

TOPIC 4.5

How can our actions promote sustainability?

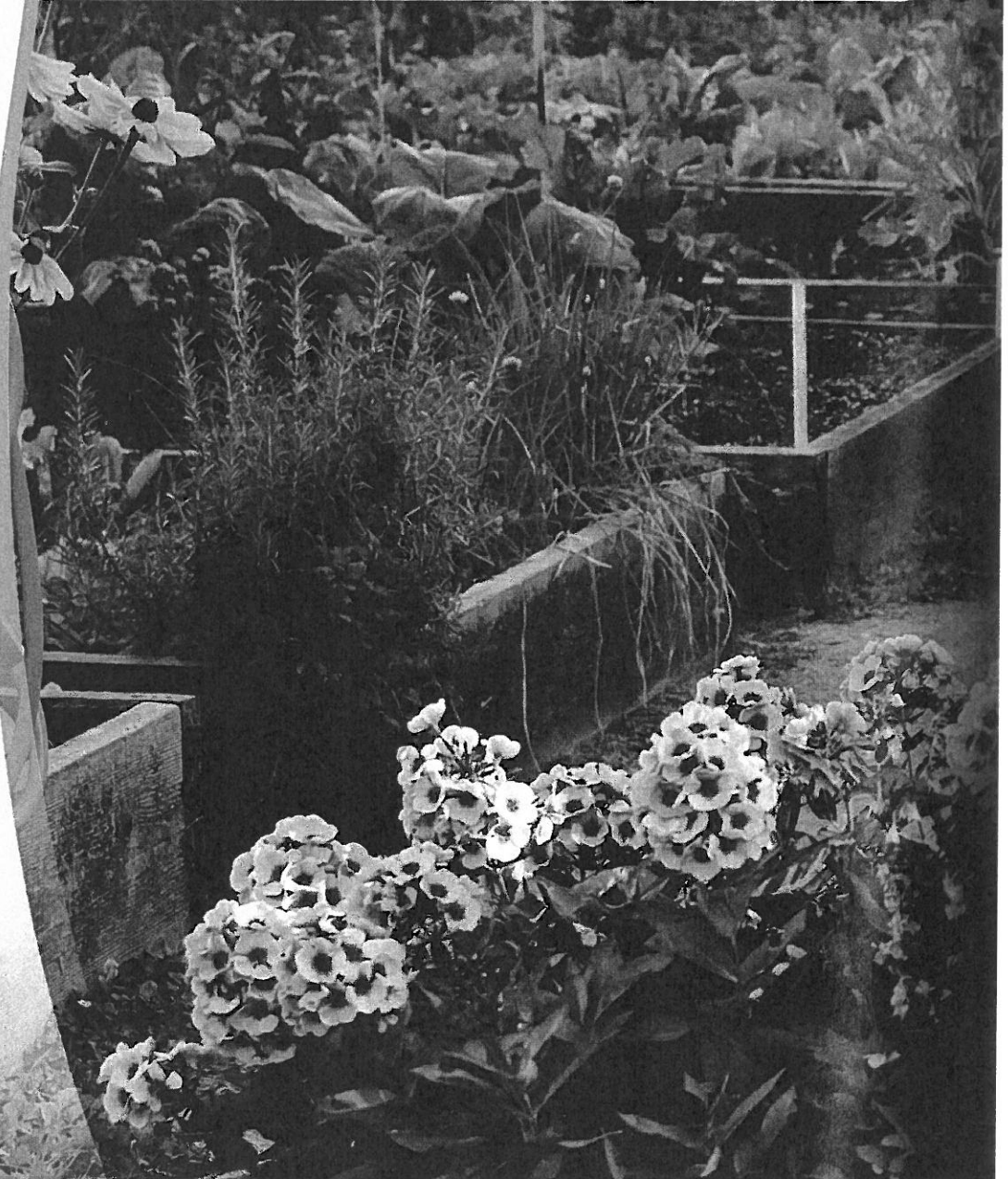
Key Concepts

- Inquiring individuals can make a difference.
- Responsible decision making and choices can lead to sustainable practices that benefit all life.

