

The Teachers' Guide to the PBS Series and its Companion Book



EDENS

LOST & FOUND

How Ordinary Citizens are Restoring Our Great American Cities



HARRY WILAND *and* **DALE BELL** *with* **JOSEPH D'AGNESE**

The Teachers' Guide to the PBS Series

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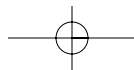
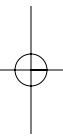
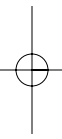
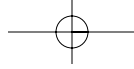
EDENS Lost & Found

**How Ordinary Citizens
Are Restoring Our Great American Cities**

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ABOUT *EDENS LOST & FOUND*, THE PBS SPECIAL

Edens Lost & Found is a four-part documentary mini-series that aired on PBS-TV stations beginning in spring 2006. It is a mini-series about urban sustainability—making cities more livable and less taxing on natural resources—that can be used as part of a sustainability education or environmental education program. Produced by the film-making team of Harry Wiland and Dale Bell, the four films investigate a fascinating phenomenon of urban renewal which is sprouting in four American cities: Chicago, Philadelphia, Los Angeles and Seattle.

For the first time in American history, more people (80 percent) are living in cities than in rural areas. Though people move to urban areas for better job prospects and a better life, this demographic shift inevitably places an enormous strain on natural resources, such as air, water, and energy reserves.

If this migration is to thrive, humans must become smarter about the way they use their resources. This does not only mean we should conserve energy, air, and water; it means we must intelligently redesign our infrastructure, our mass transit system, and more intelligently manage and preserve our biological resources such as parks and city forests. Did you know that cities would be markedly healthier places if more trees were planted in them? And

did you know that programs for urban forestry, supported by the U.S. Forest Service, are already improving the property values of ordinary citizens?

This film and book project took three years to bring to fruition. Film crews crisscrossed the nation several times chasing stories that tell the story of a greener, healthier America. For your students, this project offers an easy, engaging way to learn about an environmental movement with opportunities for multidisciplinary learning.

ABOUT THE COMPANION BOOK

The print version of the mini-series is a slightly different entity than the film version your class will watch on DVD. The companion book, *Edens Lost & Found: How Ordinary Citizens Are Restoring Our Great American Cities* (Chelsea Green Publishing), embodies the flavor of our mini-series but does not precisely adhere to the scripts of our shows. The book offers in-depth interviews with community activists, and greater depth and analysis. To make the most of the series, we encourage you to watch the films and assign readings from the book to your class. Needless to say, all material is PBS-approved and family-friendly.

HOW TO USE THE COMPANION BOOK & TEACHER'S GUIDE

This Teacher's Guide is meant to be an accompaniment to the films and companion book. Sustainable education spans many disciplines and is an excellent way to get your students thinking like young adults. They will call upon math and science skills, English, composition, arts and literature understanding, current events, local history, and civics. They also will hone their research skills, master the Internet, scour libraries, and reach out to their community in search of important resources.

The Guide is organized according to the chapters of the DVD companion book, starting with Chapter 1, "The Path to Sustainability," which defines the goals of urban restoration, defines sustainability, and describes the importance of community. Next come teaching topics inspired by our model cities—Chicago, Philadelphia, Los Angeles and Seattle—which appear in this order in the books and films. Lastly, we wrap up with topics related to the Epilogue chapter in the book. There are a couple of ways to use the Guide with the book and film series:

- You could choose to watch an entire disc from the series, such as "Chicago: City of the Big Shoulders," and then read the entire Chicago chapter, and follow up with the corresponding teaching activities and extensions in the Guide.
- You could scan the Guide first, searching for topics that interest you or supplement a teaching unit you may already be exploring with your class, such as urban forestry. You could then watch selected portions of the films, read selected chapters, and follow up with specific Guide suggestions that pertain only to your established interests.
- If you need homework ideas, summer vacation assignments, field trip suggestions, career day ideas, or fresh new projects to engage your students for a single period or a whole semester, you can simply flip through the Guide to pick a plan that appeals to you.

While we always recommend you use the book and DVD to make these activities more meaningful, the level to which you use them is obviously up to you.

The topics in this Guide consist of the following components:

- "*Background*" paragraphs concisely set up all activities, so you don't necessarily need to read the book or watch the DVD in order to teach the topic. However, we strongly recommend that you do so. One paragraph is no substitute for the depth you will find in the book or the emotional impact you and your students will experience by watching some of these film segments.
- "*Discussion questions*" are warm-up inquiries to get the class thinking and talking about the topics.
- "*Classroom activities*" do not require students to leave their classroom or school. Some may require them to do library or Internet research, write letters or send emails to local political representatives, local officials, and others.
- "*Beyond the Classroom*" projects may require visits to sites in your students' neighborhood, city or town. Students may be asked to critique a park, interview family members, circulate petitions on a topic of their choosing, or contact members of the media.
- "*Career Corner*" contains suggestions for professionals who might make good visitors to your classroom.

Elsewhere in this Guide, you'll find a list of resources and books to read. Before beginning a topic, scan the resources section of the companion book for the names of organizations or websites that may help you explore a topic.

Let us know how your experience goes with *The Edens Lost & Found* Teacher's Guide. We'll post success stories on our Website (www.edenslostandfound.org) and you and your students may be the subjects of a future documentary or book!

GLOSSARY

activism: strong action on the part of a concerned citizen or citizens to bring about necessary and important social, political and environmental change.

biodiversity: a complex, rich, and healthy variety of plants and wildlife in a specific ecological system.

cistern: an underground basin or tank used for capturing and holding rainwater.

coalition: a partnership between two or more volunteer, philanthropic, charitable, or political groups unified to accomplish a common goal.

community: a group of people who live in the same geographical area, or who share the same goals or dreams.

conservation: protecting or keeping some object or resource from change, loss or damage.

CSA (community sponsored agriculture): an agricultural business model in which customers support a local farmer by subscribing to his crops at the beginning of the season, and eating what he or she successfully grows throughout the season.

ecosystem: a group of plants and wildlife that are adapted to, thrive in and depend upon a fixed geographical area.

grasslands: an ecosystem in which low, grassy plants are the chief vegetation.

green building: the employment of environmentally friendly, energy efficient, and conservation-minded techniques in the construction of residential and commercial buildings.

green energy: the employment of environmentally friendly, energy efficient, and conservation-minded technologies to generate power for homes, heating, automobiles, and the like.

greenhouse effect: the warming of the earth's environment caused by an overabundance of certain polluting gases.

infill housing: the construction of new residential housing within a city block in a manner that fills in long-vacant or recently vacant lots, and does not require the destruction of additional parcels of wild land.

marsh: swampy land unfit for construction and agriculture but perfect for specific wildlife and plants.

native species: indigenous plants and animals that are particularly well-suited to a specific climate or region, and may place fewer demands on that territory than other species.

prairie: a treeless, grassy plain found in many places in the world, but for our purposes, the American Midwest.

runoff: industrial, residential, and agricultural wastes that are not absorbed into the soil but washed instead into local waterways.

service learning: a technique in which students gain education as they perform volunteer, charitable or essential work.

stormwater: the valuable but often dangerous excess rainwater that collects during a storm.

sustainability: using resources in a way that meets the needs of the current generation without destroying the ability of future generations to meet their needs.

urban agriculture: the cultivation of edible crops on ground that lies within city limits.

urban renewal: the act of redeveloping city areas that may or may not be dilapidated, with or without sound environmental practices in mind.

water table: the level to which underground water reserves have become filled or are saturated with rainwater.

watershed: a large geographical area that drains into a specific body of water, or underground reserve.

INTRODUCTION

The Path to Sustainability

TOPIC: Sustainable Cities

Background

We begin our project with two important questions: What is sustainability? What is a city? In our first chapter, readers are told that nature is inherently *sustainable*. Every drop of water that falls in a forest is absorbed and stored away for future use. Every leaf that falls from a tree breaks down into fertilizer to feed the next generation of trees. There are exceptions, but in general all ecosystems can sustain themselves—can keep on going—indefinitely.

This is a marked contrast from human-built environments, which often draw upon finite resources in order to survive. The best example is our use of petroleum as a fuel source. There is a fixed amount of oil on the planet; when it is used up, we will need to find another source of power. Along the way, unfortunately, the use of that fuel damages our environment and possibly our health. And sometimes humans use infinite resources in such a way that they are made, in a sense, finite. A good example is our approach to rainwater. Harvested and managed correctly, the rainwater that falls on our planet should be sufficient to provide for our needs. But in many American cities and towns, rain is treated as a nuisance, something to be whisked away and discarded. In the process of doing this, that precious water is polluted and in turn pollutes our environment.

This chapter—indeed, this entire book and DVD series—shows ways that Americans are trying to make their cities more sustainable. We focus on cities because 80 percent of Americans live in cities and their outlying areas. If we do not find a solution to the problems of big city life, then we cannot help Americans living in our heartland or other people worldwide.

Discussion Questions

1. Why do you think more Americans are working hard to making their cities sustainable?
2. Composting your cast-off vegetables or coffee grounds is a sustainable activity, because these organic materials break down into dirt and can be used again. Setting out a barrel to catch rain to water your garden is also sustainable, because the water is not wasted. Can you think of other sustainable behaviors?
3. Can you think of some *unsustainable* behaviors? Can you explain why they are unsustainable?

Classroom Activities

1. Ask students to imagine they have been asked by city hall to create guidelines for a sustainable city. First have them come up with a list of categories they feel are part of a sustainable city (Examples: parks, water-

sheds, green building, etc.). Then have them use their working knowledge of their city to rate it according to each of the guidelines. Are there any categories they cannot judge because they need more information? Let this be the jumping-off point for an exploration. If they can rate all of the categories, how did their city score? What can they do to help?

2. Essay writing: Have students describe a day in their lives living in a sustainable city. Where do they live? What do they have for breakfast? Where does their food and water come from? How do they travel? Where do they and their families shop, dispose of their trash, heat their homes, etc.?
3. Ask students to list 10 simple things they could do at school or at home to lead a more sustainable life. Suggest that they look online at sustainability networks or groups for hints.

Beyond the Classroom

1. As students work through the book and films, consider having them mount a sustainability campaign at school. They could, for example, raise money for rain barrels, or help the cafeteria compost and recycle. It will enhance their experience if they can explain to other students why these activities are worthwhile.
2. The work of making a city sustainable is not as easy as these activities may imply. Have your students select one major issue facing cities—such as air pollution, oppressive heat, water management etc.—and research ways that cities around the country are trying to solve these problems. City planners refer to these new, highly successful approaches by the term “best practices.” Why do students think they are called this?

TOPIC: Building Communities

Background

Human beings are social creatures. We thrive when we make connections with other people, build friendships, and cultivate a sense of belonging to a group. In all the cities we visited for this project, we noticed an interesting pattern: By pitching in to clean up a dilapidated park, plant a garden, or clean up a local river, people made friends with others and felt rewarded by a greater sense of community. This equation never failed. It was present in every situation we observed.

Community is an important concept for your students to understand and recognize. Every day, young people move freely between different social circles: the community of their families, their close friends, their school campus, and their cities, towns, or neighborhoods.

Though they belong to each of these communities, they may not take any action to cement their standing in that group. As the stories in our project demonstrate, active participation goes a long way toward making a person feel happy, productive, and connected to others in his or her group.

Discussion Questions

1. What is the difference between “a community,” such as a school or neighborhood, and having a “sense of community”?
2. In this opening chapter, the authors assert that when people pitch in to make their neighborhoods and surroundings a better place, they are rewarded with a greater sense of community. Why do you think this is so?
3. Do you think volunteering to help improve your neighborhood is a good thing to do—or a waste of time? What are some easy things you could do right away to make a difference?

Classroom Activities

1. Ask students to create a chart or Venn diagram of the various communities to which they belong. (If they make a Venn diagram, at what points do they overlap?) Ask them to highlight the communities they actively participate in. Why do they or don't they participate in these communities equally? What can they do to participate more in your different communities?
2. Classroom debate: Can communities be negative or harmful? What is the difference between a community and a clique? What about online communities?
3. Research the phenomenon of blogs. In recent years, U.S. military personnel serving overseas have posted their impressions of military conflicts in blogs. Suggest your students read some of these online materials. How do your students think these blogs help the servicemen and women maintain their sense of community with those back home?

Beyond the Classroom

1. Suggest that students volunteer briefly for the group of their choice. Ask them to keep a journal about how participating in this activity makes them feel. The words *community* and *common* have the same root. What do students have in common with the people they've met?
2. Have students locate and visit three different “community” centers in their area. What do each of them do? How would students describe the feeling generated at one of these centers?
3. Ask students find and visit a “community development” bank? Have them interview a bank officer to

find out how this institution differs from other banks. What do these banks invest in? How does that promote change and improve the local community?

TOPIC: The Restoration of Urban Ecosystems

Background

The term “urban renewal” is often used to describe highly visible projects such as the renovation of a city's historic district, the construction of a civic center, and other flashy developments intended to make a city attractive to tourists. These types of projects are important but they don't go far enough. If city leaders and citizens instead choose to view their city as if it were an ecosystem—partnership between humans and nature—then their renewal process will find ways to combat water shortages, hot summer temperatures, high energy needs, air pollution, smog, and the like. In this section, your students will begin to explore what happens when a city fosters *community* and *sustainability*.

Discussion Questions

1. When cities get bigger, they tend to use more natural resources, more space, more energy, etc. Can you think of some simple ways that a city can do more using the same amount of resources?
2. The United Nations defines sustainability as growth or development “*that meets the needs of the present without compromising the ability of future generations to meet their own needs.*” Can you put this definition in your own words?
3. In chapter 1, an engineer says that a sustainable city has more money and is more independent. Why do you think this is so?

Classroom Activities

1. Chapter 1 lists a number of problems that plague big cities, from wasted energy, water, and dollars. Our example is based on Los Angeles. Ask students to review what they know about each of these problems, possibly using their own city as an example. To what extent should these problems be left up to politicians and government to solve?
2. Ask students to explain in their own words the meaning of the term, “urban form.” In what ways are cities praiseworthy? Consider asking them to compare the positive attributes of cities in general to their own city. Is their city pedestrian-friendly, for example?
3. You are the developer: Ask students to apply the seven principles of integrated resources discussed in Chapter 1—open space, public parks, urban forestry,

watershed management, environmentally conscious waste disposal and recycling, green building, and mass transit—to redesign a fictional strip mall. Their redesign should encourage sustainable practices and do what it can encourage a feeling of community among customers. What changes will they make?

Beyond the Classroom

1. Ask students to attend a city hall meeting. You will need to do some homework on their behalf since a number of local meetings, though open to the public, require special knowledge. As students work through this book and accompanying films, they will have ample opportunity to visit more specialized meetings.

For now, ask them to attend a general town meeting or town council meeting and report back on what topics are facing their community. Do they feel the issues are important? Why or why not?

2. As a follow-up to this assignment, ask students to familiarize themselves with their local newspaper. Did the paper cover the meeting they attended? How well did the reporter represent what went on? (If an article was not written, ask students to write their own.)
3. As a real-life follow-up to the developer activity above, have students select and propose different elements of their designs for a real-life project, idea, or issue facing the community. How might their idea make a sustainable contribution to their city?

