

Archives on the Arctic: Connecting to Global Issues with Primary Sources

Lesson Plan: Global Warming ~ We ALL Are Threatened!

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Description:

Compare and contrast the effects of global warming on the Arctic environment and the rest on the world, including the impacts to the animals and humans.

Grade Level(s):

Grades 6 - 8
(Also adaptable for high school classrooms)

Subject(s):

Science; Social Studies; ELA

Duration:

One-Two Weeks (about 6-8 hours)

Goal:

The goal is to recognize, understand, and help to minimize, the effects of global warming on the environment, including animals and humans.

Objectives:

Students will:

- learn and understand the effects of global warming on the Arctic environment.
- discover the related effects of global warming on the rest of the world and how this impacts human survival.
- cooperatively work in a small group to create/design a presentation or display to share their findings on global warming.
- be able to compare and contrast global warming effects between humans and animals.

Standards:

- Next Generation Science standards:
 - MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
- Washington State Social Studies standards:
 - 3.2 GEOGRAPHY Understands human interaction with the environment.
 - 3.3 GEOGRAPHY Understands the geographic context of global issues
- Common Core Literacy standards:
 - CCSS.ELA-Literacy.RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.



- Common Core Literacy standards (Continued):
 - [CCSS.ELA-Literacy.SL.6.1a](#) Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion
 - [CCSS.ELA-Literacy.SL.6.1d](#) Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing
 - [CCSS.ELA-Literacy.SL.6.2](#) Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study
 - [CCSS.ELA-Literacy.RH.6-8.2](#) Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
 - [CCSS.ELA-Literacy.RH.6-8.7](#) Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts
 - [CCSS.ELA-Literacy.RST.6-8.8](#) Distinguish among facts, reasoned judgment based on research findings, and speculation in a text

Background Information:

The students should know the definition and have a basic understanding of global warming and its causes. They will not need to know all of the effects of global warming as these will be discovered throughout the lesson.

Primary Source Documents/Resources:

- Political Cartoon: (see above) by Jim Morin, *The Miami Herald*, December 29, 2006
<http://www.loc.gov/pictures/item/2011647559>
- Article: "Arctic sea ice just hit a record low. Here's why it matters." by Brad Plumer, *The Washington Post*, August 28, 2012
<http://www.washingtonpost.com/blogs/wonkblog/wp/2012/08/28/arctic-sea-ice-just-hit-a-record-low-heres-why-it-matters>
- Print: "Ice Stars", Print from digital photograph, August 4, 2002. Geography and Map Division, Library of Congress.
<http://myloc.gov/Exhibitions/earthasart/exhibitionitems/ExhibitObjects/IceStars.aspx?Enlarge=true&ImageId=69f39159-d4a8-441b-b34a-d92d77c47b8b%3ae7fa5462-9106-421f-b6fc-767bd1ea19cb%3a53&PersistentId=1%3a69f39159-d4a8-441b-b34a-d92d77c47b8b%3a14&ReturnUrl=%2fExhibitions%2fearthasart%2fexhibitionitems%2fExhibitObjects%2fIceStars.aspx>
- Webcast: "On Thin Ice: Changing Ice Cover on Polar Oceans" by Thorsten Markus, 11/17/2009, 65 minutes
http://www.loc.gov/today/cyberlc/feature_wdesc.php?rec=4801
- Webcast: "Big Ice Sheets Doing Big Things: Why It's a Big Deal" by Robert Bindschadler, 07/20/2011, 52 minutes
http://www.loc.gov/today/cyberlc/feature_wdesc.php?rec=5239
- Polar Bears- Photo Gallery, *National Geographic*
<http://ngm.nationalgeographic.com/2011/07/polar-bears/schulz-photography>
- Rising Seas- Photo Gallery, *National Geographic*
<http://ngm.nationalgeographic.com/2013/09/rising-seas/steinmetz-photography#/15-abandoned-house-tiengemeten-island-holland-670.jpg>
- Article: "Signs From Earth: The Big Thaw" by Daniel Glick, Republished from *National Geographic Magazine*
<http://environment.nationalgeographic.com/environment/global-warming/big-thaw/#page=1>
- Article: "Is Shrinking Sea Ice Behind Chilly Spring?" by Daniel Stone, *National Geographic News*, March 26, 2013
<http://news.nationalgeographic.com/news/2013/03/130326-arctic-sea-ice-global-warming-science-environment-spring>

