teachers'domain

Teacher's Guide: Take Action for Nature and Your Community

Overview

Take Action for Nature and Your Community is a student-directed learning experience. However, while students are expected to direct their own investigations, teachers must be fully engaged to keep the activity on track, facilitate partnering and discussions, and ensure that all learning goals are met.

In this activity, students explore human relationships with the natural environment, learn how both Alaska Native ways of knowing and Western science can be used to study and help the environment, and take action on a local environmental issue. The focus of the lesson is on how students can become responsible for their own education and get involved in taking care of the natural environment. Students watch several videos that illustrate the effects of climate change in the Arctic, show students taking part in scientific research, and exemplify ways to take an active role in caring for the environment. Students are then asked to identify and research an environmental issue that concerns them; they apply observations and research to address a local community issue related to climate change.

The following notes include suggestions for how you might enhance your students' learning experience by providing additional context to the content presented. The notes correspond to the flow of the activity.

Activity Objectives

- Learn how to make observations of the natural environment
- Learn how both Alaska Native ways of knowing and Western science can help in the study and care of the local environment

Grade Level: 5–12

Suggested Time: Three to four class periods, with time between the last two periods for student research outside the classroom

Materials:

- Science notebooks, if needed for additional note taking

Before the Activity

- Before students begin, provide an overview of the activity in order to set expectations. Suggest a timeline for completing the different parts of the activity, mention the different types of media they will encounter, and identify what they will have to do to demonstrate learning. For example, beyond their participation in class discussions ("Talk About It" sections), tell students which notes ("Write It Down" sections) they will need to turn in as assignments.

- Arrange computers with Internet access so students can work in pairs and/or small groups.
- Review the Glossary of Alaska Native and Western Science Terms PDF Document. If students will not have access to printers at their individual computers, you can make copies of the document ahead of time. Encourage students to refer back to the glossary as needed throughout the lesson.

The Activity

Introduction

As Earth's global climate changes, local environmental changes can be important issues to the community. The objectives of this activity are to help students better understand how Western science and Alaska Native ways of knowing can complement each other in the study and care of the natural environment, and to guide students to get involved and take action for the environment within their own community.

1. What Is Your Relationship with the Natural Environment?

This screen asks students to consider their own relationship with nature and to think about how subsistence lifestyles depend on the natural environment. If students are unfamiliar with the subsistence way of life, you may want to provide them with examples of subsistence activities. If you are in a more urban location, have students think about how elements of the natural environment still affect the daily lives of their families.

2. Climate Change in the Arctic

On this page, students watch a video about the effects of global warming in the Arctic—such as how increased temperatures impact ice conditions. Students consider how climate change can affect local environments (such as Shishmaref, Alaska) and begin to think about how it may affect their own relationships with the natural environment that they described in screen 1. If students are unfamiliar with the subsistence way of life, you may want to hold a class discussion rather than have them write down their ideas.

3. Scientific Research

This page asks students to think about the processes of scientific research. After watching a video about Alaskan students who gather data about lake ice and snow conditions, students respond to questions about the tools and reasoning behind the research featured in the video. They should come away with a better understanding of Western scientific data collection and how students can be involved in and do real scientific research. You may want to review the GLOBE Program (www.globe.gov), Signals of Spring (http://www.signalsofspring.net/), or other Web sites for programs that involve students in scientific research.

4. The Value of Observations

This discussion asks students to reflect on their understanding of Alaska Native ways of knowing and Western approaches to science and how the types of observations may differ. Depending on their background, students may be much more familiar with one of the approaches and may need more guidance to understand the advantages of the other.

After student pairs have had a chance to discuss their ideas, bring them together for a class discussion. Lead the class in a dialogue about the advantages of each approach and how observations from Alaska Native ways of knowing and Western science can complement one another.