CHICAGO

City of the Big Shoulders

Chicago is known for everything from the Sears Tower and White Sox to windy weather and deep-dish pizza.

Chicago is also undergoing a major urban renaissance, committing itself to creating great public spaces and preserving and restoring its rich ecological heritage. The history of urban activism in this city dates to the 1890s, the time of the merchant, Aaron Montgomery Ward, who devoted himself to preserving large swaths of Chicago's urban land for the good of all people, rich or poor.

Today that tradition continues in the spirit of activists whom students will meet on the DVD, in the book, and in this chapter.

CHICAGO HISTORY

Chicago was founded in the 17th century shortly after French explorers Marquette and Joliet made their famous survey of the region. Originally, Chicago was a trading post that bridged the growing European settlements on the continent with the teeming wilderness that was rich in natural resources. Traders wanted to be able to transport precious beaver skins and other goods down the Mississippi river all the way to the Gulf of Mexico.

Chicago eventually became one of the major hubs of industry in America. Cattle raised in the Midwest were shipped to Chicago slaughterhouses, where the processed meat was then transported all over the country. Chicago also cranked out steel and cut timber for the world. Today, Chicago is considered the capital of American Midwest culture, but its successes have been hard-won. The city has battled race riots, organized crime, crushing poverty, and more. Heat waves in the 1990s killed hundreds, and forced the city to take a hard look at its relationship with nature.

A new program of urban renewal seeks to beautify the city, attract new residents, reduce the stifling summer heat, conserve precious water, purify the air, and make the city more livable than it ever was in its long history. Chicago's efforts are being copied by cities throughout the United States.

IN THIS SECTION

You may wish to have your class watch the *Edens Lost & Found* Chicago DVD as an introduction to this material. You should also refer to Chapter 2 in the companion book for the original source material on which these teaching materials are based. Here are the main topics covered in this section of the Teacher's Guide:

- **Millennium Park:** Public spaces and urban forestry

- **Green Roofs:** Managing water, air and temperature in the big city
- **Cleaning the Chicago River:** Giving new life to an old friend
- **Blazing Nature Trails with Deb Perryman,** Illinois Teacher of the Year, 2004-05
- **Little ecosystem on the prairie:** Why restore native lands? Identifying and helping the native wild spaces near you.
- **Profile of an Activist:** Marian Byrnes, Conscience of the Calumet. Devoting your life to activism.
- **Profile of an Activist:** Michael Howard. Saving one's neighborhood from crime, health risks, and more. Environmental justice in the urban environment.
- **Carl Sandburg:** Poet of the People

TOPIC: Millennium Park: *Public spaces and urban forestry*

Background

The space that now contains Chicago's acclaimed, 25-acre Millennium Park was once a public eyesore consisting of several railroad tracks and decrepit city blocks. When he first came into office, Chicago's Mayor Richard M. Daley promised to do something about the blight. But finding millions of dollars the city would need to accomplish this task was considered both a political and fiscal nightmare.

Salvation came in the form of a rewarding and convenient partnership between public and private realms. The city did its part by first building a huge underground parking garage that created some much-needed revenue. The money people paid to park their cars was set aside to pay for some of the park's construction. At the same time, some of Chicago's wealthiest philanthropists chipped in money for the park's artistic elements, such as phenomenal landscaping, an outdoor pavilion or bandstand, an indoor theater, world-class sculptures, and architecture by some of the world's leading designers. The total cost of the park was more than \$475 million.

Why is Millennium Park a good story to share with your students? Parks offer a much-needed dose of the outdoors to people who have few opportunities to experience nature. But more than that, parks are perhaps the best way to meet people of all races, creeds, and colors who are part of your community. By their very existence, parks can teach tolerance and understanding. (This is true, we might add, even of parks in the suburbs.) City parks are considered a given today. But it wasn't always so. The 19th century saw the birth of great parks in the United States, New York City's Central Park and Philadelphia's Fairmount Park among them. In the 21st

century, however, parks face serious economic realities. Great parks are often too expensive to build, though they can offer something priceless to the cities they call home.

Discussion Topics

1. After reading and viewing the Chicago section of the book, ask students to describe what effect they think Millennium Park has had on Chicago's inhabitants.
2. What are some of the ecological benefits of having so much greenery in the city? (Hint: The presence of trees can greatly affect the temperature and air quality in an urban setting. Green spaces capture and filter contaminated rainwater.)
3. Do you have a park in your community and how do you use it? Survey the students to hear how they use their parks: sports practice, concerts, exercise, relaxation. Ask students to describe the role that the park plays in their community, and how they would like to see that role changed or improved.

Classroom Activities

1. Divide the class into two teams. Have them debate whether or not their town or city should invest in a public space, or spend additional money to improve an existing park. Make sure they identify what needs aren't being met by the current public spaces. Later, as a follow-up, they can investigate what their proposed improvement project would cost. They may need to contact local experts via e-mail to come up with their figures.
2. Design a dream park! Have students work with a few partners to design a specific part of a park—such as sporting areas, storage and maintenance areas, seating, landscaping, artwork, cultural, historic or military monuments—then work together as a class to weave each team's concepts into a single design.
3. Have students use the Internet and library sources to identify what plants and animals are native to your area. Do they know, for example, what USDA Hardiness Zone (www.usna.usda.gov/Hardzone/ushzmap.html) they live in? How does knowing that zone help predict what kind of habitats birds, small wildlife, and butterflies need to survive and thrive through spring, summer, winter, and fall in your area?

Beyond the Classroom

1. Visit a nearby park with an eye toward preparing a critique of the place. What would students like to see changed? Are there any eyesores or obvious problems they feel need to be addressed? You could divide the class into groups or pairs, with each group or pair occupying itself with a specific area. Some topics to investigate include: Are exits and entrances well marked and secure? Are there sporting facilities? Areas

for small children? Bathrooms and water fountains? Flags and monuments?

2. Ask students to take an inventory of the park's biodiversity: plants, shrubs, trees, birds, wildlife and more. (This will require repeat visits during different seasons since some animals may only be active during certain times of the year.)
3. Have students draft a wish list for improving the park. How can they bring their observations to the attention of local authorities? They may like to present their wish list during city council or town meeting.

Career Corner

Consider asking a city planner, landscape designer or landscape architect to speak in your classroom to talk about how they create inviting green spaces to be enjoyed by everyone.

TOPIC: Green Roofs: Managing water, air, and temperature in the big city

Background

Anyone who has ever visited a city in summer knows that these big, sprawling, asphalt-heavy places are overburdened with heat, sometimes with humidity, and that water is often expensive or scarce. One of the best ways to conserve water and combat oppressive heat is to use a new technology called "green roofs," which covers flat city roofs with soil and plants. City planners and others can exploit the natural properties of green plants to conserve and trap moisture, lower the ambient air temperature, purify oxygen, reduce the need for air conditioning, filter out airborne pollutants, and insulate the rooftop from the damaging effects of the sun.

Chicago and Seattle have led the nation in this area by installing green roofs on some of their municipal buildings. Chicago City Hall has saved taxpayers \$4,000 to \$5,000 a year in heating and cooling costs since it installed the roof. The roof also brings in token revenue for the city; the city hall gift shop sells honey produced by a rooftop beehive.

Discussion Questions

1. Based on the text, what are the pros and cons of this kind of roof construction? (In general, green roofs cost more to install but extend the life of the roof by 50 percent. They also require maintenance in the form of careful and consistent gardening.)
2. Many green roof programs have expensive start-up costs because it is pricey to buy and install plants on a roof. How do your students think this affects a city or community's decision to install a green roof? How can your class or school help defray some of the costs? (Hint: Anyone can help plant a plant.)

- How could your class mount a campaign to educate local politicians and business people about the environmental and fiscal benefits of installing a green roof?

Classroom Activities

- Do the Math:** Green roofs are expensive to install, but pay great dividends later as plants mature, extend their root systems, retain more water, absorb more sun and offer more shade. Have students develop and work out math problems that examine different aspects of green roofs. (Example: Suppose a green roof costs \$30,000 to install, but saves \$3,000 a year in cooling costs, in how many years will a city break even?)
- Draw a chart:** In science class, ask students to illustrate all the benefits of a leafy plant (shade, water retention, air purification, sun light absorption). How does this change as the plants grow? How many weeks (for an annual) or years (for a perennial) does the plant need to become mature?
- Have students use the Internet to research the Ford Motor Co.'s use of green roofs on some of its factories. Why does it make good business sense to do this?
- Chicago City Hall sells the honey harvested from its rooftop beehive. What are other income sources could be derived from a rooftop garden? (Example: dried flowers.) Ask students to research the economic value of various plants, and come up with a plan for a green roof business? What would you make or sell?

Beyond the Classroom

- Check with a local architects' or landscape architects' association to locate the nearest green roof in your area. If a visit is out of the question, invite the designers to your classroom or to correspond with students via e-mail to explain their work.
- Survey your community. Which large public building would be ideal for a green roof? Would your school or local library be a candidate?
- Challenge students to write a persuasive letter or speech to their city council about installing a green roof atop city hall. Either mail the letter to multiple town leaders and log in each response, or have a delegation of students deliver the speech at the next meeting. Don't neglect local merchant associations or the your local Chamber of Commerce. Remind students that in order to be successful, letters and speeches must include environmental and financial benefits.

Career Corner

Ask students to brainstorm what kind of professional and educational background one would need in order to pursue a career as a green roof designer or builder.

TOPIC: Cleaning the Chicago River: *Giving new life to an old friend*

Background

Traditionally, cities in both the Old and New World were built along rivers for trade purposes. In Chicago, industry originally sprouted along the riverbanks to take advantage of free water. But conditions deteriorated when factories realized they could use the river as an open, running sewer. As the Chicago River became a noxious dumping ground, citizens turned their back on it. They erected stone or concrete walls and chain-link fences. "Let's hide it," the city seemed to say of the river. "Let's let the weeds grow and the invasive trees and shrubs take over. Let's pretend the river is not there. It's not worth our time."

In the last couple of decades, Chicagoans have decided to clean up the river. They used strong new federal laws to get polluters to clean up their act. Later, as the river ran cleaner, they removed physical barriers to the water and permitted open access. (People will not protect what they cannot see!) Lastly, they removed the invasive plants and restored native trees and grasses to the area. The leaves of these plants fell into the river each autumn and provided food for insects, which in turn provided food for fish. The cycle of life had begun again. This was all the result of long, arduous work.

Discussion Topics

- What role have rivers traditionally played in cities or suburbs? How has that role changed over the years? How can that change lead to pollution and neglect?
- How are the waterways in your areas used? Are they mostly used for storm water runoff? If so, see the activity below.
- What role *could* waterways in your area play? Could they be good sites for recreation, scenic trails, fishing, or hiking?

Classroom Activities

- Have students research the plants and animals native to the rivers and waterways in your area. You may need to divide the class into groups to make more efficient use of your resources.
- Working with a partner or in groups, have students draw a cross section of life in your local riverbeds. What fish are underwater? What insects thrive on the plant matter? What plants give them shelter and sustenance? What other animals or amphibians are there?
- The Friends of the Chicago River, an organization mentioned in the *Edens Lost & Found* book, published its own small book on the history of their river and the animals who inhabit it. Consider putting together a small pamphlet or poster on your waterway using the information you collected.

Beyond the Classroom

1. **Storm Drain Task Force:** Ask students to investigate the water runoff from your school grounds or neighborhood. When it rains, where does the excess water naturally want to go? Follow the trail of water as it leaves the school. Where does it end up—in a stream or down a sewer? (Your local water company or department of water and sewer can tell you if a sewer drains in a local stream, water company reservoir, or water treatment facility.) If your students are the crusading type, they may like to use stencils to paint warning signs asking people not to dump paint, motor oil and other toxins in local sewers. See *Earthwater Stencils* (www.earthwater-stencils.com) to purchase ready-made stencils, or have students make their own out of cardboard.
2. Plan a chaperoned walk along a river near your city or town. What do you see along the way? Have students use graph paper and some measuring tools to plot the course of the river and major landmarks—train tracks, baseball fields—along the way. Later, they can use this information to prepare a definitive map of the local waterway.
3. Join a restoration effort. While on your walk, survey and keep records of the kinds of wildlife and plant life you see. Are the native plants and animals that should be near your local rivers there? Try to find a local organization that is restoring the banks of your local waterway. Such groups are always on the lookout for helping hands, and would welcome your students with open arms. This could be a wonderful opportunity for a service learning project.

Career Corner

Plant biologists, officials from your local department of public works, or the department of water and sewer all make ideal visitors to the classroom to talk about the issues of waterway health. Your nearest Environmental Protection Agency office may have helpful brochures on the topic of water quality, and be willing to arrange a visit from an office official.

TOPIC: Blazing Nature Trails with Deb Perryman**Background**

Deb Perryman, Illinois Teacher of the Year, has experienced great success turning a neglected woodland tract of land behind the school where she teaches into an outdoor classroom. This property is not only used by her high school students as a nature trail, a sample collection site, and a place to do experiments, but also as a place where trained high schoolers lead elementary school students on supervised nature walks. In other words, the land benefits

not one school, but *any* school that can reach it. Her success is adaptable to schools in other areas, whether a tract is in your back yard or not.

Discussion Topics

1. What are the benefits of nature trails to a community?
2. What is a nature center? What natural or manmade elements should it have? (Example: a meeting room, an outdoor trail, a pond, a stream or creek, etc.) What kind of teaching could go on in such a place?
3. How do you define the word “habitat”? How many different types of habitats do you think you might find in the woods near you, and what kinds of creatures might you find in each?
4. How can learning about local nature be a benefit to city dwellers? Where does the city end and nature begin?
5. In the book, Ms. Perryman says that she knew she could save the land behind her school if she made it more valuable to more people in her community. What does she mean by that? Why do you think this is so?

Classroom Activities

1. Ask students to work with partners or in small groups to design a nature trail on paper. Though this first activity is intended to be “fictional,” your students’ success on this project will depend on their ability to incorporate real-life elements drawn from habitats in your area of the country. They should be consulting region-specific guidebooks to flora and fauna, scanning websites for up-to-the-minute information on wildlife populations in your area, and basing their design on knowledge of real nature trails. To stimulate the design process, you might ask them to consider including benches or observing platforms for bird watching, feeders to enhance or encourage viewing, ponds, etc. Have students draw their designs, mark each stopping point along the way with a numeral, and write a short description of that spot.
2. **Nature Center Manager for a Day:** Ask students to create a schedule of exhibits and activities that would take place on a daily basis at your nature center. How might they change the schedule to incorporate activities for children much younger than themselves, i.e., grades K through 8?

