

# Earth and Human Activity: Arctic Passage Exploration Grade 5

## Standards

### **Wisconsin's Model Academic Standards for Science (WMAS)**

#### **B. Nature of Science**

B.4.1 Use encyclopedias, source books, texts, computers, teachers, parents, other adults, journals, popular press, and various other sources, to help answer science-related questions and plan investigations

#### **C. Science Inquiry**

C.4.1 Use the vocabulary of the unifying themes to ask questions about objects, organisms, and events being studied

C.4.2 Use the science content being learned to ask questions, plan investigations, make observations, make predictions, and offer explanations

C.4.3 Select multiple sources of information to help answer questions selected for classroom investigations

C.4.5 Use data they have collected to develop explanations and answer questions generated by investigations

C.4.6 Communicate the results of their investigations in ways their audiences will understand by using charts, graphs, drawings, written descriptions, and various other means, to display their answers

C.4.7 Support their conclusions with logical arguments

C.4.8 Ask additional questions that might help focus or further an investigation

#### **G. Science Applications**

G.4.1 Identify the technology used by someone employed in a job or position in Wisconsin and explain how the technology helps

### **Next Generation Science Standards (NGSS)**

#### **Earth and Human Activity**

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

### **Common Core State Standards (CCSS)**

#### **Language - Vocabulary Acquisition and Use**

**L.5.4b** Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., photograph, photosynthesis)

## **Objectives**

- Students will be able to define the terms *resources*, *environment*, and *conservation*.
- Students will be able to obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

## **Materials**

- At Zoo: clipboards, pencils, data sheet
- Extension after zoo visit: computer, materials for poster

## **Preparation**

- Make arrangements with your school for transporting your class to the Zoo. Each student should carry a button, shirt, name tag, etc. with what number to call if the student gets separated from the group.

## **Procedure**

### **Engagement:**

#### **Introduce Key Vocabulary (5-10 minutes)**

Write these three terms on chart paper or on a whiteboard in your classroom. Ask students what they know about these three terms: *resources*, *environment*, and *conservation*.

What smaller words do you see inside of these words (ex: conservation, resources), or what are some similar words you can think of (ex: they may think of environmental for environment, or they may think of other nouns with the -ment ending such as government, or protection, conversation for the -tion ending)?

Can we guess the meaning of the entire word by the pieces that make up the word, or by similar words that we know? (ex: conservation means the act of conserving, resources are sources or things we can use from the natural world, the environment is a noun that refers to the surroundings or conditions in which a person, animal, or plant lives or operates).

Write the definitions next to the terms.

*Resources*: natural materials humans can use.

*Environment*: the surroundings or conditions in which a person, animal, or plant lives and operates.

*Conservation*: protecting the Earth's resources and environment.

\*If you are teaching the lesson in Spanish, here are the three terms: *recursos*, *medio ambiente*, *conservación*. You can use the same lesson above for the terms in Spanish (ex: -ión ending)

#### **Introduce standard, group brainstorm (10 minutes)**

Show students this NGSS standard:

"Students will obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment."

Tell students we will be learning about different communities (or groups) of individuals that use science to promote conservation. Give students 2 minutes or so to brainstorm possible groups of individuals that use science to promote conservation. After students have brainstormed, have them share with the class. Some possible categories could include: adults, kids, politicians, citizens, scientists, consumers, schools, zoos.

Tell them that we will be going to the Henry Vilas Zoo to learn about how different communities of people use science to promote conservation. Tell students that we will be exploring the Arctic Passage exhibit to learn about conservation. Ask students if anyone has been there before.

### **Watch Video and discuss questions (10-15 minutes)**

Show students the following video. Ask students to think about these questions while they watch:

1. Who is the person in the video? What is his job?
2. What important information does the video include about polar bears?

Have students choose a question and show you on their fingers the number 1 or the number 2, so that it is clear to you that everyone has chosen a question to think about.

