necessary part of geographic reasoning.

2.G4.1 Identify different physical and cultural regions in the world.

SIOP Elements

Preparation

Adapting content

Linking to background

Linking to past learning

Strategies used

Scaffolding

Modeling

Guided practice

Independent practice

Comprehensible input

Grouping Option

Whole class

Small groups

Partners

Independent

Where Have All the Creatures Gone?

Integrating Processes

Reading
Writing
Speaking
Listening

Application

Hands on
Meaningful
Linked to objectives
Promotes engagement

Assessment

Individual
Group
Written
Oral

Arizona English Language Proficiency Standards

Basic

Reading

Standard 4: The student will analyze text for expression, enjoyment, and response to other related content areas.

B-7: identifying the topic/main idea and key details from text heard or read, using sentence frames.

Overview

As the years go by, our world is being impacted by climate change more and more. Animals in the aquatic environment of the Hudson Bay are a case study of species that are or will be impacted over time with the increase in temperatures and environmental changes.

Purpose

In this lesson, students will investigate how a group of animals in the Hudson Bay are impacted by climate change through time. This lesson includes strategies for diverse learners.

Key Vocabulary

environmental stressor: something that is hurting the environment

prey: an animal that becomes food for another animal

predator: animal that lives by killing other animals for food

climate change: changes in the Earth's weather patterns

tundra: a flat area of land in the northern parts of the world where there are no trees and the ground is always frozen

greenhouse gases: gases on our Earth that absorb more heat, so the Earth is getting warmer

Materials

- Dice
- Student Readings
- Reading Worksheet
- Math Activity

- Internet
- Check for Understanding
- Grading Rubric
- Vocabulary Cards
- Vocabulary Test and Answer Key

Objectives

The student will be able to:

1. Locate specific details found in the readings.
2. Create a line plot.
3. Describe the impact of climate change over time.

Procedures

Students should have been introduced to the different biomes animals can live, specifically the arctic regions. Students should know how to create line plots.

SESSION ONE

Engage:

1. Introduce the lesson by telling students that the temperatures in many areas of the world are getting warmer and this rise in temperature is affecting animals. Have students share why this matters with people at their table. Then discuss this idea as a whole class and list some of the ideas on the white board. **(Preparation: Linking to prior learning, Grouping Option: Small and Whole group)** Take care not to explain at this stage.

Explore:

2. Project the digital map <https://arcg.is/1OOX1D> to display the various animals that they will be reading about and to show the area that the animals live in. Do not take time to explain the information but rather tell students that they will soon read four short texts with a partner.

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3. Distribute the Student Readings and Reading Worksheet to partner groups. **(Grouping Option: Partners)**
4. Explain that they should read the texts together and record the required information on the Reading Worksheet related to predators, prey, and ideal temperatures for each animal. **(Integrating Process: Reading, Writing)**
5. Before sharing the answer with the whole group, have partner groups get together with another set of partners and share their findings. **(Integrating Process: Speaking, Listening)**

Explain:

6. In a whole group setting, ask students the same question as before: "Why does the temperature on Earth getting warmer matter to the animals that you just read about?"
Have students share their ideas and compare these to the ideas already recorded on the white board. **(Integrating Process: Speaking, Listening)**
7. Now tell students that we call the change in temperature "climate change" and show them the following video. <https://tinyurl.com/y8zb6blw>
Note: At this time, other maps and resources can be used to help builds student knowledge. If a student asks about global warming, let them know that it is part of climate change, but global warming is only focused on the change in temperature.
8. Distribute the Vocabulary Cards or project them. Introduce the other vocabulary words and refer to the images especially the image of the tundra in order to show what it looks like. **(Scaffolding: Comprehensible input)**
9. A Ticket out the Door might be an oral vocabulary quiz. **(Assessment: Oral)**

SESSION TWO

Elaborate:

10. Refresh students' memory of what they learned yesterday but asking a few questions about the animals they studied and how temperature mattered to the animals. **(Preparation: Linking to prior learning,**
11. Tell students that today they will look at how temperature change might happen over ten years in the Hudson Bay Area. Show students on a world map where the Hudson Bay is located. Reinforce the idea that this area is made up of tundra and an Arctic Ocean environment. **(Scaffolding: Comprehensible input)**
12. Distribute the Math Activity to partner groups. Tell them that they will take turns rolling, and that each roll represents one year of change in temperature

for the summer season. Model the first year. **(Scaffolding: Modeling, Grouping Option: Partners)**

13. Partners will then take turns rolling and adding and subtracting the temperatures and recording their numbers. **(Application: Hands on)**
14. When students finish collecting the data, the partners will draw a line plot on the worksheet. **(Application: Linked to objectives)**
15. Have each set of partners share with the class their final summer temperature. Ask students what would happen to the animals that they studied. Have them work with their partners to identify which animals would still be able to survive and what problems they may have. Share conclusions with the whole class. **(Integrating Process: Speaking, Listening)**

Evaluate:

16. Pass out the Check for Understanding and the Grading Rubric. Explain the writing prompt using another one of the four animals used in the lesson. **(Scaffolding: Modeling)** Thoroughly explain the Grading Rubric. Have students work in partners or independently to complete the Check for Understanding assignment.
17. On the same day or later, have students complete the Vocabulary Test. **Assessment: Individual or group, Written)**

Assessment

ELA, Geography and Science

The Vocabulary Test can be graded. Mastery will be considered 80% or higher.
The Check for Understanding can be graded. Mastery will be considered a 3 or higher on the Grading Rubric.
The Reading Workshop can be graded. Mastery will be considered 75%.

Geography and Mathematics

The Math Activity Sheet can be graded. Mastery will be considered 75% or higher.

Extensions

Have the students identify the mode and calculate the mean.

Read: *Winston of Churchill: One Bear's Battle Against Global Warming* by Jean Davies Okimoto.

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Have students make posters to inform people about climate change or have students write a letter from the perspective of one of the arctic animals studied.

Sources

Canadian Storymap platform: www.arcgis.com

Dice Clipart
<https://homeschoolclipart.com/math/dice-clipart/>

Churchill Northern Science Centre:
<https://www.churchillscience.ca/>
(This is the location where I conducted the research.)

National Wildlife Federation:
<https://www.nwf.org/Educational-Resources/Wildlife-Guide/Amphibians/Wood-Frog>

Sacramento Splash:
<https://www.sacsplash.org/critter/fairy-shrimp>