Curricular Competencies

- Contribute to care for self, others, community, and world through individual or collaborative approaches
- Transfer and apply learning to new situations
- Generate and introduce new or refined ideas when problem solving
- Contribute to finding solutions to problems at a local and/or global level through inquiry
- Express and reflect on a variety of experiences, perspectives, and worldviews through place

Community gardens are popping up all over the place. People may grow fruits and vegetables, herbs, flowers, or a mix of everything. Community gardens are a great way to promote sustainability. They benefit the biosphere, atmosphere, geosphere, and hydrosphere. Community gardens increase biodiversity, and they reduce run-off after it rains. Because people are growing food locally, it reduces the amount of food that needs to be transported to an area. Community gardens also help bring people of different backgrounds together and allow them to share aspects of their culture with each other.



Starting Points

Choose one, some, or all of the following to start your exploration of this Topic.

- 1. Identifying Preconceptions** Which of the following statements do you think are true, which are false, and why do you think so in each case?
 - As an individual, my actions to promote sustainability do not matter and will not make a difference in the big picture.
 - Finding an organization that promotes sustainability and the time to volunteer with that organization is difficult.
 - It is important that I educate myself about candidates running for office, including checking for bias, before I vote.
- 2. Explaining** How do community gardens benefit each of Earth's spheres specifically?
- 3. Inferring** Some community gardens are on the roofs of buildings. When people plant gardens or grass on the roof of a building it is called a green roof. How do you think green roofs promote sustainability? Which of Earth's spheres are positively impacted by green roofs? (Hint: Remember to think about how a green roof could affect the heating and cooling of a building.)
- 4. Applying First Peoples Perspectives** What are some ways that you could apply First Peoples knowledge to promote sustainability?



Key Terms

There is one key term that is highlighted in bold type in this Topic:


- **smart growth**

Flip through the pages of this Topic to find this term. Add them to your class Word Wall along with their meanings. Add other terms that you think are important and want to remember.

Inquiring individuals can make a difference.

Although it may seem like an overwhelming goal, individuals can make a difference in moving toward sustainability. Table 4.5 outlines examples of how individuals can be empowered.

Table 4.5 Examples of Individual Empowerment

Role or Action	Empowerment
	<p>Consumers have power.</p> <ul style="list-style-type: none"> • What choices do you make about the products you will and will not buy? • What reasons lie behind, or motivate, your choices? • How can you find out more about the manufacturing conditions and materials used to make a product?
	<p>Volunteers inspire through their commitment and example.</p> <ul style="list-style-type: none"> • Where do you, or can you, volunteer your time? • Who benefits from your willingness to share a part of yourself? • How can volunteering locally have global effects?
	<p>Citizens have responsibility.</p> <ul style="list-style-type: none"> • In what ways are you a citizen of your community? your province? your country? your planet? • What responsibilities do you have as a citizen? • How can you educate yourself about candidates before you vote?
	<p>Citizen scientists can make important contributions to science.</p> <ul style="list-style-type: none"> • How can you find out more information about local projects you could participate in, such as vernal pool, butterfly, or wildflower surveys? • What local projects interest you? • How can your local data be used nationally or internationally to help scientists learn more about sustainability?
	<p>Science-minded advocacy groups can affect change, and increase sustainability and stewardship.</p> <ul style="list-style-type: none"> • How can you find out more about advocacy groups their motives, backing, and the causes they represent? • How can the work you do as a member of an advocacy group lead to changes in legislation that help protect ecosystems and ecosystem services?



Before you leave this page . . .

