POLAR TREC
Learning Resources

Details

Completion Time: Less than a week
Permission: Download and Share

Polar Scientists: Polar Science

Overview
Elizabeth Eubanks PolarTREC teacher 2008 – Arctic Tundra Dynamics created this lesson to introduce her students to a wide variety of polar scientists and their research. Students will use the PolarTREC and other websites to learn about the various research projects that are going on at the poles. After students have tracked 10 polar scientists they are then asked questions which will further generate an understanding of their own perspectives of polar science.

Materials

- Polar Scientist worksheet
- Computer with Internet access
- SMART board or Interactive white board would be helpful but not required

Objectives
Students will learn about current polar scientists and their research. They will determine their personal views of polar science as a career.

Lesson Preparation
Teachers should have some basic knowledge of the PolarTREC web site and how to find information on the polar scientists. Teachers should also research other websites to obtain similar information in order to complete the worksheet. On the worksheet I have also added a space to investigate tropical research projects in order to compare projects at the poles to projects a) in a different location and b) in a location that we live in. ** My students live in tropical Florida – this step may be adjusted for your own location.

Since this is an introduction to polar science, content previously studied is not needed. However, students should have knowledge of Internet use and how to do a basic search. They should also know what the scientific method is.

Procedure
Present the attached worksheet to students, have them review it and then review it with them.
1. Explain the objective of the lesson – to learn

about polar scientists and research being done in the Arctic and Antarctic, while defining their thoughts of polar science, utilizing technology and comparing tropical research (or local) projects.

2. Teacher introduces – or reintroduces the PolarTREC site to students. As a group students view and select an arctic project they are interested in. They click the project overview and record the scientist(s) name and add it to the first column.
3. Students find the institution or organization the person is affiliated with. Discuss the meaning of this, ie. they may work for a college or organization which is supporting them to do research or they may be graduate or undergraduate students.
4. Record contact information; this may be an email address or street address. On the PolarTREC website click on the scientist's name. Students can be encouraged to contact the scientist for extra credit or further knowledge.
5. Record the title of the project and then a brief description of the research. Students should put this in their own words and it should be brief enough to fit in the small box.
6. Repeat steps 3-6 nine more times, researching at least five scientists from the Arctic and five from the Antarctic. Students should also use at least one other website- teachers may give suggestions here.
7. Do one more example pertaining to question # 5. = tropical research. Have students come to the SMART board or computer screen and search for tropical research. Have the class select a project and discuss what the project is about.

**** This should take ~ 50 minutes.

8. Have the students finish the project on their own during the next week.
9. Speak with the computer teacher and see if they have time to work on this during computer or other classes.
10. After one week, discuss what students have learned. Review questions 1-5 – taking up to one hour.
11. Collect worksheets and evaluate.

Extension

Have the students contact researchers or teachers with questions through the 'Ask the Team' page on the PolarTREC website.

You could investigate some of the research projects a little deeper by looking at gallery photos or journals on the PolarTREC web site.

This activity opens a door to investigate anything that is happening in the Arctic and Antarctic.

Resources

www.polartrec.com

Google search

Assessment

Have a class discussion regarding the activity. Students share knowledge learned about scientists and develop their own perspectives on polar research. Students also learn to com-

pare research being carried out in different environments ie. arctic vs. tropic. Teachers collect the worksheet and evaluate completion for a grade and take note of questions 2, 3 and 4 which are opinion answers.

Credits

Lesson created by Elizabeth Eubanks, hoocaca@yahoo.com
Drawing application adapted from a similar lesson by Frank Kelly- PolarTREC teacher 2007.

Learning Resources

National Science Education Standards (NSES):

Content Standards, Grades 9-12

Content Standard A: Science As Inquiry
a. Abilities necessary to do scientific inquiry
b. Understandings about scientific inquiry

Content Standard B: Physical Science
c. Chemical reactions
f. Interactions of energy and matter

Content Standard C: Life Science
d. Interdependence of organisms
e. Matter, energy, and organization in living systems
f. Behavior of organisms

Content Standard D: Earth ad Space Science
a. Energy in the earth system
b. Geochemical cycles

Content Standard E: Science and Technology
a. Abilities of technological design
b. Understandings about science and technology

Content Standard F: Science In Personal and Social Perspectives
a. Personal and community health
b. Population growth
c. Natural resources
d. Environmental quality
e. Natural and human-induced hazards
f. Science and technology in local, national, and global challenges

Content Standard G: History and Nature of Science
a. Science as a human endeavor
b. Nature of scientific knowledge
c. Historical perspectives

Other Standards:

Florida Sunshine State Standards
* Based on middle school standards

Learning Resources

SC.8.E.5.10 - Assess how technology is essential to science for such purposes as access to outer space and other remote locations, sample collection, measurement, data collection and storage, computation, and communication of information.

SC.8.N.1.6 - Understand that scientific investigations involve the collection of relevant empirical evidence, the use of logical reasoning, and the application of imagination in devising hypotheses, predictions, explanations and models to make sense of the collected evidence.