Beyond the Classroom

1. Get some experience. Your students’ ability to answer these discussion questions or do these activities would be greatly enhanced by a visit to a nature center, nature trail, or even a walk in a particularly wooded neighborhood. Try to give them this experience before they tackle the projects above.
2. Be a trailblazer! Use the information provided on page 65 of the book and the activities mentioned

here to build a formal nature trail on the grounds of an outdoor area near your school or in your community. Obviously, the existing nature should dictate or suggest a form and function to your design. You will want to look over each of the fictional designs your class has made to see which ideas are applicable to a real nature trail. This can easily become a year-long project for your class. They will need to come up with a design, then present it to local or school authorities for permission and possibly funding. To pull off this project, your students will have to budget their time and resources, and may need to devote weekend or after-school time to the project. Be sure to have an opening ceremony and invite people from all walks of life in your area. (If your students are successful in building your own trail, you will need to enlist successive generations of students to maintain it.)

3. If your community does not have a nature trail or even a nature center, challenge your students to audition various sites in town and choose two or three to include in their proposal to local leaders. Be aware that county parks, state parks, and private lands open to the public may be amenable to letting your students to blaze a trail there.

Career Corner

A docent or parks person from a local nature center would be a great ally in this project. Ask him or her to visit the class to talk about how they got involved in this work. What did they study and how did they expand their study in their spare time?

TOPIC: Little Ecosystem on the Prairie

Background

Illinois is just one of many American states that hosts prairie lands. Prairies are habitats where grasses predominate, wind and sun are plentiful, and animals adapted to this kind of environment thrive and graze. As early pioneers moved west, they moved into the grasslands of the Great Plains, cutting the sod and using it as “bricks” to make their homes, and turning the treeless landscape into arable farmland. Later, these lands hosted American industry and were turned into heavily suburbanized areas featuring homes, strip malls, and corporate parks. Americans often think that prairies are “out there in the wilderness,” but they are right where many of us live. The Chicago area is home to vast tracts of prairie that were protected by the efforts of concerned volunteers.

Discussion Topics

1. Why should native prairie lands be restored? Why is protecting

the prairie important? (Reflect on Steve Packard’s comments in the DVD and page 45 of the book, if necessary.)

2. Mr. Packard compares precious nature to art in a museum. In what way is nature like a canvas and the different ecosystems like a painting or expression? How is losing nature like losing a great work of art? Devil’s advocate questions: Isn’t there always *more* nature, somewhere? Why can’t we be happy with that?
3. What is an invasive species? Why should they or shouldn’t they be removed? Are some more dangerous than others? How did some of them arrive in the U.S.?
4. On page 44, Mr. Packard says Native Americans had a hand in maintaining the prairie, burning the grasses from time to time to enhance their ability to hunt. Ask students how they think the arrival of European Americans altered this delicate relationship between Native Americans, native grasses, and large creatures such as the American bison. Why do they think wide open spaces benefited Native Americans and pioneers? (Hint: In America, as in the African grasslands, open spaces allowed people and animals to see prey and predators.)

Classroom Activities

1. Have students use library and Internet sources to make “extinction maps” for the range of, say, American buffalo in the Great Plains of the U.S. On one map, they should indicate what the range of the buffalo was at one point in American history. On a second map, they can show the range of the buffalo 100 years later. How has the range changed with the settling of the American west? (They should be able to generate another set of maps to show the decline of the grizzly bear in the continental United States.)
2. Learn to define and identify the difference between: savanna, prairie, wetland, fen, and woodland. Based on their nature walks and visits to green spaces in your areas, see if they’re able to create a map of your town or county showing where each are located.

Beyond the Classroom

1. Seek out local organizations and experts who are heading up “native plant restoration” efforts in your area. They may provide an excellent opportunity for a service learning project for your students. Every environmental group needs volunteers to carry out the work described by Mr. Packard and Ms. Shore in the book and DVD. So long as parents agree and students are adequately trained and dressed, there is no reason why they couldn’t help a group remove invasives and replant native species in their area.
2. Consult local naturalists or your Cooperative Extension office (www.csrees.usda.gov/Extension) to learn about invasive species that may be threatening

your neighborhood. On one of your outings with students, consider collecting some samples of these plants for further study back in the classroom. How or why do invasives make such successful inroads in foreign terrain? What attributes do they possess that make them such capable invaders?

Career Corner

Find a local botanist or professor who is an expert on native plant species. Have them visit to speak on such topics as: How do native plants become extinct? How do new species get a foothold in new areas?

TOPIC: Profile of an Activist: Marian Byrnes

Background

Dubbed the Conscience of the Calumet, Marian Byrnes is a former schoolteacher who became an environmental activist when she found out that land behind her home was to be destroyed to build a bus garage. Ms. Byrnes knew there were better places for such a facility, and she set out to educate Chicago's city fathers about the value of the native prairie. Now in her eighth decade, Ms. Byrnes has spent most of her life protecting that land and other, long-neglected sections of southeast Chicago. As we'll see in this section of the book and film, the area is still struggling. Big industries have left the area in pursuit of cheap labor, and while the old steel workers applaud the efforts of environmentalists in preserving the wetlands, they are hungry for jobs.

Discussion Topics

1. After students have watched this poignant section of the DVD and read about Ms. Byrnes and the plight of the steel workers in the book, ask them how people become involved in causes. How would they have reacted if they learned that their neighborhood was going to be changed in a huge way—and they were never consulted about it? How might they make their opinions known?
2. Based on their reading and the DVD, can they explain what happens when a major industry leaves an area? Encourage students whose families may have undergone such an upheaval to talk about their experience.
3. What is the responsibility of industry to preserving the environment? Notice that in the case of the Calumet, nature rebounded when industry left. How can the two coexist safely and productively?
4. "Ecotourism" refers to a fast-growing form of recreation in American life. People hike, boat, sightsee and travel in order to experience nature in its wild state. Based on the way Calumet residents talk about ecotourism, can your students list some of the benefits and dangers of ecotourism?

Classroom Activities

1. Ms. Byrnes says repeatedly that she is not a naturalist, yet she has a very good working knowledge of the wild plants and edible plants in her neck of the woods. Challenge your students to become just as proficient at identifying wild plants or "weeds" in their town. As a year-round project, ask them to photograph or draw different plants in their neighborhood and try to identify them. Make sure they understand the difference between wild plants and nursery-grown plants. Stress that they should never touch a plant they cannot identify by sight, nor should they collect plants from wild settings unless they are given permission. Even the lowliest plant belongs to all of us, and the species would not last long if everyone picked one.
2. Role playing and debating: Have students select a partner. Let one student assume the role of a steel worker, another an environmentalist. Have each student interview the other about his or her concerns. They can face off in a debate. Or write a short dramatic sketch about confrontations between workers who need jobs and income, and those concerned with protecting the environment. As a class, have the workers and the environmentalists brainstorm ways they can resolve the issue.
3. Research the wetlands and the role they play in the ecosystem. In general, wetlands are a buffer zone between open water and dry land. Throughout history, humans have poorly understood the role of wetlands, labeling them "swamps" and regarding them as the locus of disease. But what happens to the open water and the dry land if the wetlands disappear?

Beyond the Classroom

1. Ms. Byrnes is helping turn an abandoned mill into museum. Are there any historic mills or factories in your area that could be turned into a museum or a study center? How can your students organize to let local leaders know their preferences about how such places are used? To give students a "real-life" understanding of the costs involved in rehabilitating such places, consider having them interview a local builder, contractor or restoration expert.
2. Wetlands are everywhere. They provide an excellent habitat for a variety of insects, birds, amphibians and other wildlife. But they are not always treated with respect. Consider a visit to some wetland areas to examine their condition first hand. If this is not possible, a careful reading of local newspapers often yields articles about legal conflicts over wetland areas. Ask students to create a plan for how they can positively impact their local wetland, or write a letter to the editor based on their reading of the newspaper articles.

Career Corner

Have students interview an “accidental” community activist, i.e., someone who found him- or herself involved when they never thought they would be. Contact your local ecological organizations to help find appropriate people.

TOPIC: Profile of an Activist: Michael Howard**Background**

As a young man Michael Howard left his poor neighborhood and made something of himself. After a stint in the military, he learned a trade and eventually made an excellent living as a building contractor. On the cusp of buying a home in a wealthy neighborhood, he and his wife decided to return to their old Chicago neighborhood and devote themselves to improving it. A religious man, Mr. Howard believes in being a minister to others. He applied the ethos of the preacher’s life to the environment and saving his neighborhood. Since he’s come back home, he’s founded a trade school for underprivileged youth. He’s transformed a polluted, vacant lot into a wonderful nature center for children and families. And taken steps to rid his neighborhood of harmful lead in its drinking water.

Discussion Topics

1. Throughout the Chicago chapter of the book, we hear the term “environmental justice.” What is it, and why do you think so many Americans do not enjoy it?
2. Does nature exist in the inner city? Where and how? Some people feel there is an urgent need to bring more examples of nature to cities. Do you agree? Why or why not?
3. What do you think is the relationship between how healthy a person is, the kinds of toxins they encounter in their daily life, and how much money they have? Do you think this relationship always holds true, or only sometimes?

Classroom Activities

1. Ask students to be investigative reporters. Using information gleaned from local newspapers, Internet resources, phone calls to city hall or to the office or elected officials, have them write an article about an environmental justice issue that might—or does—affect an area near you. Their stories will have greater impact when they can include two things: the voices of experts who are knowledgeable about the issue they’re writing about, and ordinary people who have been adversely affected by the issue.
2. Bringing nature indoors: If you and your students live in a major city, brainstorm ways that you can bring more of an experience of nature to your immediate

area. If you live in a place where nature “seems” abundant, ask students if they really do feel a sense of nature in their daily lives. If they don’t, what can they do to improve this?

3. Create a chart that shows how the environmental abuses in one part of a city can affect other parts or neighboring suburbs. (For example: Builders and factories illegally dump refuse in vacant lots. Toxins build up. A disproportionate number of children become sick from asthma and lead poisoning. Public hospitals have many more patients to treat. Everyone’s taxes go up.)

Beyond the Classroom

1. Stewardship project: Take your class on an urban field trip seeking out neighborhoods and abandoned lots in your community which could use some help. Consider having your students “adopt” a parcel of land or stretch of road. Besides merely cleaning up an area, being a good steward means researching the problems, talking to residents, and bringing the situation to the attention of politicians and local leaders with effective letter-writing campaigns or petition drives. As a science component, students can research the effects of a particular environmental threat and develop a presentation to educate people who’ve never heard of the problem.
2. Design, plan and hold a fundraiser for a community or neighborhood in your area.

Career Corner

Invite a lawyer who works in environmental justice or on pro bono cases to speak to your class about how the concept of “justice” affects the work they do.

TOPIC: Carl Sandburg: Poet of the People**Background**

Carl Sandburg (1878-1967) was one of America’s greatest poets, a double Pulitzer-prize winner, and national poet laureate. Best known for his famous six-volume biography of Abraham Lincoln, Sandburg was a prolific writer of poems, newspaper articles, short stories, novels, children’s books, and folk songs as well. He is the perfect writer to spotlight in Chicago because he was born in Galesburg, Illinois, of Swedish immigrant parents, and worked in Chicago as a newspaperman in the early 1900s. Two famous Sandburg poems, “Chicago” and “Prairie,” make fine complements to the Edens book chapter and DVD.

Discussion Topics

1. Ask students to look up some information on Sandburg’s early life. They will learn that among other things, he traveled across America as a hobo for many

years, collecting songs and stories. When he wrote the life of Lincoln, he was no doubt attracted to the president's humble beginnings. How did Sandburg's background affect his writing and folksongs?

2. What is the relationship between the arts and the environment in modern society? (Example: Charity concerts, photographic essays, paintings and writings reach larger audiences and can help spread the word about a particular cause.)
3. The poems "Chicago" and "Prairie" are easily available in school anthologies and online. Ask students to read the poem "Chicago," the first paragraph of which begins,

*Hog Butcher for the World,
Tool Maker, Stacker of Wheat,
Player with Railroads and the Nation's Freight
Handler:
Stormy, husky, brawling,
City of the Big Shoulders:*

Questions Based on the Poems

1. Ask students to describe in their own words the "arc" of the poem. In essence, the poet says many people deplore Chicago for its "wicked," "crooked," and "brutal" ways. But though the poet can readily see these elements in the city, he still thinks it is worthy of admiration.
2. Ask students what feelings the line "stormy, husky, brawling" evokes in them. Do they get the sense that Chicago is a busy, larger-than-life place?
3. What is meant by the phrase, "City of the Big Shoulders"? Is it a compliment? Do they sense that this city supports the nation with its industries?

The prairie was important to Sandburg. He even titled one of his biographies, "Lincoln: The Prairie Years," which described the president's early years in Illinois. His poem "Prairie" is long, and you may wish to have your students read only portions of it. In general, they should notice that the poem is written in the first person, but appears to switch in spots from the voice of a person who was born and bred on the prairie, to the voice of the prairie itself.

The first line begins:

*I was born on the prairie and the milk of its wheat,
the red of its clover,
the eyes of its women, gave me a song and a slogan.*

But then later:

I am the prairie, mother of men, waiting.

4. How many different ways can one make their living on the prairie? (Sandburg mentions everything from agriculture to steel and timber industries.)
5. What is the significance of the switch in voices, from the person born on the prairie to the prairie itself? Do students get the feeling that land and human have become one and the same? You might ask how many students feel a strong personal bond to the place where they live, or where their family vacations.

Classroom Activities

1. Challenge students to write a poem extolling the virtues of their city or town in the way that Sandburg wrote about Chicago. Remember: Sandburg didn't sugarcoat his view of Chicago, nor should your students when writing about the pros and cons of their town.
2. Sandburg wrote about the American prairie at a time when it was still unsullied by modern building and expansion. Have students take a stab at writing a "new" version of the poem in which they talk about environmental threats to this unique part of the American landscape. (It may be preferable to have them write about a locale with which they are familiar.)

Beyond the Classroom

1. It is not unusual for musicians, poets and writers to gather to share their work with the public in central locations. You may wish to have your students read their work at public gatherings, open-mic nights, or local holiday celebrations. If this is not possible, consider holding your own consciousness-raising arts event on school grounds at which students would read poems, sing songs, and present their research into their area of environmental justice in a fun way to an open-minded audience.
2. Literary sites are found all over the United States. You may wish to make a class visit to the home of a local writer, spend time researching and reading that person's work, and then trying to understand how that person's work or memory fits into the lore of the local community.

Career Corner

Invite a local writer or newspaper reporter to talk about the work that they do.

PHILADELPHIA

The Holy Experiment

Philadelphia is the city of Independence, the city where the dream of American freedom went from being a cold, abstract philosophy to a reality in the hands of our Founding Fathers.

Despite its place in American history, in recent decades Philadelphia's stature has not kept pace with nearby cities such as Washington, DC, New York and Boston. In this chapter, your students will learn how the city slipped into decline and ignored its precious parks and city blocks. But the city is now enjoying a remarkable recovery. Hope for the city's revival now rests in the hands of those who are cleaning it up, beautifying it with greenery and art, and realigning the city with nature.

PHILADELPHIA HISTORY

Philadelphia, the birthplace of America, is where the Founding Fathers wrote the Declaration of Independence and the U.S. Constitution. A city of intellectualism and the American enlightenment, Philadelphia is the site of the Liberty Bell, Benjamin Franklin's hometown, and onetime capital of the United States. The city was founded in 1682 by the Quaker William Penn, who called it "the City of Brotherly Love." Today Penn is hailed for his open-minded views on religious tolerance, women's rights, and treatment of Native Americans. In this film and book, however, we pay tribute to his excellent early attempts at intelligent city planning.