Resource Materials:

- Map Maker Interactive, National Geographic
http://education.nationalgeographic.com/education/mapping/interactive-map/?ar_a=1&ls=8000800007%26f%3D903%26t%3D1%26lg%3D31%26b%3D0%26bbox%3D0.00001,-80.64704,-123.04687,85.05113
- Vanishing Sea Ice- Interactive Map, National Geographic
<http://ngm.nationalgeographic.com/2007/06/vanishing-sea-ice/sea-ice-interactive>

- Video: “NASA Time-lapse Satellite Imagery of Arctic Ice Cap Melt” July 26, 2012, 43 seconds
<http://www.youtube.com/watch?v=-8bHufxbxc8>
- Video: “Disappearing Arctic Sea Ice - Melting Polar Ice Cap” NASA, April 3, 2013, 2:25 minutes
<http://www.youtube.com/watch?v=UVzCOoQY28Y>

Procedures:

1. Display the political cartoon from The Miami Herald by Jim Morin about global warming. As a class, have a brief discussion about global warming in order to gauge their level of understanding. Ask the students what they think about the polar bears response to the man. Were they surprised by the response? Do they believe that humans are threatened too?
2. Show the students the video on YouTube from NASA “Time-lapse Satellite Imagery of Arctic Ice Cap Melt” You may want to play this short video a couple of times and ask the students to share what they are seeing and how they feel about it. Then show the YouTube video from NASA “Disappearing Arctic Sea Ice - Melting Polar Ice Cap” After this video, continue the previous discussion about how they feel about the change in the amount of sea ice and how that might affect the rest of the world.
3. Share with the students the photo galleries from National Geographic: Polar Bears- Photo Gallery & Rising Seas- Photo Gallery. Have them discuss in small groups their opinions from viewing these pictures. Then have a short class discussion where they can share any feedback they gathered from their small groups.
4. Review with the class the other resources that they will be going through and using in their small groups. These include: the articles, webcasts, and prints found in the primary resource section, as well as, the Vanishing Sea Ice- Interactive Map from National Geographic that can be found in the materials section. Using these resources, the small groups will be assigned either a “human” or “polar bear (Arctic animals)” focus. Their goal is to learn about their assigned threatened species- the how and why they are threatened. They will also work as a collaborative group to come up with a solution(s) to what can be done and when/how action should be taken.
5. Each group will design a poster/display to share their findings and then create a presentation to share with the rest of the class.
6. After viewing all presentations, the class can discuss any changes in their opinions and/or any new questions that have risen from this lesson. A Venn diagram or other chart can be created on the board to compare and contrast the two groups: humans and polar bears (animals).

Evaluation/Assessment:

- Each student will be asked to write a reflection of their learning and their opinion of the effects of global warming on animals, humans, and the environment. They will also need to write how they personally can help limit the impacts of global warming.
- A contrast/comparison chart can be created individually, small group, or whole class, to show the impacts of global warming.
- Cooperative group assessments
- Presentation assessments

Possible Extension:

- Using the Map Maker Interactive on the National Geographic website each student or group can create a map that shows the location of sea ice, the geographic areas most affected by global warming, the locations of global warming impact that they were studying, or any other criteria of your choice.

Additional Notes:



(<http://img.allvoices.com/thumbs/event/609/480/22982139-polar-bears.jpg>)

(Jim Morin, *The Miami Herald*, 9/22/2011)