1. Identify one way that you can promote sustainability as a consumer.
2. What does it mean to be a citizen scientist?

TAKE
a Stand

Make a Difference

You Can Make a Difference
as a Consumer

EcoLogo, ENERGY STAR®, Fair Trade, SeaChoice, B.C. Certified Organic—going shopping can be a confusing experience with so many different labels to consider. For instance, many consumers are unaware of what the Leaping Bunny logo on a household cleaner stands for, or what a tree marked with FSC on a pack of printer paper means. However, these and other labels can help you make informed choices as a consumer, if you understand the claims behind them.

It is also important to know if claims are valid and regulated, or if they may be false and misleading to the consumer. A technique called greenwashing refers to how some companies or organizations promote themselves and their products as environmentally responsible, but do not live up to their claims. It is important for consumers to recognize this strategy and develop a healthy skepticism for any claims that a company makes before making a purchase based on them.

Analyze and Evaluate

1. Labels are important tools for consumers. Find out more about one of the labels mentioned in this feature, or another that interests you. Write down any questions you have about the label. Use online resources and other information sources to answer your questions. Use your answers to inform consumers about the label, using a medium of your choice.

Apply and Innovate

2. Making a difference as a consumer applies not only to what you purchase, but also to what you choose not to purchase. How much of what you purchase do you actually need? Track your purchases for a week to find out. After a week, assess your consumption. Write an opinion piece to advise other consumers about their power as consumers, based on your experiences.

Organic
MILK
1%
M.F.
PARTLY SKIMMED
MILK



CONCEPT 2

Responsible decision making and choices can lead to sustainable practices that benefit all life.

Activity

Community Gardens

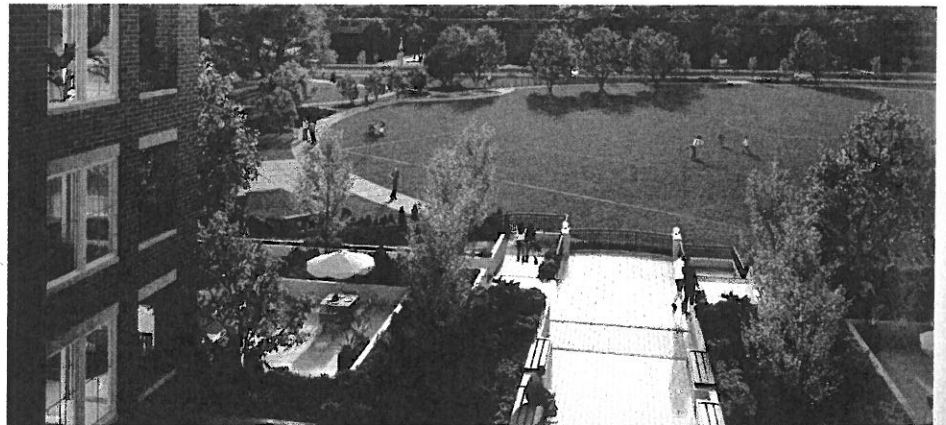
Is there a community garden in your area? If so, where is it? What is grown there? How does it benefit Earth's spheres on a local level? What other questions do you have about the garden? If not, how could you start one? Make a list of what you would need to establish a community garden in your area.



Connect to Investigations 4H, 4I, and 4J on pages 348, 350, and 352

In this unit, you have read about the importance of maintaining sustainability and the interconnectedness of Earth's spheres. You have also read how human actions can negatively impact Earth's spheres and nutrient cycles. However, human actions can also restore sustainability and balance to Earth. **Figure 4.28** shows a sample of the many ways that human activities are promoting sustainability.