We also frankly examine the issues behind middle-class abandonment of the city. As citizens fled to the suburbs in search of a better life, the resulting loss of tax revenues nearly crippled the city's ability to take care of itself. Parks were ignored. Townhouses were abandoned. And crime and poverty and toxic pollution set in. In this chapter we see how one charitable organization, Philadelphia Green, and inspired city leaders helped turn things around with a most unlikely tool: gardening.

IN THIS SECTION

You may wish to have your class watch the *Edens Lost & Found* DVD as an introduction to this material. You will also want to refer to the companion book, chapter 3, for readings relevant to each of the following topics. Here are the main topics that will be covered in the Philadelphia section of the Teacher's Guide:

- **Fairmount Park:** The significance of the intentional watershed
- **Think Globally, Eat Locally:** The benefits of urban agriculture

- **William Penn's Holy Experiment:** City planning and its effect on the environment
- **Philadelphia Green:** Philanthropy and the greening of a city
- **The Forest for the Trees:** Understanding the value of urban forestry
- **Profile of an Activist:** Ed Elliss finds community in a garden
- **Profile of an Activist:** Iris Brown saves a neighborhood from crime
- **Arts and Literature Connection:** Public Art and the environment

TOPIC: Fairmount Park: *The significance of the intentional watershed*

Background

Fairmount Park was founded foremost to provide a cleansing buffer zone for the city's water supply, not recreation. City planners realized that as rain fell on undeveloped land, it would be filtered by leaves, trees, roots, dirt, and enter underground aquifers as PURE. Once underground, water could then be pumped out for human consumption. In this way, the city could stop relying on river water for human consumption. Today Fairmount Park's landing holdings encompass 9,000 acres, making it one of the oldest—and largest—city parks in the United States. It may well be one of the first watersheds in United States that was set aside for the single purpose of keeping city water clean, to offer a buffer between city and pollution, and to mitigate the effect of factories polluting water.

Discussion Topics

1. What is a watershed area? (Refer to vocabulary list if necessary.) How does this differ from a water treatment plant? (Hint: One is natural, the other man-made.)
2. Why are watersheds as important or more important than manmade water treatment facilities? Why are they even more important as cities grow?
3. What role can and should watershed establishment play in city planning?

Classroom Activities

1. Request a map of your local watershed from your local water company, as well as promotional materials describing local water quality, and the steps the water facility takes to purify water. Divide the class into teams and allow them to use library, Internet, and water company resources to answer questions such as: How pure is your water compared to other cities in

your area? Compared to other metro areas in your region? Compared to the national average? Have students create a chart comparing the levels of impurities in each sample.

2. Water quality and availability are among the hottest political topics in the nation. Have students pore through local newspapers to put together a summary of the local water issues your community is facing. How can your community improve or expand your watershed? What threats exist to your watershed?

Beyond the Classroom

1. Visit your local water treatment facility and/or reservoir. Learn what steps water goes through on the way to your faucet. Create a class chart showing the typical purification process.
2. Home Detectives: Ask students to take an inventory of the potentially harmful chemicals kept by their family in places like kitchens, garages, or tool sheds. How are these chemicals used and applied? Ask students to assess how likely it is that some of these chemicals might end up in the water supply after being used. To facilitate this activity, photocopy a sheet that includes a list of common household chemicals (paints, auto fluids, pesticides, etc.) and a 1 to 5 scale, five being "most likely." Can students think of ways to minimize this risk? Can they brainstorm ways our nation can eliminate that risk entirely?

Career Corner

Every water facility employs a water commissioner or water quality official. Invite this individual to speak to your class. What lessons can your students glean from this talk to share with their parents?

TOPIC: Think Globally, Eat Locally: The benefits of urban agriculture

Background

The American food supply is arguably the most reliable in the world. Even in the harshest winter months, Americans who live in snowbound locations have access to fruits and vegetables from warmer climes. But the actual strains of crops planted are chosen for their ability to stay fresh over long distances, not necessarily for their flavor. For example, apples are picked in Washington state and shipped all over the nation. There may be more flavorful apples available, but supermarkets carry the cultivars that are least perishable.

Imagine instead buying fruits and vegetables from a farmer growing crops in your own town or city, year round. Such a farm would contribute to a city's goals of sustainability because the open ground and plants would capture water and reduce the sweltering asphalt heat of

the city. The food would also be a welcome source of fresh vegetables in an urban environment, reducing the need for food to be trucked in from outside the city and consuming precious fuel. The city of Philadelphia has encouraged such agriculture, turning over vacant lots to community groups, farmers, and others after razing dangerous abandoned buildings.

Discussion Topics

1. Ask students to offer their own definition of urban agriculture. Where do they think most food in the United States is grown? When was the last time they visited a farm, or even spotted one while driving around? Would a farm feel out of place in their town or city?
2. What are the benefits of growing and choosing to buy more local produce? Do they think the food would be fresher? Might a greater variety of food be available? How do you think eating and supporting local farms is good for your local economy? (Money spent on food would stay in the community, and help reduce consumption of fossil fuels.)
3. Why would perishability be more important to some farmers than the flavor of a particular food?

Classroom Activities

1. Ask students to compile a list of local farms and the kinds of produce they grow and sell. If local agriculture is not obvious in your area, ask them to write a letter to their state department of agriculture requesting a list of farms in the state. What trends do they notice? Does a particular crop dominate? Ask students to figure out how many farms sell their crops to large commercial businesses, and which sell to local residents.
2. Are there any kinds of foods that would grow in each season in your area? For example, some hardy green vegetables, such as spinach, kale, mustard greens, turnips, leaf lettuce, and collards can actually be harvested throughout winter, provided they have a bit of protection from the elements. Make a seasonal chart that shows your results. What do students think Native Americans and early European American settlers ate in wintertime in their area?
3. What is the early and late "frost date" in your area? What do those terms mean? How can students find out the approximate dates when frost will end or appear in their area? In general, this information is available from the local "cooperative extension office" in your area, which can easily be found online or in the blue pages of your local phone book.

Beyond the Classroom

1. Make up a grocery list that includes the names of ordinary fruits and vegetables. Distribute the list to the class.

Ask students to take the lists with them the next time they go to a grocery store. Have them jot down information from the labels on these items' packaging. Where do the carrots, potatoes, celery and other items in local supermarkets come from? Does your supermarket sell produce that is locally grown?

2. Ask students to research the meaning of the term CSA, or Community Sponsored Agriculture. Briefly, a CSA farm sells a "share" in its seasonal crops for a fixed dollar amount. In return for this up-front cash, farmers prepare a bag or box of groceries for their investors each week during the local growing season. Families get fresh local produce, and farmers get a guaranteed market for their produce at a fair price. Have your class research the names and e-mail addresses of local CSA farms, and write to these farmers to learn more about their operation. Consider a class visit, if possible.
3. At the Martin Luther King, Jr. Middle School in Berkeley, California, students plant, grow, and harvest their own vegetables in a school garden. The program is called the Edible Schoolyard (www.edibleschoolyard.org). Have your students investigate the feasibility of planting their own school garden. Many school properties have abundant land for such a project, but students need to make the strongest case possible to parents, teachers, and their school administration. How would they raise the funds for such things as garden tools, seeds, fencing, soil, and more? How could they ensure the availability of water, and how would they prepare the garden for winter? Could they provide ingredients to supplement their school lunches? Could there be a summer school program where kids tend gardens to take vegetables home or sell produce to local restaurants and schools? Who in your community would partner with you?

Career Corner

Invite a local farmer to the classroom to talk about his or her work. Don't neglect local dairies, cheesemakers, and others. If this is not possible, contact your local cooperative extension office, or the state department of agriculture for a suitable speaker.

TOPIC: William Penn's Holy Experiment: City planning and its effect on the environment

Background

The birth of Pennsylvania was one of America's greatest Founding Father stories. Quakers were largely despised in England when William Penn received a grant from the King to start a colony in the New World. This was the Crown's way of ridding itself of a religious zealot and troublemaker. Unlike previous settlers in the New World, Penn opened his territory to religious refugees of every

type. (To this day, Pennsylvania is home to the descendants of Amish, Mennonites, Quakers, Moravian and other denominations.) Moreover, Penn offered Native Americans a fair price for their land and didn't carry a gun when he visited tribes. In his great city, Philadelphia, he promised free press, freedom of religion, and granted men and women alike equal rights under the law. Many of these rights are today guaranteed by the Bill of Rights and the Constitution.

Many of your students will be unfamiliar with the notion of city planning. Penn was among the first to draw a plan for his city, mandating where parks, streets, and homes would go. He established a rule of thumb that governed how much land would be developed in the city, and how much would remain as wild land or parks. His approach was intended to create a healthier metropolis than he had known in London.

Discussion Topics

1. What does it mean to "plan" a city? What aspects of a city can be planned, and why is it better to plan them than not?
2. William Penn decreed that for every 10 acres developed into city blocks, one acre would be preserved as open land. What do your students think of this 10 to 1 ratio? Is it smart? Does it go far enough? What is lost when open land is turned into homes, shopping centers, and roads? Do they think their city would benefit from such a rule?
3. William Penn preferred to call Philadelphia a "Green Countrie Towne" instead of a "city." What is the difference between the two? What feelings do students have when they think of the phrase, "Green Countrie Town"?
4. Why do you think some people resist city planning and zoning? Why is the topic such a big issue for adults?

Classroom Activities

1. Today major cities are trying to emulate Penn's example by protecting what green space still exists in their cities, or creating green space by encouraging citizens to plant trees, parks, and gardens. Ask students to create a checklist of important ingredients for a healthy city. How can you keep a large swath of green—for farming, parks, community gardens, watershed areas, etc.—while still serving the needs of business and industry?
2. You're the city planner. Design a city center. Where would you site the parks? The schools? City hall? Shopping? Industrial buildings and factories? Present your plan to the class.
3. In groups, research the life of William Penn. Consider having the class write a short play showing pivotal moments in his life. How would students have Penn explain himself and his ideas to a stranger to

Philadelphia? A powerful soliloquy would do the trick, but how would they write it?

Beyond the Classroom

1. Make arrangements to attend a local planning board meeting. Before attending, have students research the current issues by scanning through recent newspapers in the local library. Have students take notes and discuss what they heard. Did they agree with what was discussed? Disagree?
2. Does the class have ideas on how the city might improve its approach to planning issues? Have them draw up a proposal and present it to city officials.

Career Corner

Invite a city planner to speak to your class. What does he or she do all day? What is their educational background? What do they feel are the most important aspects of their jobs?

TOPIC: Philadelphia Green: Philanthropy and the greening of a city

Background

The Pennsylvania Horticultural Society (PHS), a gardening society, dates to 1827, nearly 180 years ago. First it was an organization for hobbyists, commercial growers, and high-society folks. In the 1960s, as Philadelphia battled urban sprawl, PHS became involved in improving the city. The group began donating a portion of the profits from its annual flower show to various causes. They started by running camps for kids, and helping citizens plant flower boxes and community gardens.

Today, the PHS "Philadelphia Green" program is the largest of its kind in the nation. It is so large and important that Philadelphia's city government has hired it to help neighborhoods restore vacant lots with trees, plants, flowers, and fences. Such improvements build everyone's sense of community and raise property values. Before Philadelphia Green donates its plants, expertise and money, neighborhood residents must commit to doing the work.

Discussion Topics

1. What does the word "philanthropy" mean? How is the work of philanthropists important to communities? What does an organization like the Pennsylvania Horticultural Society get out of giving money to other people to plant gardens and trees? Why wouldn't they rather keep that money for themselves? (Hint: Through its good works, PHS has saved the city, built community, improved Philadelphia's sustainability, and made the city a better place to live.)
2. The Wharton School of Business School conducted a study that demonstrated planting trees raises property

values 15% on city blocks. Why do you think people are willing to pay more to live on a block with trees? What effect do flowers and trees have on the way people think of their neighborhoods?

3. Conversely, what effect does the presence of trash have on your opinion of a neighborhood or city? Why?

Classroom Activities

1. Research your USDA Hardiness Zone. Which trees are appropriate for your area? What characteristics, habits, or flowers, do these trees have? What is the tree's life cycle? How much water does it need? (Hint: Search for advice on websites maintained by the U.S. Forest Service, TreePeople, Philadelphia Green, and the Arbor Day Foundation.)
2. You are the philanthropist. You have \$30,000 to spend in your community next year planting new trees, flowers, lawns, and fences. Using online plant catalogues or Websites for major home centers, draw up a budget showing how you would spend your money. Assume that labor will be donated free of charge.
3. Using "watchdog" website (example: www.charitynavigator.org), research the work of great philanthropic organizations such as the Red Cross, UN organizations, United Way, Heifer International, and others. How much of the money raised goes to the cause itself, and how much to pay for administration costs? Which organizations spend their money most efficiently?

Beyond the Classroom

1. Have students compile a list of 10 to 15 questions that they could use to interview members of various philanthropic organizations in their area. Next, have students research the names and contact information of various groups. Have them interview members by phone or in person about the goals of the group and report back to the class. (Use your judgment about dividing up the class. Ten groups might call for five groups of kids interviewing two each.) Later, ask students to decide which group is working on sustainability issues. Brainstorm how your class might help the group attain its goals. Do they need volunteers to plant a garden, restore a wetland, blaze a trail?
2. Older students often conduct fundraisers to collect money for class trips and the like. This time around, challenge students to donate a portion of their earnings to a worthwhile organization. *Before* they hold their fundraiser, have them decide what percentage of their take they want to donate. How does their decision to donate affect their plans for the fundraiser? Are they more spirited because they have a dual goal? Are they determined to raise more money now?
3. After they have participated in a service learning project with a local group, have them critique the group's work. How effective or organized did they think the

group was? What would they do differently next time? How did they feel about their own work? What made them feel energized? Frustrated?

Career Corner

Invite some representatives from a local horticultural society to speak to the class. What are their plans? Do they have a philanthropic goal? What is it? If not, can your students suggest one and volunteer to put it together?

TOPIC: The Forest for the Trees: Understanding the value of urban forestry

Background

Urban forestry refers to a new national movement, supported by the U.S. Forest Service, to plant more trees in urban areas. Besides the scientific benefits, studies show trees have an enormous effect on the psychological appeal of a city. Share these facts with your students: 100 million additional mature trees planted in American cities would save \$2 billion per year in energy costs. If you place trees in your backyard in a spot where they can block prevailing winter winds, you can lower your family's heating bills 10 to 20 percent. Shade trees planted to the east and west of a home cut cooling costs 15 to 25 percent. Street trees shade concrete and help cool entire neighborhoods. Flowering, fruit, and nut trees feed humans, insects, and wildlife. Trees keep land from eroding, rivers from flooding, and landslides from occurring.