[https://www.youtube.com/watch?v=axRX9\\_UyUOc](https://www.youtube.com/watch?v=axRX9_UyUOc)

After watching the video, ask students these two questions again, and have them share their thoughts and answers. Ask them this final question: why is it important for people to use science ideas to promote conservation?

*\*If you are teaching this lesson in Spanish, have students decide which of these questions they would like to think about while watching the video. Have students show you on their fingers the number 1 or the number 2, so that it is clear to you that everyone has chosen a question to think about.*

1. *¿Quiénes son esas personas? ¿Cuál es su trabajo?*
2. *¿Cuál información importante contiene el video acerca del calentamiento global?*

video: <https://www.youtube.com/watch?v=TDdbiR3jlqo>

*After watching the video, ask students these two questions again, and have them share their thoughts and answers. Ask this final question: ¿Por qué es importante que las personas utilicen las ideas de ciencias para promover la conservación?*

### **Exploration:**

At the Zoo, have students work in partners or in small groups. Explain that they will be exploring different parts of the Arctic Passage exhibit and answering questions about these sources of information. Show them the observation sheet (attached below)\*. Explain that for each source of information, students will decide which group of people the source is related to (is it talking about scientists, does it include information for consumers, citizens?), and they will write down how this group of people can protect the Earth's environment and natural resources. Explain that there are a few sources listed. Students should explore these sources first. After exploring the listed sources, students can choose other sources in the exhibit, such as the seals exhibit, the grizzly bears exhibit, the grizzly bear interpretive storybook, and the seals puzzle.

*\*This handout is available in Spanish.*

**Explanation:****Discussion (15 minutes)**

After the field trip, each group of students should discuss the information they gathered with each other. Discuss these questions as a class.

1. What groups of people did you learn about?
  - a. What did you learn about scientists?
  - b. What did you learn about consumers?
  - c. Did anyone learn any information about other groups of people?
2. What can different groups do to protect the Earth's resources and environment?
3. Arctic Passage was built in 2015. Think about all the different sources of information you saw in these exhibits. Why do you think the Henry Vilas Zoo decided to build these exhibits, and why do you think they chose to design these exhibits in the way that they did?

For question 4, give students a note card. Read the question out loud. Explain that students will be writing their answer on the notecard without putting their name. Give students time to write (3-5 minutes).

4. What roles do communities of individuals such as the Henry Vilas Zoo play when it comes to conservation?

**“Give One, Get One” Activity (10-15 minutes)**

When everyone has written an answer on their notecards, explain the give one get one activity to the class. The activity starts with two people reading their cards to each other. They thank their partner and switch cards. Now, each student finds a different partner and reads their new card out loud to their partner. The activity can continue for as long as you deem appropriate for your group. Once students have exchanged their cards several times during “give one, get one,” have students turn in their cards and sit at their spots. Ask question 4 to the whole group, and have students share answers.

**Extension:**

- Using appropriate electronic devices, have each group create Google Slides presentations about polar bears. Refer to the “other useful resources” section for resources to use with your students. Students can also choose to make a poster presentation. In this presentation, they should include the threats they face, and how different groups of people (scientists, consumers, and citizens) can help protect them and their environment.
- Students can conduct research projects related to conservation efforts by specific communities of individuals, such as researching the role and history of Association of Zoos and Aquariums (AZA) Zoos, researching the effects of global climate change on other habitats around the world, learning about polar bear researchers, and learning about zookeepers.
- Students can design a new exhibit for the Zoo which has the focus of educating the public about the habitat, its species, and conservation efforts made by different groups of people.
- Design an interview for a scientist about a conservation topic of your choosing (polar bears, global climate change, etc). Include a list of relevant questions to ask your interviewee. If there is an opportunity to connect with a scientist (see “useful resources below”), have students choose 2 questions to ask.
- Write persuasive letters to politicians, companies, or organizations about the importance of conservation (ex: write a letter defending the importance of passing laws to limit carbon fuels emissions, explain why electric or hybrid cars should be made more affordable by companies to consumers than gas-burning vehicles, etc).