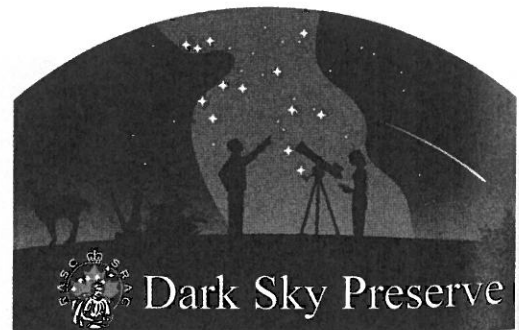
Figure 4.28 Examples of promoting sustainability

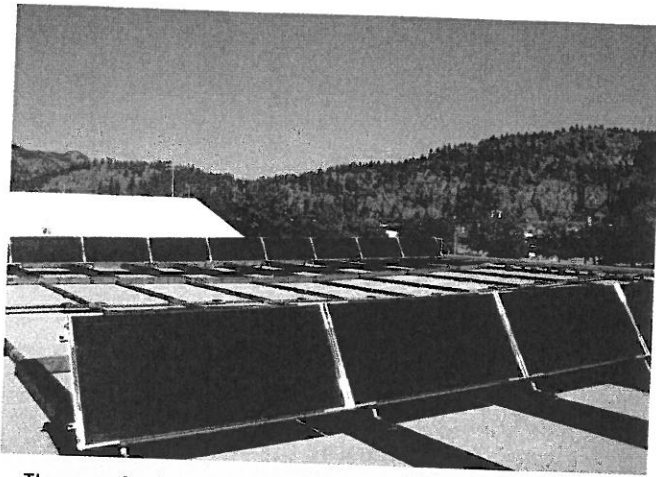


smart growth strategy focussed on concentrating growth in the centre of a city, rather than in outlying areas

Urban sprawl happens as cities with growing populations increase their size by spreading into natural areas and farmland. A strategy called **smart growth** helps by concentrating growth in the centre of a city, rather than in outlying areas. Homes and businesses are intermixed, while green spaces are preserved. Smart growth also enhances public transit, which reduces air pollution from traffic, a benefit to the atmosphere.

McDonald Park in Abbotsford, B.C. was designated as a Dark Sky Preserve by the Royal Astronomical Society of Canada in 2003. Being a Dark Sky Preserve means that the park is dedicated to reducing the effects of artificial lighting on the nighttime environment. This not only increases the aesthetic ecosystem service the park offers to its stargazing patrons, but also helps protect the wildlife that use the park as their habitat. Animals that rely on darkness to forage for food, mate, or migrate are negatively affected by light pollution.





The use of solar panels on a small scale can help reduce the use of fossil fuels. The Grand Forks Aquatic Centre in Grand Forks, B.C. uses 18 solar panels to heat pool water and hot tubs. The St. Hubertus winery in Kelowna, B.C. recently installed 42 solar panels that supply 100% of its power during summer days. In East Vancouver, Vancouver Cohousing's Community Solar Project opened a multi-family residential development that is equipped with 90 solar panels to provide electricity to the development's common areas.



From 2008 to 2011 trips made by bicycle increased by 40%, making bicycling the fastest growing mode of transportation in Vancouver. The city responded by increasing the number of protected two-way bike lanes in the downtown area. In 2016, the city started a bike-sharing program as well. People can purchase daily or monthly passes to ride the bicycles instead of using an automobile. The bike-sharing program is part of Vancouver's Greenest City Action Plan.



Waste Reduction Week for Schools is a nationwide program in which students can learn more about how to reduce the waste their schools produce. Students are challenged to have a waste-free lunch, as well as to reduce, reuse, and recycle while at school. Students conduct a waste assessment to determine which materials may be recycled, reused, or composted. Then, they create a waste reduction action plan for their school.



The Scia'new First Nation on Beecher Bay in East Sooke, B.C., in partnership with the Trust for Sustainable Development, are building a sustainable housing development as a community. They are incorporating ecologically sustainable technologies including the use of a geothermal heating system to provide heat to homes. Trees removed as part of construction will be used on site, such as to make fireplace mantels for the homes.

Before you leave this page . . .

1. Choose one of the examples from these two pages and explain how it affects you personally.
2. Choose a different example from these two pages and explain how Earth's spheres benefit from it.