Discussion Topics

1. What are the scientific and atmospheric benefits to having more trees in a city? If students are hazy on the benefits, consider this question a jumping-off point to a larger discussion.
2. Considering all the environmental and economic benefits of trees, why do you think some cities do *not* have a tree-planting program? (Answers might include lack of education, poor planning, lack of funds, etc.) Based on your impression of your own town, should more trees be planted here or not? How could you verify your impression?
3. What would you say to convince the average person to plant more trees in your area? What could a city government do to encourage citizens? How could your class help spread the word, or do some of the tree-planting work?

Classroom Activities

1. How does a tree make itself feel more comfortable in different weather and seasons? Have class teams draw diagrams or posters that demonstrate the cycle of transpiration.

2. Contact your local National Forest Service office to inquire about their efforts in urban forestry. What would they like to see accomplished and what are their major challenges?
3. Which are the best trees for your area for winter windbreaks or barriers? Which are the best trees in your area for shade? (Ideally, in temperate areas, deciduous trees are best for shade because they have leaves when it is hottest, and have no leaves in cold seasons, allowing sunlight to warm your house or sidewalk. Evergreens make good windbreaks because they always have leaves to block wind. But these rules will differ in warmer climates; students should contact their nearest forest service office or cooperative extension office for region-specific advice.)

Beyond the Classroom

1. Develop a strategic tree-planting plan for your school. Where is the best place to plant trees to shade your school during warm months? Where should you plant the trees to reduce wind in winter? Where should you plant the trees to shade students resting outdoors after sporting activities? Are there other areas that would benefit from shade, such as faculty parking lots?
2. For all their benefits, trees have some downsides that make people reluctant to use them: they require maintenance, they contract diseases, they shed leaves in autumn and drop dangerous limbs in storms. Ask your class to prepare a point-by-point rebuttal to each of these cons. For example, leaves could be collected, shredded and used as mulch and compost to absorb water. Can they interview a local nurseryman to find good "city" trees that are resistant to diseases and less likely to break in storms?
3. Trees cost money to maintain, but they also *save* us money if used correctly. Have students do some calculations and draw up a budget and cost comparison showing this trade-off to present to local government, the managers of a strip mall, or the board of education.

Career Corner

Invite a representative from the National Forest Service or a certified arborist to visit your class and talk about the attributes of good trees to plant in the urban environment.

TOPIC: Profile of an Activist: Ed Elliss finds community in a garden

Background

Ed Elliss is a senior citizen who lives in inner-city Philadelphia. A lifetime military man, he used to display a somewhat standoffish attitude toward his neighbors. But after Ed lost his son, who had been working on a garden, Ed resumed his son's work and became close to

his neighbors in the process. Now he knows everybody on the block, and the lot that was once an eyesore has become a neighborhood gem. Ed's daily example inspired others to plant garden and paint murals on their block.

Discussion Topics

1. How is it possible that the work of building a neighborhood garden can help people feel closer to their neighbors?
2. Mr. Elliss says he had to work hard to learn how to work with others. A former Navy man, he was used to giving and taking orders. What is the benefit of learning to work with people, rather than just giving orders?
3. Local businesses have now contributed money and plants to Mr. Elliss's neighborhood garden. Why do you think their contributions came after it was clear that the garden was a success? Why is it often difficult to persuade people of the wisdom of a great idea or the importance of a plan before they see the results?

Classroom Activities

1. Have students draw up a list of projects drawn from different walks of life: building a new school, planting a garden, starting an environmental group, starting a business, etc. Next, have them work through the list and decide which project would benefit from a cooperative approach. An authoritarian approach? Why?
2. In pairs or groups, let students research a well-known person who was active into his or her 70s, 80s or older (Grandma Moses, Thomas Edison, etc.) Ed Elliss was inspired by his son's memory. What inspired these people? What kept them going?
3. Write a want ad for a job that seeks an elderly person, and stresses the kinds of skills, talents, life experience that only a senior citizen can offer. What kinds of jobs could senior citizens perform better than applicants who are much younger?
4. Which setting do you think offers the best community support for a senior citizen—a city, a suburb, or the country? What are the pros and cons of each?

Beyond the Classroom

1. How well do some of the nature groups with whom you've become acquainted meet the needs of the elderly in your community? How can you design a survey to find out and report back to these groups so they can improve their outreach into the senior community?
2. Interview an elderly person in your life or community whom you find inspiring because of the passion for a cause or activity. Present your interview and report to the class.

Career Corner

Invite the activities coordinator of a senior center to your class. What kinds of projects do they help seniors get

involved in? What interests their clients? How do they seek to develop relations between younger and older communities, if at all?

TOPIC: Profile of an Activist: *Iris Brown saves a neighborhood from crime*

Background

Iris Brown is a Puerto Rican immigrant who moved to a tough neighborhood in Philadelphia and joined a community organization that was trying to run out the drug dealers and improve the area. At first, all Iris did was pick up trash. Because she couldn't speak English, she felt shy about expressing herself in community meetings. But the more she attended, the more she understood. The more she understood, the more she began challenging the status quo. Eventually she transformed 50 abandoned city lots into beautiful gardens, including one containing a cultural center. In 2005 Iris won an international award given to women committed to environmental causes. Her story reminds us that many new Americans need only find their voice to make a difference.

Discussion Topics

1. An old saying advises you to "bloom where you're planted." What do you think that means? How does it apply to the work of Iris Brown?
2. How do immigrants impact American society as a whole—from the time of the British colonists to people of many different nations arriving now?
3. Iris and her group of gardeners bravely marched into a city block where people were dealing drugs. They chased them off, and proceeded to plant a garden. How should a crime situation in your community be handled? Who would you rely on? Would you do things on your own, depend entirely on the police, or work together with the police?

Classroom Activities

1. Iris learned that she would do anything to keep her neighborhood from going downhill. Write an essay: What would you be willing to take a stand for and why?
2. Use U.S. Census data—available online or at your local library—to identify the primary immigrant populations in your area. Trace their histories and the important roles they have played in your area.
3. The United States is an immigrant nation. Many Americans can trace their family origins to an ancestor who entered this country at Ellis Island, New York. Study the Ellis Island website and see how immigration has changed over the years. Can students find the names of their ancestors or the ancestors of a fellow classmate on this site? Work with the class to investigate the causes and process of immigration then and now. Challenge

them to compile and present statistics about the different waves of American immigration in compelling graphs or charts. Can they show, for example, where Americans have emigrated from over the last 100 years?

Beyond the Classroom

1. Have students interview members of their family about their roots. Challenge them to see how far they can trace their family trees. If appropriate, they should try to elicit information about the point in their ancestry when family members began to feel wholly “American.”
2. Service Learning Project: Though your students are not teachers, they most likely have a valuable gift to share with recent immigrants: the ability to read, write and speak English. Consider challenging them to tutor at a local ESL facility. At the completion of their project, have them share their most poignant stories.

Career Corner

Seek out a prominent, successful person in the community for whom English is a second language. Have them speak to the class about the role of communication in community involvement.

TOPIC: Arts and Literature Connection: Public art and the environment.

Background

Philadelphia enjoys one of the most extensive public mural programs in the United State. The city commissions and pays for great works of art to be painted on the sides of old buildings and above vacant lots. Artist Jane Golden's job is to seek out these walls and the artists to fill them. Meanwhile, Chinese-born Lily Yeh is an artist who came to Philly to study and teach art. When she was offered an opportunity to build a park in an African American community, Yeh hesitated because she wondered if the community would welcome her, an outsider. But she stuck it out and ended up not just building one park, but a vibrant arts center to boot. She showed people that they had a longing to create art, how they love it, how to appreciate it, and how it creates lasting value in the community.

Discussion Topics

1. Why do you think Philadelphians feel good driving down the street and seeing a mural on the side of a building?
2. Lily showed people who didn't consider themselves artists that they did indeed possess artistic skills. Why is artistic expression an important thing for humans?
3. What role does public art—monuments, murals, statues, and outdoor memorials—play in your community?

If the answer is not at all, how you would like to see that change? Do you think art should be supported by government funds? Why or why not?

Classroom Activities

1. You're the artist: Ask students to draw a picture, sketch, sculpt, or build something that has environmental meaning for them. How would their work be different if they knew it was going to be publicly displayed?
2. Quotes are often found on pieces of art. Ask students to compile a list of their favorite quotes on various topics, such as the importance of community, gardens, cities and the environment. Have them pretend that they are part of a committee selecting works of art for a public space. Which quote would they use with what type of artwork, and why?
3. Challenge the class to pick one piece and one quote from all the ideas offered in Activity 2. Why is this such a difficult thing to do? Does it give them insight into the difficulty of designing art to be shared by an entire community?
4. As a class, design an environmental mural for a wall or hallway in your school. What math is involved in scaling up a design for a larger area? Does this give them an appreciation for the complexities of designing a mural the size of a building?
5. Have students research the great art projects of the WPA during the Great Depression. Are there any of these works in your community? What type of decoration do they think would be suitable for a library, a train station, city hall, a community center?

Beyond the Classroom

1. Have the class assume that they are going to paint a mural or erect some type of artwork in their community. How would they go about it? What steps would they need to follow to carry the project through from beginning to end? To point them in the right direction, you might suggest breaking them up into three committees: one in charge of designing the artwork, another to raise funds for the project, and another to pitch the project to the public and local leaders. How is each committee important? Can they think of other jobs that require special attention?
2. Have the class survey spots in town to determine a suitable location for their artwork. What criteria are they using to choose the location? How would they address the objections of citizens who disagree with their choice of location—and their choice of artwork?

Career Corner

Invite a representative from an arts organization or local artist to your class to talk about the role that their art plays in the community.

LOS ANGELES

Dream a Different City

Los Angeles is without a doubt the most glamorous of American cities. It's a city renowned for movie stars, a Hollywood version of the American dream, and flawless weather.

But as your students will learn, this seeming paradise is struggling to remake itself as a sustainable city. Water is always in short supply, rampant sprawl is eating up more and more precious real estate, and the city's dependence on the automobile is choking the air with smog and carbon dioxide.

In this chapter, you'll learn how concerned citizens and city government are working together to reverse these disastrous trends in America's promised land.

LOS ANGELES HISTORY

The land that is now Los Angeles was first explored in 1769 by Spanish missionaries who were enchanted by the region's natural beauty. The man who kept the diary of that expedition, the Catholic missionary Father Juan Crespi, wrote longingly of a beautiful valley and its pristine river lined with valuable trees.

We start our chapter with this story because it is a stark contrast to the Los Angeles we know today—a city blanketed by smog, challenged by sprawl in every direction, and facing severe cycles of drought and flood. How did this paradise go astray? As we explain early on, with each passing decade Los Angelenos made tiny adjustments in the fragile desert landscape that altered the entire ecosystem. Fearful that the Los Angeles River would overflow its banks, government engineers turned the soft dirt bottom of that river into a concrete canal. Today, to make sure the growing region has enough water to drink and prosper, Los Angeles buys water from other cities but makes little attempt to capture precious rainwater that falls on the area throughout the year. At the same time, Los Angeles has done little to limit population growth, the ever-widening belt of suburbs, and the rampant use of automobiles.

As more and more people flock to this gorgeous part of the nation, the swelling influx taxes resources more and more. It costs local taxpayers millions each year to buy water to drink. Because so much of the ground is covered by asphalt, rainwater has nowhere to go, and the region is often beset with dangerous floods. Such natural disasters cost local and federal taxpayers millions more.

How can Los Angeles heal itself? As we point out, it's now extremely difficult to do so. It's hard to create large parks in an already-developed city or landscape. One problem is connected to so many others. You cannot

tackle the problem of smog, for example, without eventually addressing the lack of public transportation. In this chapter, students meet a number of people working hard to come up with creative solutions to these problems.

IN THIS SECTION

You will want to have your class watch the Los Angeles DVD of *Edens Lost and Found*, as an introduction to this material. You will also want to refer to the companion book, chapter 3, for relevant readings. Here are the main topics that will be covered in the Los Angeles section of the Teacher's Guide:

- **Bunker Hill:** The city center as a center of community
- **The LA River Basin:** Water in the desert
- **Smog, Cars, and a City Spread Far and Wide**
- **The Legacy of Failed Design:** Where to build an urban forest?
- **Multiculturalism and the Diversity of Man and Nature**
- **Profile of an Activist:** Darrell Clarke, transportation proponent
- **Profile of an Activist:** Andy Lipkis, the man who planted trees
- **Community Service & Activism:** What is a nonprofit and how do they profit communities?

TOPIC: Bunker Hill: *The city center as a center of community*

Background

Los Angeles is the name given to a city, a county, and a vast metropolitan area, the same way some Americans might say they are from the "New York area" or the "D.C. area." At first glance, the *city* of Los Angeles does not have a "city center" or "downtown" area. However, recently there has been a powerful movement afoot by politicians, influential citizens, and real estate developers to "pick a spot" in the city of Los Angeles and designate it as the city center. Bunker Hill, a once-glorious residential neighborhood, has become the leading candidate for this downtown area, chiefly because a number of important buildings, museums, and theaters have been built here in recent years. This section of the book focuses on the conflict between a famed philanthropist who says Bunker Hill is the perfect location for the heart of Los Angeles, and an architect who begs to differ. On a deeper level, this section challenges students to think about the pros and cons of downtown areas and why they are important to cities.

Discussion Topics

1. Why do you think people in Los Angeles are so concerned with having a special downtown area? What is missing when a city lacks a city center or “heart”?
2. Does your city or town have a place downtown where kids and adults like to gather for evening activities, entertainment and shopping? In a few words, can you describe a few things that you think every city should have its downtown area? (Hint: Students may list shops, movie theaters, restaurants, etc.)
3. Mr. Rosenfeld seems to think Bunker Hill is an inappropriate spot for Los Angeles’s center. Why is this so? What do you think of his argument that famous spots in great cities are rarely found on hills? Does his comment ring true to you?
4. What economic reasons might a city have for encouraging people to spend more time downtown?

Classroom Activities

1. In pairs or groups, have students design a piazza, plaza or square for your town. What would they place there? What kinds of businesses would flourish in such an area? What kinds of architectural features would make people feel at home? Where would you locate the square? Why? Have each group present their plan to the class, and have students vote on their favorite town square plan.
2. Research piazzas and squares in famous European cities such as Rome, Barcelona, Paris, etc. Are they similar to American town squares? What purpose do they serve now and what was their history? What can we learn from them to improve our town gathering places?
3. Have students debate the pros and cons of building a town square. They may wish to choose positions that might be expressed by a local architect, realtor, or merchant. Merchants might well argue that potential revenue will be lost because so much of the square will be devoted to “empty space.” Remember: A square’s value lies not so much in what is built there or what shops will be located there as in the open space that will be used as a meeting place for local people. In this sense, malls may well have become the piazzas of the 20th and 21st centuries!

Beyond the Classroom

1. Day of sketching: Take the class to a downtown area with some sketch pads. First, have them recreate what is already located in that downtown area. Next, have them redesign it to offer more opportunities for social interaction. Photography can be a quick way to capture the reality and duplicate via photocopiers or computer printers.
2. Critique your existing downtown area. Have students pay attention to signage, shops, and green space. Are there enough of the important things? Where else

could some objects or business be sited? What would the architectural focal point be? Have them think about items normally found in town squares, such as statues, flags, monuments, fountains, etc. What would they be made of and how would they look?