5. Making Use of Both Native and Western Perspectives

On this page, students watch a video about Alaska Native students who contribute data for scientific research. These students demonstrate a commitment to their community and make use of both Alaska Native and Western perspectives. To stimulate their writing, have students think about how research about a subsistence food source, such as salmon, could benefit from both Alaska Native ways of knowing and Western science. Again, depending on their background, students may be much more familiar with one of the approaches and may need more guidance to understand the advantages of the other.

7. Identify Community Concerns and Environmental Issues

This page asks students to investigate environmental issues in their community by reading local newspapers, visiting Web sites, and talking with adults whom they know, such as family members or neighbors. Emphasize that they should speak with people who are familiar to them (safety first!). However, because some students may not know anyone who is appropriate for them to speak with, consider providing an alternative option: bring a person from a local tribal organization known to you or recommended by a reliable resource into the classroom.

You might also prepare suggestions of local areas and issues for students to research.

8. Research an Environmental Issue

In this activity, students work with a partner or group to concentrate on one local environmental issue that is particularly interesting to them. Their research should be guided by these questions:

- What is the connection between their selected environmental issue and climate change?
- How does this issue impact the community?

You can provide more research structure if needed, for example:

a) Suggest listing key words related to the topic

b) Demonstrate how to research the key words using a search engine

c) Help them brainstorm questions about the topic

d) Show how to keep track of information sources

You may want to set aside specific time for research in the library or classroom and meet with each group to discuss its issue. Encourage students to use a variety of resources, including their own observations, the Internet, books, photographs, and interviews (again, stress the importance of safety first!). Screen 12 of this activity also features links to resources that students may find useful. Have students keep track of all of their sources so that they know where their research information came from. If they run into misinformation, this may help you to identify the problem and help get them back on track.

The remainder of this student activity (screens 8–11) has the flexibility to be a short-term (a couple of weeks) or a long-term (full semester) project. You should outline a timeline for the entire project to share with students, including a final deadline and check-in points along the way.

9. Brainstorm Solutions

This page asks students to first brainstorm possible plans of action to address their chosen environmental issue. Encourage students to be creative and to draw on both traditional ways of knowing and Western science when coming up with ideas.

Next, students must decide on a plan of action to address their chosen environmental issue. You can help them choose a feasible idea, considering safety issues, available resources, and the amount of time allotted to the project. Students typically begin thinking very big, so it is important to help them whittle down their idea into something that's manageable. Otherwise, students run the risk of failure because their idea was impractical given time and resource constraints.

When choosing a solution, students should consider the following points:

- The causes of the issue
- The effects of not taking action on the issue
- The objective of their plan—how will their solution benefit the community?
- The costs of their plan

Because each project will be different, the results of this planning phase will vary for each team. For instance, some groups may choose to undertake a design project and should use this time to create design sketches. Other groups may choose a less concrete solution, such as an education project, and should use this time to develop their idea and plan out the necessary steps to accomplish their goal. Project ideas should have a measurable component so that students will have some way of showing that they've made progress toward their goal. For example, students should be able to make observations of their project's impact on the environment, or be able to collect data about how successfully they conveyed their message to the community.

10. Take Action!

Students should now implement their plan. Again, because of the range of possible project ideas, there may be a wide variety of plans of action. For example, some students may make a prototype of a design that can be tested in the environment; others may simply have a well-thought-out concept that can be explained to community members. You may want to meet with each group of students to help them figure out the best way to test their proposed solution. Students should also begin to think about how they will present their findings to their peers when they have completed their project.

11. Share Your Findings

This page asks students to create a presentation about their project to share with the rest of the class. For large classes, you may want to hold a poster presentation session, where students can walk around and learn about the other projects informally. Alternatively, for smaller classes, you may want to have each group give an oral presentation (5–10 minutes) in front of the class.

After students have had a chance to learn about each other's projects, lead the class in a discussion using these guiding questions:

- How has this activity changed your understanding of your own relationship with the environment?
- What have you learned about making observations?
- How did you make use of both Alaska Native ways of knowing and Western approaches to science?
- Why do you think it is important for young people to take environmental action?