Make a Difference

Respecting and Protecting Earth's Spheres

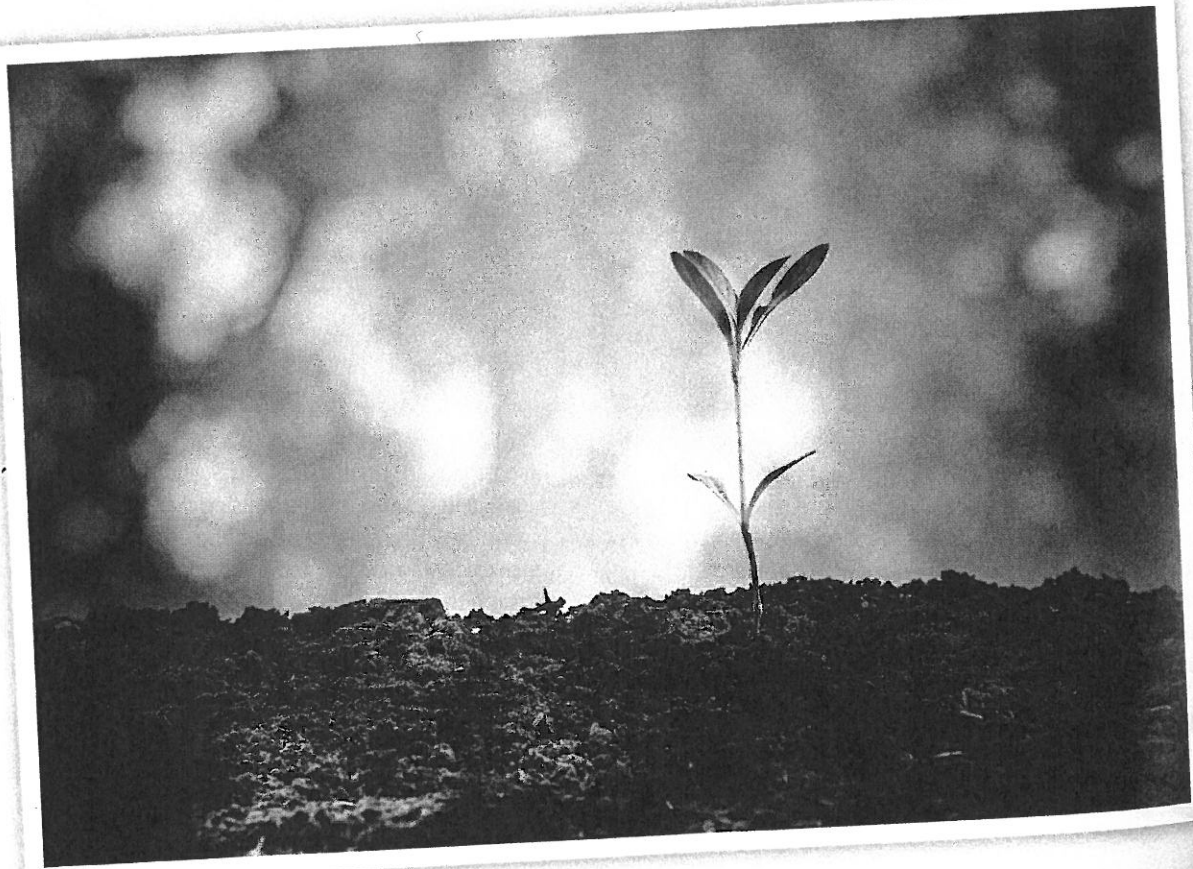
All of Topic 4.5 represents ideas for how you can do something meaningful to make a difference for Earth—your home, our home. What can you do, what would you like to do to take action and make a difference for one or more of Earth's spheres?

- It can be something small, like using stainless steel water bottles instead of plastic.
- It can be something huge, like organizing a battery recycling drive for your school or local community.

- It can be something collaborative or personal.
- It can be something that serves to inspire others.
- It can be something private.