Career Corner

Invite a business owner who operates a business in the heart of your town. Talk to them about how they feel about the vibrancy of your downtown area. How much does their business rely on “foot traffic”? What do they like about your downtown, what do they dislike, what would they change and why?

TOPIC: The LA River Basin: Water in the desert**Background**

As we learned in earlier sections of the book and films, scientists agree that the best place for excess rain water to go is in the ground. If rain is allowed to reach the open ground, it will eventually be absorbed and purified by layers of rock and soil, and can later be pumped out for use by humans. This saves cities money because they don’t have to buy clean water from other town and cities, nor do they have to spend so much money building expensive storm drains or purification systems. If the water is collected in a storm drain and washed out to the ocean, it is often wasted. Also, as we saw earlier, rainwater spreads toxins all over a city by washing pollutants into waterways. And the more asphalt and concrete was used in the construction of a city, the greater the chance of damaging floods because the rain cannot be absorbed.

In the early 20th Century, the Los Angeles River often spilled over its banks. Following a number of deaths, the Army Corps of Engineers—a special branch of the U.S. government in charge of major public works projects—raised the riverbanks with tall concrete walls, and encased the river bottom with concrete. Today the river looks like a massive cement canal that leads to the sea. (Ask students if they have ever seen images of the river in Hollywood movies.) Now, in the interest of collecting water for drinking and better water management, many water experts in Los Angeles are wondering if it is time to remove the concrete from the river, and allow the water to seep into the ground once again.

Discussion Topics

1. Why was the famous Army Corps project on the Los Angeles River a good idea? Why was it a bad idea?
2. Where do Americans get the water that they drink? Are there ways to collect even more water?
3. Are there things the ordinary citizen can do to conserve water in the home? Are there ways families can collect large amounts of rainwater to use in the garden, to wash cars, or for other outdoor uses?

4. Do you know the meaning of the term “Catch-22”? In what way was the Army Corps project a Catch-22 for Los Angeles? (Hint: It was supposed to reduce the danger of floods, but it now contributes to dangerous floods because the ground cannot absorb the water.)

Classroom Activities

1. Geography/hydrology: Plot the path of water in your community. Where does rainwater go when it falls in the vicinity of your school? What is the nearest tributary, river, or large body of water? Where does the majority of your drinking water come from and where does it go after it is used?
2. Using e-mail, phone research, and letters to local authorities, have students determine what kind of treatment dirty “graywater” undergoes when it leaves their kitchen sink. How is it treated and where? How many different steps does it go through before it is released into the local environment?
3. What does the Army Corps of Engineers do? Look at the role the Corps has played in American water management, from the channelization of the Los Angeles River to the disastrous 2005 floods in New Orleans.

Beyond the Classroom

1. Have students do a study of the kinds of pollutants and potential problems lurking in the school parking lot. For example, have them design an experiment to determine whose cars are leaking, and what substances the vehicles are contributing to the local environment. Are other school-generated pollutants making their way into the watershed?
2. Supervise a walk with your class along a local waterway. What obvious problems can students notice simply by looking at the water and the area around it? Based on their observations, do they think there may be problems with the water that they *cannot* see? Consider having a sample of the water tested by a local lab. Then use your findings to make suggestions to the local water authority.

Career Corner

Invite a member of the Army Corps of Engineers to speak to your class about its work.

TOPIC: Smog, Cars, and a City Spread Far and Wide

Background

The word “sprawl” appears often in the American news media, usually in a negative light. As more and more Americans flock to Los Angeles each year, home builders are obliged to move farther out into the city’s surrounding regions, turning farmland, desert, wilderness and other open spaces into new suburbs. Sprawl, as this phenome-

non is called, is hardly confined to Los Angeles. Sprawl is happening all over the nation, and is regarded as a sustainability issue because as more homes are built, a) more people consume natural resources, b) more acres of open land are lost to development, and c) transporting people in and out of the nearest city consumes vast amounts of energy. How can we control sprawl? Some places in the nation put strict limits on where builders can develop new homes. They give tax breaks to businesses and individuals who rehabilitate older properties in the city. And they try to build more public transportation so people don’t have to use their cars to get to work.

Discussion Topics

1. Why is sprawl considered such a big problem? Shouldn’t Americans be allowed to live wherever and however they like?
2. Recently, teachers have expressed concern that sprawl is affecting young people’s home life and their relationship with their parents. Why might this be so? (Hint: Parents who travel long distances from their homes to the workplace may end up spending less time with their families.)
3. Do you think it is ever fair for a city or town to limit how many people can live within its limits? Would it be fair for our country to tell people how many children they could or couldn’t have?
4. How would you suggest slowing the pace of sprawl in the United States?
5. How do you think sprawl affects Los Angeles’s environmental health? Do you think more suburbs produce more or less pollution in rivers and streams? More or less smog? More or less traffic?

Classroom Activities

1. Do research to find out which cities in the United States produce the most amount of smog. What airborne chemicals contribute to smog, and how are they usually released?
2. Which automobiles are the worst offenders? Have your students select three types of vehicles and research how many pounds of carbon dioxide are emitted per car in a lifetime. Ask them to compile their data in a chart ranking the lifetime carbon dioxide emissions of popular cars. Next, have them calculate how hybrid cars improve or change the situation. Have them research and present to their classmates how a hybrid vehicle works.
3. Ask students to find out which trees absorb more or less CO₂, and if the rate of that activity varies seasonally. Everyone knows plants breathe CO₂, but how does that “reverse respiration” actually work? Does a large, mature oak tree necessarily take in more CO₂ than a recently planted sapling? Challenge students to use what they know to develop a tree-planting plan to combat pollution and smog.

Beyond the Classroom

1. Conventional vehicles typically get better mileage on the highway, and less mileage in the city. Hybrids are opposite. Ask a car dealer or mechanic who works with these new cars to explain why that is so. What new hazards must mechanics and car owners face with these new vehicles? (Hybrids are controversial because their battery systems are considered dangerous and should only be touched or maintained by a properly trained technician.)
2. How does the issue of sprawl affect your community? If your region is a fruitful area for this discussion, you might consider launching a major learning project. You might have students access local property records to determine the patterns of home construction in your area. What did the surrounding area look like 10, 50 or 100 years ago? Can students create a map that shows the successive waves of construction and the decades in which they occurred? How did the increasing population affect schools, mass transit, and local government?

Career Corner

The topic of sprawl impacts so many different disciplines. You might check nearby colleges and universities to see if any city planning experts can speak to your class on the implications of sprawl. Lacking this, consider inviting local air quality experts from a local EPA office, local developers, and activists to discuss the different issues of sprawl with your students.

**TOPIC: The Legacy of Failed Design:
Where to build an urban forest?**
Background

As we saw in other cities in the *Edens* project, trees and forests can repair much of the damage to a city's environment. But inserting trees into the urban environment of Los Angeles is a major challenge. Cities such as Chicago, New York and Boston were designed to be compact. They grew *up*, not out; the designers of those cities purposely protected large chunks of woodland within their city limits. Philadelphia, as we have seen, set aside Fairmount Park as a watershed. New York City built Central Park on Manhattan Island and Prospect Park in nearby Brooklyn. Los Angeles, on the other hand, was envisioned by its earliest builders as an alternative to these other cities. LA grew with a minimum of parks, and the earliest attempt to build green space—the Olmsted-Bartholomew Plan—was rejected by city fathers in the 1930s. At this late date, it is very difficult to find, buy and set aside vast tracts of land for trees. So some of the city's smartest thinkers must become very creative if they are to save the city.

Discussion Topics

1. Ask students to describe their vision of Los Angeles. It will most likely include an image of palm trees, sea, and sun. Now tell them that LA has the fewest acres of parkland per person—.9 acres versus a national average of 10 acres per person—than any major city in the country. How does that change the way they think of “Hollywood”?
2. Trees are often described as the “lungs” of a city. What does this mean, and how does that vision help us understand the work trees and forests do?
3. Real estate is pricey in Los Angeles. How does the value of the land affect the chances that the city will buy some and plant trees on it?
4. Can students think of ways to build forest land or small parks where there are none? (Hint: How has Philadelphia been able to do just that?)

Classroom Activities

1. Have students use a map of their city or county to calculate how much green space exists there. (A sheet of clear plastic marked with a grid pattern—1 square = 1 acre—will help them estimate how much acreage is given over to green space.) What percentage of their town is green? Is any of it protected?
2. Suppose you are permitted to add 10 acres of trees to your town or county. Draw on a map of the area where you would place this “green belt” and why. Would you include parks, or just trails? How would you protect it for future generations?
3. How green are your school grounds? Have students use resources, such as a guide to local plants, to determine what kinds of trees are native to your area. Which kinds would you plant if your area suffers often from damaging droughts?

Beyond the Classroom

1. Consider a strategic tree-planting project. Have students build on the last activity by inventorying plants on school grounds and contemplating tree plantings. Have them ask your local cooperative extension office (through your state Department of Agriculture) for advice on the best places to plant deciduous trees to block sun in summer, and where evergreens should be planted to block harsh winter winds. Study wind and sun patterns to determine the ideal locations for trees.
2. Visit a local tree farm to ask questions such as: Which trees grow fastest? Are fast growers necessarily the best choice for school grounds or an urban setting? How do you take care of damaged and diseased trees? Which will survive best in an urban setting?
3. Many of the ordinary citizens we met on the *Edens Lost & Found* project underwent training to learn how to care for trees in their city neighborhoods or parks.

You might check to see if there is a similar class in your area that your students could attend.

Career Corner

Invite a local arborist to speak to the class. A trained tree expert, an arborist is qualified to give expert testimony about tree damage on construction sites. They consult with homeowners, businesses, and local officials on ridding valuable plantings of disease, and they are knowledgeable about the proper pruning of overgrown or damaged stock.

TOPIC: Multiculturalism and the Diversity of Man and Nature

Background

As the producers of the *Edens* project visited different parts of Los Angeles, they found that Americans of different backgrounds and cultures were interested in environmental issues. Throughout the Los Angeles chapter, for example, we see evidence of the region's Hispanic heritage. We meet two politicians of Hispanic descent, including Los Angeles' new mayor. We meet young Mexican-American women who care for a special community garden called Proyecto Jardin. On the banks of the Los Angeles River, we meet recent immigrants from various Asian nations who pitch in to clean the riverbank. In the Chicago section, we introduced the concept of environmental justice: nature should be available to all people, not just those who have the means to escape to the country. The same applies in Los Angeles, as well, and it's a good example of how recent newcomers to the United States value the natural urban environment and commit to caring for it.

Discussion Topics

1. How is the American melting pot reflected in the photographs in the *Edens Lost & Found* chapter on Los Angeles? On the other three cities?
2. Why do you think people who recently moved to the United States would care enough about the Los Angeles River to spend their weekends picking up trash along its banks?
3. What does the term "diversity" mean when it is applied to wild nature? How is that term similar to the way we describe all the different types of people who make up a city?
4. What are the benefits of a society that is a melting pot of different cultures?
5. How is the environment a unifying and uniting force among different cultures?

Classroom Activities

1. Research the immigration history in your area. Have groups of students research the role of these groups in your community and present their findings to the class.

2. Many immigrant groups have strong ties to farming, agriculture and gardening. How have they continued that heritage in the United States? Report on your findings.
3. In pairs or groups, devise an outdoor environmental project that would be ideal for a variety of groups in your community. Describe the project, its location and goals, and how it could unite and use the strengths and talents of different cultural communities in your area.

Beyond the Classroom

1. Visit a couple of different cultural community centers to learn about the work that they do. What ethnicities are represented here, and what roles do various cultural groups play in your community?
2. Visit the nearest historical museum. How well are the contributions of different ethnic groups represented in the various exhibits? Based on your own research, how could the museum improve its depiction of your community? Consider submitting your ideas in the form of a critique to museum officials.

Career Corner

Invite a volunteer from a local cultural group to speak to your class. Have the visitor talk about the history of his or her people in your community. If the group continues any strong ecological or agricultural traditions, have the visitor explain how these have played a role in your area.

TOPIC: Profile of an Activist:

Darrell Clarke, transportation proponent

Background

One of the important links in the chain of urban sustainability is the availability of quick, cheap, easy public transportation. If citizens know they can get to work reliably by bus, train, ferry or some other means, they will leave their cars at home. Ultimately, that's best for everyone, since individual cars, trucks, and SUV consume the most fuel, spew the most carbon dioxide, and generate the most traffic. Public transportation is the way to go, but some cities, like Los Angeles, grew large without incorporating a mass transportation infrastructure into their plans. Los Angeles was conceived as a city where the average American could zip in and out of town on his own set of wheels. Now, choked by smog and traffic, the city is trying to expand its mass transit choices.

In this section, we focus on the work of activist Darrell Clarke, a latter-day Don Quixote who has spent 18 years of his life trying to persuade Los Angeles county to build a light rail train line to his neighborhood. Light rail has become one of the hot new modes of transportation in the United States. If you and your students live in or near a big city, you may have access to a light rail line. Such

trains are lighter than ordinary passenger trains and thus cheaper to build. Like the old trolley cars of old, they run on electric power and don't pollute the immediate vicinity where they are used. Numerous light rail websites abound on the Internet, so your students will have a multitude of follow-up activities, if you so desire.

Discussion Topics

1. Why is public transportation so important to the health of cities?
2. How many different forms of public transportation have you used in the past? Can you describe a few pros and cons of each?
3. What is the difference between light rail and regular trains? How do they operate, and why are they so popular now in cities?
4. What reasons does Mr. Clarke give for spending so much of his time fighting for mass transit? Is his battle worth it?

Classroom Activities

1. Research and compare light rail trains to passenger trains and subways. Create a chart comparing fuel consumed, emissions, people carried, energy needed, and other notable differences or similarities of the technologies.
2. Plan a light rail for your area. Where would the stops be and why? Challenge students to create a map of all the stops, design possible signage, and a breakdown of all fares. If your city or region already has public transportation, how could it be improved, added to, or renovated?
3. Choose a city (yours or a nearby big city) and consider the following: If people carpooled or took public transportation, how much fuel could be saved? How many pounds of carbon dioxide emissions could be reduced? How much traffic could be reduced? Take a rush hour estimate of the number of cars that travel through your town, estimate the emissions spewing from each, and compare this figure to the emissions of some public transportation options and to the number of people this form of mass transit can carry. Which seems like the best bet?

Beyond the Classroom

1. Go on a field trip to find an ideal spot for a public transportation hub or train station in your town. Who or what would be displaced by such a station? What kind of services would such a station need?
2. Study your school's transportation choices. Visit the depot from which all your district's school buses emanate. Study the routes. Do most students take the bus? Do all students have the opportunity to take public transportation? Is the school's transportation hub adequate? How would you improve it?

3. Consider taking a commuter train trip. Who is using the train and why do you think they are?

Career Corner

Invite someone from your town or region's Department of Transportation to come speak to your classroom about your area's needs, challenges, priorities and plans for local transportation hubs.