SC.8.N.3.1 -Select models useful in relating the results of their own investigations.

SC.8.N.4.1 Explain that science is one of the processes that can be used to inform decision making at the community, state, national, and international levels.

SC.8.N.4.2 - Explain how political, social, and economic concerns can affect science, and vice versa.

Name _____ Due Date _____

Polar Scientists and Their Research

5 from the Arctic and 5 from Antarctic

Arctic Scientist Name	Institution	Contact info	Research Title	Description of Research

Antarctic Scientist Name	Institution	Contact info	Research Title	Description of Research

1. What websites did you use to find your information? List them all. You must use the PolarTREC website and at least one other site.

2. Which research project looks interesting to you and why?

3. Would you like to be a Polar Scientist? Why or why not?

4. List 6 characteristics that you think are important for a polar scientist to have.

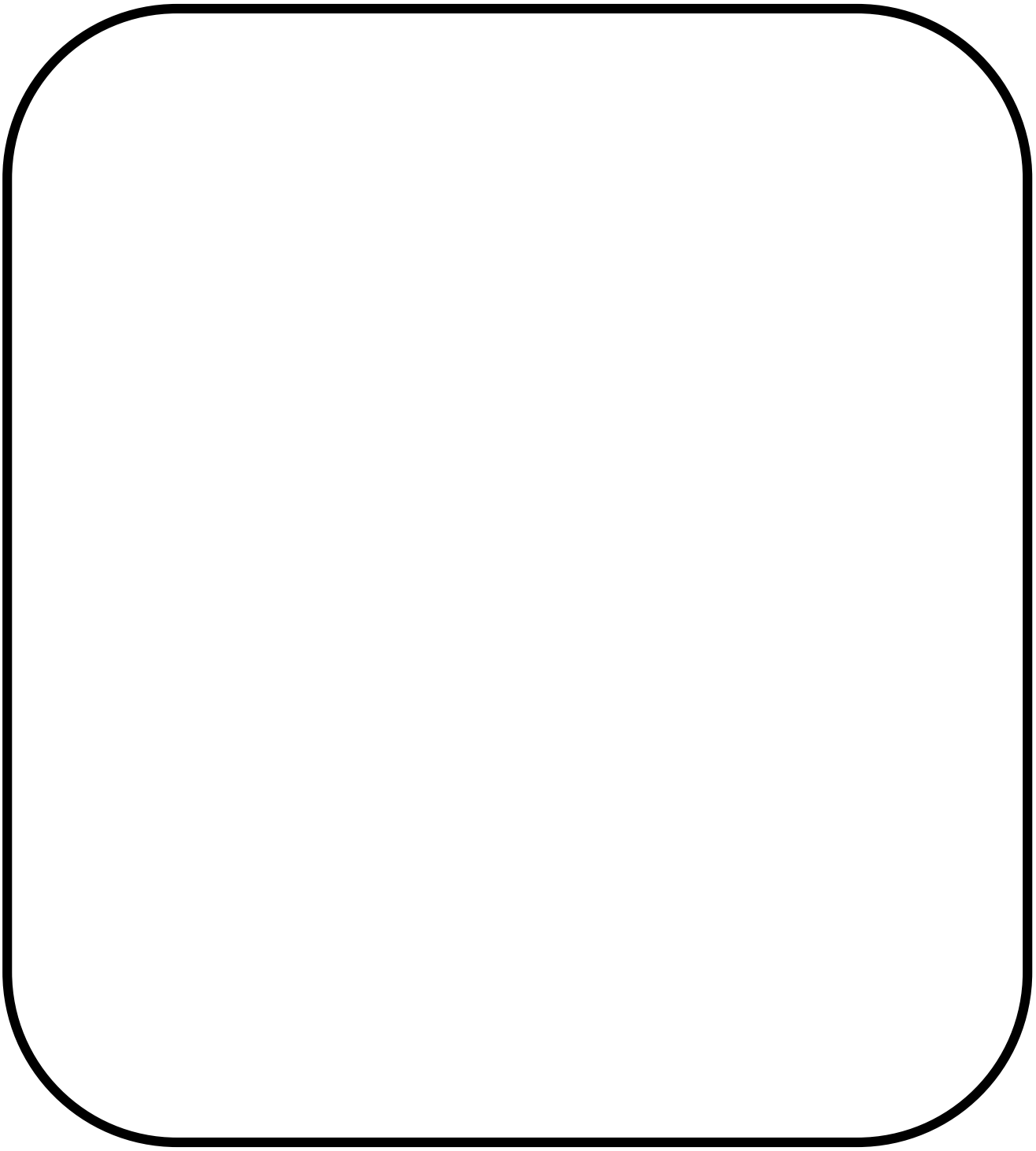
5. Use the Internet to look up 2 research projects that are occurring in the tropics.
   - Internet address

     Research project title and description

   - Internet address

     Research project title and description

Draw and color a picture with a caption depicting a polar or tropical science research project (from the list above) that appeals to you. Include yourself, the scientist working with any special instruments within the drawing.



Caption: _____

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