Apply and Innovate

1. How would you like to respect and protect Earth's spheres today?
2. What will you do tomorrow?
3. ...?



Check Your Understanding of Topic 4.5

QP Questioning and Predicting PC Planning and Conducting PA Processing and Analyzing E Evaluating
AI Applying and Innovating C Communicating

Understanding Key Ideas

1. Answer the question that is the title of this Topic. Copy and complete the graphic organizer below in your notebook. Fill in four examples from the topic using key terms as well as your own words. **PA C**



2. Explain what is meant by the phrase “sustainable practice.” **PA**
3. What role can the development of a community garden in your community play in ensuring the sustainability of your community? **PA E**
4. Identify some of the actions you can take in your home to encourage the development of a sustainable household. **AI**
5. Describe what sustainability means to you.
 - a) What does “urban sprawl” mean?
 - b) Provide an example of urban sprawl that you may be familiar with.
 - c) Use a cause-and-effect map to show possible effects on a city of using the strategy known as “smart growth.” **AI C**
6. Converting a strip mall to condominiums instead of building on a field is an example of smart growth. Explain why. **PA C**

Connecting Ideas

7. List and describe three actions that you as an individual could take to increase sustainability on Earth. How would your actions positively impact each of Earth’s spheres? **AI**

Making New Connections

8. Use the Internet to find examples of different online campaigns that people have launched to promote sustainability. Present one example to the class and discuss whether or not you think the campaign has been effective. **E AI C**
9. Read the information in Table 4.5 and think about the following statement: “Instead of waiting for the change that might never come, many people are choosing to become the change they are waiting for.” Which of the actions in the table can or do you take to ensure sustainability? Explain how. **E AI C**
10. In the news, you often find complex issues presented in polarized ways, where each side represents an extreme position. When this happens, people become stereotypes—they become their opinions or their jobs, instead of real people. For example, “environmentalists” are pitted against “loggers”, or “developers” are pitted against “activists.” What happens to dialogue and communication when people who are engaged on both sides of complex issues are reduced to stereotypes? **AI C**

Skills and Strategies

- Planning and Conducting
- Processing and Analyzing
- Evaluating
- Communicating

What You Need

- access to online and/or print resources

Investigating a Local Environmental Project

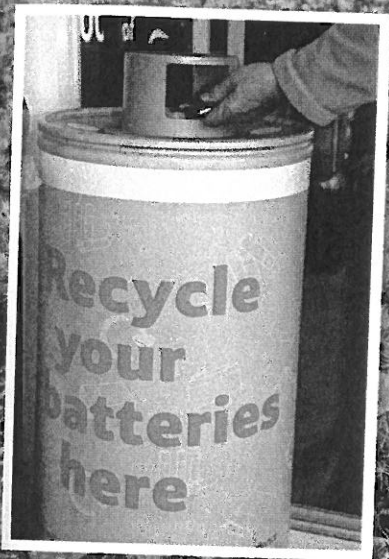
Do you have a friend who is part of a group that is working to preserve a local bog? Is your neighbour involved in a spring riverbank clean-up each year? Do you help out with a local frog count? In this investigation, you will research an environmental program or project to find out how it is linked to the sustainability of a local environment.

Question

How is a local environmental program linked to sustainability?

Procedure

1. With your class, identify sources of information that could be used to discover local projects that promote the sustainability of a terrestrial or aquatic environment in your area.
2. With your group, use these resources to choose a local project that interests you. Ask your teacher for permission to research this project before you continue.
3. As a group, write a list of questions that you would like to answer about your chosen project. Your goals are to learn more about the project in general and find out why it is important to the sustainability of the environment it is targeting. Below are examples of questions that your group could ask.
 - Is there a program that is working to reduce the amount of greenhouse gases being released into the atmosphere? What impact has this program had on the local area? What other plans could be put in place to help this program succeed?
 - Is there a project in your community to reduce the amount of pollution released into a nearby river or lake? How has this aquatic environment become more sustainable as a result of the project? What other actions could be taken to improve the sustainability of the hydrosphere and biosphere in this environment?