### Other useful resources:

- The Association of Zoos and Aquariums (AZA) has some great resources about conservation:
  - <https://www.aza.org/aza-educator-resources>
  - <https://www.aza.org/conservation-education-materials>
  - <https://www.aza.org/conservation>
  - <https://www.aza.org/climate-change-and-wildlife>
  - <https://www.aza.org/communicating-climate-change>
  - [https://www.aza.org/climate\\_change\\_resources](https://www.aza.org/climate_change_resources)
  
- Henry Vilas Zoo is an Arctic Ambassador Center for our conservation partner Polar Bears International (PBI; <http://www.polarbearsinternational.org/>), helping connect people to the Arctic! PBI has some fantastic resources, especially during winter.
  - During polar bear migration season (October-November), PBI:
    - Runs a live polar bear cam from the tundra around Churchill, Canada, the polar bear capital of the world! (<http://www.polarbearsinternational.org/saveourseaice>)
    - Offers webinars and live chats with field scientists. Talk with or message scientists streaming live from Churchill! (<http://www.polarbearsinternational.org/for-teachers/tundra-connections>)
  - Year-round PBI provides the following:
    - Teacher resources including units and lessons: <http://www.polarbearsinternational.org/for-teachers>
    - The Bear Tracker shows the location of radio collared female polar bears in the Arctic: <http://www.polarbearsinternational.org/about-polar-bears/tracking/bear-tracker>
    - Past Tundra Connections sessions can be viewed at: [https://www.youtube.com/playlist?list=PLtVrwxiz\\_3tSWeGq4AAfOVAEvaXh2Mjly](https://www.youtube.com/playlist?list=PLtVrwxiz_3tSWeGq4AAfOVAEvaXh2Mjly)
  
- Henry Vilas Zoo celebrates a free conservation education International Polar Bear Day event each winter that everyone is welcome to attend. The Zoo also holds other free conservation education awareness events throughout the year, such as Earth Day/Party for the Planet Celebration, Orangutan Caring Day, International Red Panda Day, and African Penguin Awareness Day celebrations. These are great places for students to ask questions. These events can be found at <http://vilaszoo.org/events> and the Zoo's Facebook page (<https://www.facebook.com/HenryVilasZoo/>)
  
- (See extension).

name(s): \_\_\_\_\_

## Arctic Passage Exploration

**Question: How do different groups of people (scientists, consumers, citizens) use science ideas to protect the Earth's resources and environment?**

| <b>Information Source</b>  | <b>What group or groups of people did you learn about?</b> | <b>How can this group, or how do these groups, protect the Earth's resources and environment?</b> |
|--|--|---|
| <b>Polar bear exhibit and signs</b>                                |  |   |
| <b>Polar bear 'Strong Swimmers' interpretive and pedaling game</b> |  |   |
| <b>Tundra Buggy</b>  |  |   |
| <b>Bear relocation trap</b>  |  |   |
|  |  |   |
|  |  |   |
|  |  |   |

nombre(s): \_\_\_\_\_

## Exploración de "Arctic Passage"

**Pregunta: ¿Cómo utilizan diferentes grupos de personas (científicos, ciudadanos, consumidores) las ideas de ciencias para proteger el medio ambiente y los recursos naturales del planeta Tierra?**

| Fuente de información  | ¿Acerca de cuál grupo, o cuáles grupos, de personas aprendiste? | ¿Cómo puede proteger los recursos naturales y el medioambiente del planeta Tierra este grupo? |
|--|---|---|
| Exhibición de los osos polares   |   |   |
| Juego interpretativo de pedaleo de los "nadadores fuertes" de los osos polares |   |   |
| vehículo de la tundra (buggy tundra)   |   |   |
| Trampa de reubicación de osos  |   |   |
|  |   |   |
|  |   |   |
|  |   |   |