TOPIC: Profile of an Activist: Andy Lipkis, the man who planted trees

Background

Andy Lipkis, the founder of the environmental organization TreePeople, has been an activist since he was no older than your students. Shocked to hear that smog was killing trees in the California hills, he raised money to conduct a campaign to plant smog-resistant trees. As students read the story, have them pay attention to how the young Andy got things done. He never backed down from his principles. He was always polite to authority figures. And he was remarkably persistent.

The second part of our story—the story of the grown-up Andy—deals with a new plan Mr. Lipkis has for improving the environmental health of Los Angeles and helping thousands, possibly millions, of people get jobs. Early in the Los Angeles chapter, we showed how every problem in the region is linked to another. Mr. Lipkis shows how it is possible to fix all those problems by strategically using two tools: trees and cisterns. Cisterns are large underground tanks that capture rainwater and allow it to be more easily pumped back up to the surface to water gardens, yards, and school grounds. By getting water off the streets of Los Angeles and into underground tanks, he reduces the chance of drought and floods. By planting more trees, he shades buildings and reduces the need for costly air conditioning. The county water agencies plan to employ Mr. Lipkis's ideas.

Discussion Topics

1. What do you admire about Mr. Lipkis' work as a young man? What character traits does he display early on that helped him get the job done?
2. What is a cistern and how does it work? How can cisterns help big cities like Los Angeles?
3. How did you feel in the story when the official told Mr. Lipkis, "We think you've cracked it"? How do you think Mr. Lipkis felt?
4. In your own words, explain how Mr. Lipkis' new idea can solve many of Los Angeles's problems. Why do you think this approach is called "integrated resource management"? What is "integrated" in his plan?

Classroom Activities

1. Cisterns have been around for thousands of years. How did societies living in water-challenged areas use them? What purpose did they serve? Is there anything we can learn from those ancient societies and their use of cisterns?
2. Create a diorama showing how trees and cisterns work together. Develop a cross section drawing depicting how they could work in or around your students' homes.
3. Have the class research which types of trees resist smog and which of these could feasibly be planted in your area.
4. Ask the class to look up the term "best practices" and explain what it means. How is Mr. Lipkis' plan an example of best practices?

Beyond the Classroom

1. Design and plan a reforestation project (as Mr. Lipkis did) for a local park, state park, picnic area, etc. Later, have students discuss the following: Why did they choose the areas they did? Who would they approach in the city government to be a part of their project? How would they raise funding?
2. Start a tradition at your school in which the senior class plants trees as part of a "graduation garden." Have students decide how they will use their powers of persuasion to convince adults and others in authority of the wisdom of their plan.

Career Corner

Invite someone who builds cisterns or who works in public works or utilities to talk about how their community employs integrated resource management.

TOPIC: Community Service & Activism: What is a nonprofit and how do they profit communities?**Background**

Anyone who watches the evening news quickly gleans that there are many issues and problems in American society that cannot be solved by local, state and federal governments alone. Citizens can often be effective agents for change in their communities if they are willing to get involved, volunteer their time and energy, and speak up when they see ills that can be corrected. Aiding citizens in this effort are countless nongovernmental organizations (NGOs) that are devoted to multiple or single causes. Your students may already be familiar with charitable organizations. In this section we want to make them aware of nonprofit organizations that work for community or environmental change. In general, these groups are made up of volunteers or some paid workers, and are supported by donations or by grants from larger organizations. To receive a grant, an organization might write a proposal explaining their goals, requesting a sum of money

from a philanthropic group, and carefully detail how they intend to use the funds. In the book and films, students learned about organizations such as TreePeople and The River Project, which focus on specific environmental goals. Typically, a nonprofit stands a greater chance of finding funding if their work is not overtly political.

Discussion Topics

1. What do the words "non-profit" or "altruism" mean to you? What can an organization that doesn't seek to make money have to offer society that a profit-seeking group or corporation cannot?
2. What would happen if a nonprofit organization decided to be for-profit? Would they be more or less effective and successful? Why or why not?
3. Why does our society need non-profit groups?
4. People who join groups like this are often called "activists." What are they "actively" doing? How do you think people feel when they volunteer to be active on a project that means something to them?

Classroom Activities

1. The number of non-profit groups in the United States is truly astounding. Break your class into small groups and ask them to research and profile a number of non-profit organizations. Be sure they describe the group's usual activities, projects, and goals.
2. Schools sometimes "adopt" non-profits or charities. If your school has not done so, ask your class to use their research to propose one or two to administrators and other students at an assembly.
3. Ask the class to discuss what kind of work would be necessary to start an activist group. If they have an issue in mind, challenge them to prepare a mission statement, list of goals, budget and fundraising plan. This can be a theoretical or a real-life activity.

Beyond the Classroom

1. The *Edens Lost & Found* website (www.edenslostandfound.org) contains suggestions for how students and other can take action on important issues. Challenge the class to use what they learned to speak up: Have them gather signatures for a petition, write and submit a press release to a local newspaper, radio or TV station, or plan a media event designed to call attention to an issue they feel is important.
2. Consider a visit to the offices of a non-profit organization to see who works at such places and how they go about their work. Be fair and balanced: Seek out groups with differing views or agendas.

Career Corner

Invite the leaders of some local non-profits to speak to your class about their mission and goals. Be sure they talk about how they get their funding—and how they use it.

SEATTLE

The Future Is Now

The age of technology was supposed to be Seattle's salvation. But technology, rampant development, and a growing population have only provided endless challenges for the "Emerald City."

With its flurry of grassroots organizations, its glorious Space Needle and Monorail, endless coffeehouses, gorgeous mountains, islands, sound and bay, Seattle has earned a reputation for being one of the most attractive, livable cities in American—and arguably the "greenest."

Recently, the city has been the victim of its own great press. Each time another lifestyle magazine proclaims it a top place to live, more Americans relocate there, straining the area's housing, roads and resources. In this section, your students will see how the city's green smarts are helping Seattle become an even greater place to live.

SEATTLE HISTORY

The land on which Seattle is built was once home to Native Americans who thrived on the area's abundant food sources, such as salmon, and who crafted their homes from the area's rich stands of timber. The city was named after chief Seattle, a Native American warrior and elder who helped the early European-American settlers to the region. When the city was founded in the 19th Century, the newcomers were drawn to the area's rich natural resources. Seattle became a major port, the gateway to Canada and Alaska, and a fish, coal, and lumber capital.

The city experienced a couple of different cycles of boom and bust. When timber and fishing tapered off, technology—most of the nation's first jet airplanes were built here—took over. Today the region is famous for companies such as Microsoft (computer software), Starbucks (coffee), and Amazon.com (Internet retail). The region's great job opportunities, mild climate, and attractive landscape have made it very popular with transplants (newcomers from out of town). Today home prices are soaring, traffic is terrible, and pollution is threatening the local salmon. Seattleites are combating these challenges with new modes of mass transportation. They are leading the nation with innovative, environmentally friendly architecture. And they are taking steps to rethink and redesign their city so that the salmon will run free and abundantly once more.

Seattle is a wonderful city to study with students because so many of the city's innovative programs will capture young peoples' imaginations and sense of idealism.

IN THIS SECTION

Your class should watch the *Edens Lost & Found* DVD, as an introduction to this material. You will also want to

refer to the companion book, chapter 4, for additional and pertinent information. Here are the main topics that will be covered in the Seattle section of the Teacher's Guide:

- **Salmon in the City:** Fish hatcheries and the indicator species
- **Green Building:** Starting smart from the ground up
- **Automotive Energy Efforts:** biodiesel, hybrids and One Less Car
- **Monorails, Light Rails and Viaducts:** The city's search for money and mobility
- **To the Sea:** Sustainable fishing and the life of the ocean
- **Profile of an Activist:** Dick Falkenbury and the impact of citizens on government
- **Profile of a City:** Cycle of boom and bust
- **SEA Streets and Swales:** Improving drainage naturally

TOPIC: Salmon in the City: *Fish hatcheries and the indicator species*

Background

Salmon are Seattle's "canaries in the coal mine." Because they need pristine conditions to survive, salmon are major indicators of the health of the Pacific Northwest ecosystem. The Native Americans who inhabited the Pacific Northwest incorporated the wildlife of their beautiful home in their rich mythology. Whales, eagles, ravens, bears, otters and countless others were the primary actors in ancient fables. They cropped up in body tattoos, pottery designs, and totem poles. Salmon was revered as a food source and a symbol of determination, persistence, and instinct. Native Americans understood that for all their abundance, salmon were especially vulnerable during spawning season and could easily be over-harvested before they spawned. That's why a staunchly ecological message seeped into their early rituals, one that survives among residents of the Pacific Northwest today—Native Americans and newcomers alike.

Nearly all the environmental woes mentioned in this chapter, and in the accompanying DVD, have some kind of effect on Seattle's salmon. For example, stormwater runoff, overdependence on automobiles, overfishing, overpopulation, and so on can all ultimately impact Seattle's most famous fish. But it's important to realize that similar forms of pollution exist everywhere, and impact waterways in those places as well. Even in areas where local fish are not prized, the beings affected by polluted water are humans themselves. As you work through this section with your students, it might be helpful to occasionally remind them of this. The activities and extensions we've provided will help you find meaningful connections to your town, city, or region.

Discussion Topics

1. In what way does the salmon species act as a barometer of the purity and health of the Pacific Northwest ecosystem? Do you think there are any signs noticeable in the human animal if an area becomes too polluted?
2. Salmon is a driving force in Seattle's environmental movement. Can you explain how many of the projects Seattleites have created will ultimately create a better habitat for salmon?
3. Why do you think Native American folk legends emphasize not wasting salmon or only fishing as much as you need to survive?

Classroom Activities

1. Research and report on the different ways that various animal species (hint: canaries, salmon, frogs) have been used as warning signs that an environment is unfit for humans or becoming too contaminated.
2. What is a salmon ladder? Look up information on the Ballard Locks in Seattle, and other fish ladders in other parts of the country or world. Consider having students build a working scale model of such a ladder and demonstrate how they work. Be sure they explain the curious spawning ritual of salmon.
3. What was the role of salmon in Native American culture? What other fish or animals—raven, owl, bear, etc.—have played a vital role in Native American cultures of the Pacific Northwest? Have students research, read aloud, or dramatize some of these classic animal fables as part of a larger unit on environmental literature.

Beyond the Classroom

1. Visit a local or state fish hatchery to see how humans raise fish to stock waterways. On their visit, students should not be afraid to the tough questions, such as: Why are hatcheries even necessary? What percentage of the fish raised on the hatchery will ever survive to reproduce in the wild?
2. As a prelude to a gourmet day, have students visit some local supermarkets or food shops to see how many different types of salmon products—and other fish products—they can find. Instruct students to ask local purveyors where they get their fish: are they wild-caught, farm-raised, or from some other sources? For a small out-of-pocket expense, you could arrange to have a tasting of smoked salmon in the classroom. As students snack, have them share what they learned on their expedition. How knowledgeable, for example, were supermarket employees about the sources of their fish? Can students enumerate the pros and cons of eating salmon? (The fish is remarkably healthful, but our consumption of it always has consequences.) If they enjoy the salmon, consider sharing some favorite recipes.

Career Corner

Invite a representative from a local Native American tribe to discuss ancestral foodways. Which foods were consumed by the tribe's ancestors, and how were those foodstuffs regarded? How would students describe modern American attitudes toward food sources?

TOPIC: Green Building: Starting smart from the ground up**Background**

Home construction is one of the major industries in the United States. If you ask your students to scour the local business pages or watch business news programs on TV, they will notice the health of the U.S. economy linked to the number of new housing "starts." As a nation we rely on building to create jobs and start a chain reaction of purchasing associated with prosperity. But as we saw in the Los Angeles chapter, rampant building can gobble up our landscape and cause unchecked sprawl. Moreover, the physical act of building has numerous environmental impacts: soil erosion, tree damage, tons of debris shipped to landfills, and countless building materials—everything from paint to construction adhesives to pressure-treated lumber—are toxic and can find their way into waterways and the air we breathe.

The green building movement seeks to minimize these impacts by choosing less harmful materials, protect local trees and soil during construction, reuse and recycle as much existing material as possible, and use more energy-efficient windows, insulation, appliances, and so on. Green building is catching on as conventional builders try to court energy-conscious home buyers. Green building is currently a more expensive way to build shelter, but those higher up-front costs generally pay off down the line in energy savings.

Discussion Topics

1. What does "green building" mean and why should we care about it? What is the goal of building green? What is "unsustainable" about the way we build our homes today? What is unsustainable, for example, about a drafty window or a leaky faucet?
2. Which is better: a green home with a wasteful inhabitant or an average house that is home to someone who works hard to conserve his or her resources?
3. Why do you think green building is more expensive than conventional building? Should it be? How can cities, states and the federal government help Americans who want to build a green home?

Classroom Activities

1. After researching some components of a green-built home, have students design one. Encourage them to build a model or make a cross-sectional drawing of an energy-efficient home.

2. Research green builders on the web and in your community. What kinds of services do they offer and what do they charge? (Consider an e-mail exchange with the builder to answer some of these questions.)
3. Do the math: Compact fluorescent light bulbs (CFLs) last longer than conventional incandescent light bulbs and can drastically reduce the energy needed to light your classroom or home. Using the consumer information printed on the boxes of each type of bulb, calculate how much longer a CFL bulb lasts compared to a conventional bulb. How much less energy does a CFL use? How much money could your school save on buying bulbs if it switched to CFLs? Can you calculate how much money in energy costs the school would save?

Beyond the Classroom

1. House detective: Prepare a checklist and have students use it to investigate some of their own home's efficiency issues. Have them check such things as their toilets' gallons/liters per flush, how many lightbulbs are used in the home, how much they would save in energy costs by switching to CFLs, or whether their faucets or showerheads are leaking.
2. Have students visit a home center store on their own time. Ask them to gather some free consumer information on products such as energy-efficient windows or insulation. Back in the classroom, have them design some problems that would allow them to calculate the efficacy of these products. (Both window and insulation manufacturers support websites that demonstrate the mathematics and science behind these products.)
3. A new insulation product—a sprayable foam—is currently being used by many home builders. You might consider writing for a sample for your students to examine.

Career Corner

Invite a builder to come to your class to talk about reducing energy costs. Home energy consultants are now popular in many cities. For a fee, they'll come to person's house and test the home's air, heat, and water efficiency. Since so much of their business depends on good consumer education, they may be delighted to visit your class.

TOPIC: Automotive Energy Efforts: biodiesel, hybrids and One Less Car

Background

The right to drive is a privilege, as your students will learn soon enough. Owning a car is also something of a luxury, since millions worldwide cannot afford one. On the American continent, automobiles may be a necessity in places where public transportation is impractical or nonexistent. But cars are the biggest single contributor of CO₂

on the planet. Cars and small trucks gobble up 40 percent of all the oil-based fuels used in the United States, and produce 20 percent of the nation's CO₂. In its lifetime, the average car will cough out seventy tons of CO₂. An SUV will spew a hundred tons! That's why Seattleites are exploring earth-friendly technologies such as biodiesel fuels and hybrid engines, and new approaches such as persuading two-car families that they can get by on one car alone.