- Is there a project in your community working to make agriculture more sustainable on a farm near your community? What changes have been made? How have these changes affected the sustainability of each of Earth's spheres locally?

Analyze and Interpret

1. How has the project you investigated improved the sustainability of a local environment?
2. Suggest another way the project could make the environment and Earth's spheres more sustainable. How would your suggestion do this?

Conclude and Apply

3. Use your research to design a website, blog, poster, or brochure to inform other community members about the project.

Skills and Strategies

- Planning and Conducting
- Processing and Analyzing
- Evaluating
- Communicating

What You Need

- writing materials
- audio/visual equipment, such as a video camera, tape recorder, or camera (optional)

I Remember When...

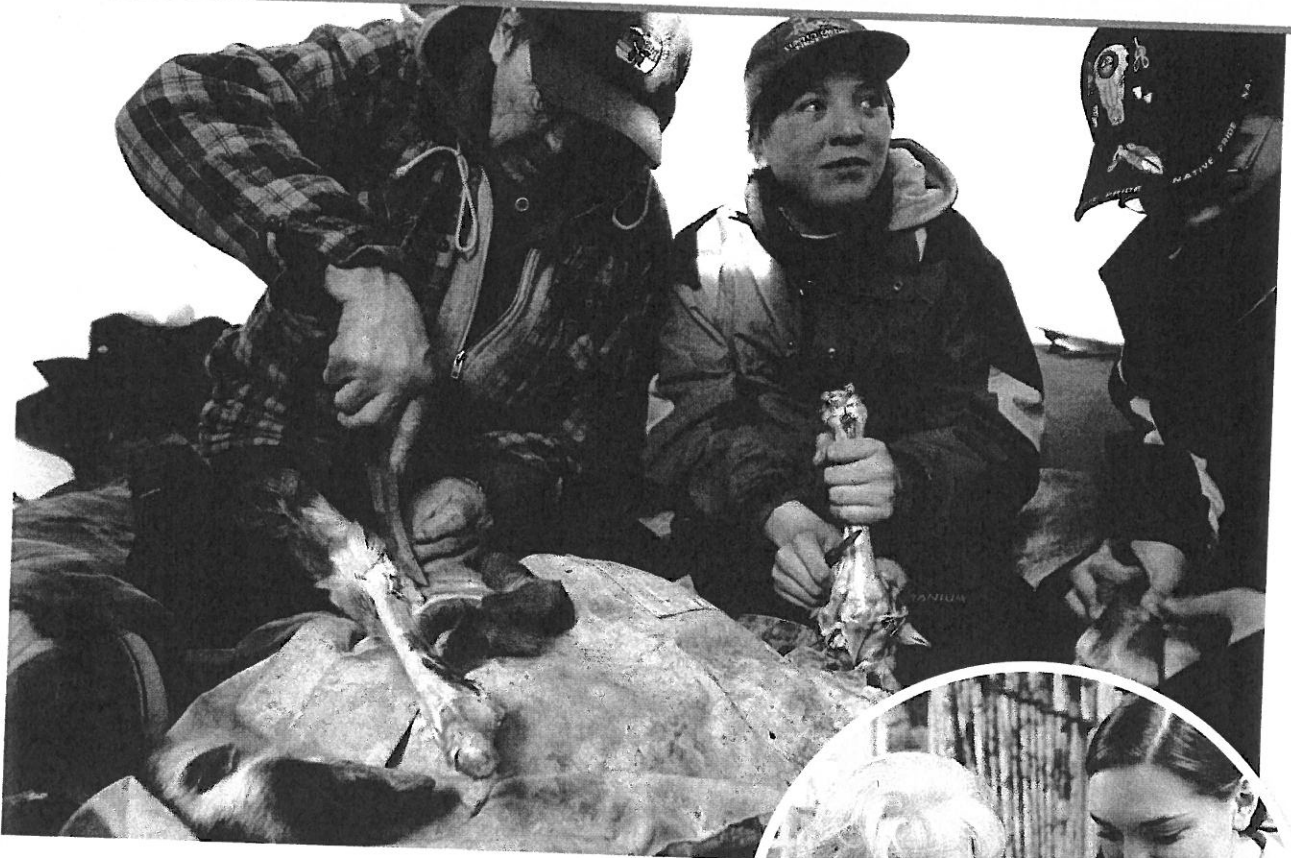
The environments in and around your community have experienced a great deal of change over the last few decades. Many of these changes are due to human activities. In this activity, you will interview seniors or Elders who have lived in your community for a long time to learn what changes they have observed.

**Question**

What changes have occurred in environments in your community in the last several decades?

Procedure

1. Your teacher will help you make arrangements to interview a local senior or Elder, either at your school or in the community.
2. Prepare a list of questions you would like to ask during this interview. Here are a few examples of questions you could ask.
 - How long have you lived in this area?
 - What was it like when you were a child (or when you first came here)?
 - How has the city (or town, or village, or area) changed since then?
 - Are there more or fewer animals around than there were in the past? What about trees or other plants?
 - What kinds of work and other activities did people do in the past? How did their work and other activities affect the land and living things in the area?
 - Has the quality of the air and/or water changed? How?
 - Have you noticed changes in local ponds, rivers, or lakes? What has caused them?
3. Show your list of questions to your teacher for approval before you begin your interview. Your teacher will discuss guidelines for the interview process with you before you begin.
4. Take notes during the interview. You could also use audio/visual equipment, such as a video camera, tape recorder, or camera, to capture the interview.



5. Use the material you gathered in your interview to prepare a newspaper article, a blog post, or a film documentary of your research findings.

Analyze and Interpret

1. Did the local environment change as much as you expected over the years? Explain.
2. How was each of Earth's spheres affected?
3. What part of your research surprised you the most? Why was this the case?

Conclude and Communicate

4. How did you feel about the information you found out? Do you think the changes were positive, negative, or both? Can the changes be reversed? How?
5. Develop a plan to share your findings with the senior or Elder whom you interviewed and the broader community. With the support of your teacher, carry out the plan.



Seniors and Elders share knowledge and wisdom that come from experience. Connecting with them also provides opportunities to develop or strengthen familial and social bonds.

Skills and Strategies

- Questioning and Predicting
- Planning and Conducting
- Processing and Analyzing
- Evaluating
- Applying and Innovating
- Communicating

What You Need

- access to the Internet and/or library materials

Local Human Activity and Earth's Spheres

Do you know what's happening in your community and how any actions are affecting Earth's spheres? In this activity, you will find out more about projects and/or activities in your community that may be affecting the sustainability of Earth's spheres.

Question

In what ways are human activities affecting Earth's spheres in your community?

Procedure

1. With your class, gather stories from newspapers, TV, radio, and the Internet about actions that affect Earth's spheres in or near your community. Here are some examples of actions that might affect Earth's spheres.
 - Diverting water for a construction project lowers the water level.
 - Adding fertilizers to a local field changes the make-up of the soil.
 - The shoreline of a lake is being developed for a new recreation area.
 - The growing human population is filling a landfill site with wastes faster than originally planned. The site must be expanded, or another solution must be developed.
 - Forests are being cut for timber or cleared for land development.
 - Identifying and extracting oil and natural gas deposits from under the ground.
 - Mining commercially important minerals.
2. Work in a group. Choose an issue to study.
3. Identify which of Earth's spheres is being immediately affected and how other spheres may be affected because they are interconnected.



4. With your group, create a list of sources of information to help you learn about the issue and predict possible consequences for Earth's spheres. Analyze all information for reliability and bias before using it. Create a "References Cited" page to record your sources of information.
5. Create a presentation to communicate your ideas and your findings.

Analyze and Interpret

1. What did you learn about the ways that human activities are affecting Earth's spheres in your community?

Conclude and Communicate

2. What actions could be taken to reduce the impacts? How could these activities be carried out sustainably?