Following the disastrous effects of Hurricanes Katrina and Rita in 2005, the cost of gasoline skyrocketed in the United States. This inspired Americans to seek out cars that are less dependent on foreign oil. Luckily, a new crop of vehicles called hybrids has appeared on the market. These cars have engines that use both gas and an electric battery to get phenomenal mileage. Biodiesel is a cleaner-burning fuel derived from vegetable oils, including discarded cooking grease! If properly refined, this fuel can be poured directly into any car, truck, or boat with a diesel engine. Lastly, Seattle has experimented with a program in which two-car families volunteer to go without one of their cars for five weeks. During this trial period, families carpooled, used mass transit, or simply used one car more intelligently. At the end of the program, some families sold off one car, realizing that they could get by without it and save money on insurance and maintenance costs. All of the ideas in this section demonstrate that there is more than one way to live sustainably with cars.

Discussion Topics

1. Some nations, including the United States, have experimented with alternative-fuel vehicles for some time. Manufacturers say that while these cars hold great promise, they will be expensive to design, manufacture and put on the road. Why do you think new technologies cost more? Do you think a manufacturer would be delighted to pay the extra costs of designing this kind of vehicle, or resistant to doing so?
2. Why did the 2005 hurricanes cause gas prices to go higher in the United States? What other kinds of events can boost gas prices?
3. European countries have long paid much more for gas than Americans. In some cases, Europeans paid as much as \$5 per gallon when Americans paid \$1.50. How do you think that affects the kinds of cars they choose to drive and how they drive them?

Classroom Activities

1. How does a standard combustion engine auto work? How does a hybrid work? Ask students to prepare two diagrams showing the difference between the two designs. (Since hybrids are fairly new, this information is available online or from car dealers that sell them, such as Ford, Honda, and Toyota.) Why do hybrids get better city mileage, while conventional cars get better

highway mileage? (Hint: Hybrids store more energy the more the driver brakes.)

2. What is the chemical reaction involved in turning cooking oil into biodiesel? (Lye, a caustic chemical, is extremely dangerous. It is used to strip oil of its glycerin, the waxy ingredient in soap. We do not advise that students experiment with biodiesel production.)
3. Use publications such as *Consumer Reports* to research the performance of hybrid cars compared to standard vehicles. Ask students to research the attributes of fuels such as ethanol, natural gas, ordinary gasoline, diesel and biodiesel. Create a chart and compare the costs and behavior of each.

Beyond the Classroom

1. Have students design a local awareness campaign to switch local mass transit to hybrid, biodiesel or electric power. Be sure they tell their audience how citizens will save money and taxes by making the switch.
2. How many cars do students' families have? Have them come up with rules for a five-week One Less Car program of their own, and challenge their families to do it. What side effects of this program did they notice?
3. What other forms of transportation does a typical student's family use each day? Suggestion: After each trip, have each person in a family jot down how many miles they have traveled and what form of transportation they used; foot, bike, car, train, bus, plane. After a month, have the student tally up all family use and zero in on common patterns or trends.

Career Corner

Invite a mechanic who works on new hybrid cars to give the class an overview of how they work.

TOPIC: Monorails, Light Rails, and Viaducts: The city's search for money and mobility

Background

Students should be able to explain why public transportation is so important to city life. Without inexpensive, reliable mass transportation, commuters would be forced to drive cars, worsening traffic, noise and air pollution. To improve mobility, growing cities like Seattle must do whatever they can to reduce dependence on the automobile and to create opportunities for transit. Trains, subways, and the like cost billions, and are always a sore subject with voters. Cities contemplating major construction must convince voters that the expense is worth the cost, then raise the money and keep the project on budget.

All three projects in this chapter met with controversy over funding. The first—which is definitely being built—is the Sound Transit light rail, a technology we discussed in

the Los Angeles section. The second, now defeated, is a Monorail. Supporters say this technology is better because it travels above, and is not subject to, normal city traffic. Use this opportunity to introduce the class to Seattle's best-known tourist attractions: a Monorail that transports tourists to and from the Space Needle, a famous landmark. A group of citizens gathered petitions and forced the city to consider extending the Monorail line. The Monorail project was hotly contested because of its cost. The city is also trying to decide what to do with a portion of highway that was damaged, but not destroyed, in an earthquake. Some want to rebuild it. Others want to tear it down. The debate: When does it make sense for a city to reduce the number of roads leading to town?

Discussion Topics

1. When money is short, should a city invest in public transportation or more roads so people can drive their cars? Explain your choice.
2. Why are transportation issues such a hot topic for Seattleites? How should citizens and communities solve problems when they disagree about something that can affect everyone?
3. The idea of physically removing a road may sound strange to your students, but it has become more common in recent decades. What do students think a city is trying to encourage by taking such a drastic step?

Classroom Activities

1. Have students break into groups and study how a monorail works. When they report back to the class, have them detail how the trains work, the benefits of their technology, and which cities have them already. Have them try to answer a critical question: What is the allure of a monorail? Is there a reason some people regard them as superior to other forms of mass transit—or do they simply look “cool”?
2. Have students debate the pros and cons of building a light rail system and a monorail system. One travels on the ground, the other above the ground. Does a city really need both?
3. Budget master: This topic revolves around two issues, sustainability and funding. Help your students understand the concept of principal, interest, and paying for something “over time.” Online mortgage calculators can help you demonstrate how people buy houses and cars over time. But what happens when a city borrows money to pay a \$2 billion debt? One estimate says Seattle would not finish paying for the cost of the monorail for 50 years, and the interest on that debt would be an additional \$9 billion. Is that too high a price to pay for sustainability?
4. Have students brainstorm ways in which a city can pay for major projects besides raising taxes.

Beyond the Classroom

1. Chances are good that your community is currently embroiled in a public debate on transit issues. Have students read up on the issue in local newspapers, then do enough research to formulate their own opinions. Encourage them to take an active role in the discussion by attending public meetings, submitting letters to the local newspaper, or phoning a call-in radio show.
2. Have students conduct their own traffic survey. Let them choose a busy street corner in their community, establish an observation schedule, and conduct a census by estimating how many carts, trucks, bikes, pedestrian and other types of vehicles pass during a particular 8-hour period. Using their data, what types of changes would they recommend to town officials? Do traffic lights need buttons or walkways for pedestrians? Would bikers benefit from a bike lane? Is the ratio of cars to trucks such that trucks ought to be rerouted on a business route through town? Suggest that they share their recommendation with your town's department of transportation.

Career Corner

Consider assembling a panel of local officials to speak to students about transit issues. Your panel might include a public works builder, a city council person, a traffic designer, and a city planner. If transit issues are a hot topic in your town, you might consider inviting citizen-activists who support or oppose the proposed work.

TOPIC: To the Sea: Sustainable fishing and the life of the ocean**Background**

The earth's oceans and waterways are among our most precious natural resources. They provide us with fish, a natural, healthy food. But the seas are in trouble. According to the United Nation's Food and Agriculture Organization, more than half the world's fish populations are "fully exploited." That means humans are catching fish faster than the fish are able to reproduce. This is bad for both humans and fish. More than 2.5 billion people on this planet rely on fish as a source of animal protein, and 200 million people worldwide earn all or part of their income from fishing. In the early 1990s, when once plentiful stocks of cod off the coast of Newfoundland abruptly dropped, 30,000 Canadians suddenly lost work. Humans depend on fish in so many ways, we must manage our capture and consumption of them.

Many of the world's nations have developed rules for sustainable fishing. Sustainable fishing boats use nets and other equipment that allow them to catch fish live, without damaging the animals' fragile bodies. This way, unwanted or underage fish can be returned promptly to

the sea. Fish are judged according to their size, and only mature fish are kept for consumption. Responsible fishers work hard to minimize harming other animal species—birds, dolphins, sea turtles—in their day-to-day work. In this chapter, your students meet fisherman Doug Frecke who works the waters off Puget Sound, and who is concerned with fish and water quality. As he says, even if you live in a city or suburb, your actions impact fish in the sea because the toxic residue of our lives ultimately leach into the ocean. As it is, many of the fish we eat are contaminated with pollutants such as mercury, PCBs and DDT.

Discussion Topics

1. Do you think technology will solve the overfishing problem? How would overfishing affect you and your community?
2. What should the penalties be for overfishing? Should there be jail time? Who should police the actions of commercial fishers? What about fishing operations in international waters?
3. Why does Mr. Frecke say that anything people do in the suburbs affects fish in the sea?

Classroom Activities

1. Have students research the contaminants found in different types of fish. Ask them to explain the process by which these contaminants end up in the sea and in the bodies of these fish. What effect might these pollutants have on humans who eat the fish?
2. On the trail of mercury: Have students research mercury and how it ends up in America's favorite fish, tuna. Ask them to prepare an action plan of things ordinary citizens can do to halt it. Should we stop eating tuna altogether?
3. Have students investigate the design of fishing nets that allow non-target species to escape. How serious is the issue of marine mammals being harmed by fishing nets? What other fish or animals can be harmed by nets?
4. Fish farms—huge commercial operations in which fish are bred for market—are sometimes touted as an environmentally friendly alternative to catching wild fish. But they are controversial because raising thousands of fish in a single off-coast environment can damage the ecosystem in that area. Have your students research and evaluate this option. Then let them decide for themselves.
5. Have students locate and study a pocket-sized "fish selector," which advises environmentally-concerned consumers on kinds of fish to avoid choosing in stores and restaurants, either because the species is overfished or contaminated. How accurate do they think this consumer guide is? Can they suggest other items that might benefit from having a consumer guide?

Beyond the Classroom

1. Ask students to request a booklet on local fish from their state department of fish and wildlife (the same agency that issues fishing and hunting licenses.) According to this guide, what species of fish reside in your local waterways? How often does your state recommend that you eat them? These recommendations should pique students' curiosity. What's wrong with neighborhood streams to warrant such a limit on consumption?
2. Besides fresh fish, your local supermarket probably sells canned fish from a variety of different nations around the world (sardines from Portugal, for example). On a fact-finding shopping trip, have students jot down the origins of various canned fish products, then research the sustainable fishing regulations in each of those nations. Do they feel reasonably certain that these fish were sustainably harvested?

Career Corner

Invite local commercial fishermen who ply your nearby waterways—ocean or lake—to speak about their work, their tools, and the laws that govern their work. Be sure to ask for the fishermen's opinion of sustainable fishing.

TOPIC: Profile of an Activist: Dick Falkenbury and the impact of citizens on government**Background**

Seattle is renowned for its remarkable access to government. A person does not have to be a politician or major figure in city administration to get his or her voice heard. Even an ordinary voter can bring ideas to city hall and have them considered by all voters. All it takes is passion, persistence, and intelligent organization. Throughout this book, students meet a number of citizens who made their voices heard. One of them, Dick Falkenbury, a former cab driver and current tour bus operator, became convinced that Seattle should build a monorail because the on-time records of these trains was better than any other mass transit vehicle. With the help of other volunteers, Falkenbury shared his idea with other Seattleites, collected petitions, and presented them to the city. The city decided to put the matter up for a vote, or "referendum." (Referendums are questions posed to voters during elections.) The voters said they were willing to explore the idea of a monorail. Ideally, all American cities operate this way. But in places like Seattle, citizen activism has been raised to an art form. Frankly, it is difficult to convince politicians to listen to anyone under voting age. But in this section, we'll explore ways your students can make their mark on local government.

Discussion Topics

1. Do you think it is every citizen's responsibility to get involved in decisions made about their hometown? To what extent? What if you don't have time to get involved or feel it is a waste of time?
2. Mr. Falkenbury and his friends gathered signatures for a petition. What are other ways people can influence government? Which do you think are the most effective?
3. Activists are sometimes viewed as troublemakers. Why do you think that is? Why is it important for citizens to speak up and to have access to government?

Classroom Activities

1. Have students define the terms "petition" and "referendum." Then have them research how ordinary citizens can place a referendum before voters in their city, county, or state. Suggest that they create a flow chart showing each step of the process. Do they know the names, phone numbers, addresses of all the people in government that they need to contact in order to make such a thing a reality?
2. Contact your local board of elections for sample ballots from past elections. Have students read the referendum questions, then come up with a few potential referendum topics of their own—either for the school or for local government. Let them practice writing referendum-style questions. (Real referendum questions are often so convoluted that they often need to be rewritten in simpler language for voters! Can your students do better?)
3. Ask students if they can think of other ways citizens can influence government *besides* using petitions and referendums. Are some more effective than others? For the next school election, consider having them plan a campaign strategy that includes some or all of these methods. Referendums are a foolproof method for gauging the opinion of the populace, and lend themselves well to simple yes/no issues that arise in school government.

Beyond the Classroom

1. Ask students to choose one of the referendum questions they dreamed up and champion it all the way to city hall. How do they think they should go about planning a successful petition drive?
2. Have students research a recent referendum issue and work backwards to locate the person or persons responsible for it. They may find that the referendum did not originate with a single person. It may have been conceived by a committee in local government. That's fine. How does this change or refine their understanding of the steps to a referendum?

Career Corner

Invite a local activist or local official to your classroom to talk about how he or she helped get a referendum before

the public. Your local city hall or political party offices should have some suggestions for you.

TOPIC: Profile of a City: Cycle of boom and bust

Background

Throughout the book and DVD, students are exposed to the cycle of boom and bust in some of the cities we profile. In Philadelphia, they learn that the city suffered greatly when its industrial might faltered, and workers fled the city for a better life in the suburbs. In Chicago, this cycle is replayed poignantly in the stories of steel workers who lose their jobs and feel out of place in a region that now seems more interested in encouraging ecotourism than in creating jobs. In Seattle, we see how the extractive world of fish, coal and timber eventually yields to the manufacturing of jet planes, and later to other industries such as software. Cities are vital places, but their vitality relies greatly on commerce. Indeed, some would argue that commerce is the chief reason great cities exist. But all cities have their ups and downs, and in this section, we'll show you ways to investigate this sometimes painful topic with your students, and suggest ways in which they can become more aware of the economic rhythms of their own city, town or region.

Discussion Topics

1. Why do you think most cities go through cycles of boom and bust? Are they necessary? What can be good about it? How does it effect people?
2. Is a boom always a good thing? Is a bust always a bad thing? Come up with examples.
3. What causes booms or busts? What can happen to a city when it experiences a bust?
4. In the Seattle chapter, the authors say Seattle's early economy was an "extractive" one. What does that term mean, and what was being extracted?

Classroom Activities

1. Use newspapers and books on local history to research your community's past. When were its prosperous and difficult times, and what brought them about? (A local historian may be able to shed light on this topic.)
2. Have the class study industries that have played a major role in your area. What role did they play? Do they still? How has that changed? What effect did those industries have on the environment, if anything?
3. What are the ups and downs in America's economy? For context, have students look into America's most famous bust—the Great Depression. Then ask them to research and define a "recession." Are recessions ever good things?
4. Have students pretend that they have been called in to attract tourists to a town that has fallen on hard

times. How would they approach this task? What history, attributes, and qualities of the town could they promote? Are there ways to do this that would preserve the environment?

Beyond the Classroom

1. Have each student interview a family member, neighbor or other adult who lost his or her job due to an upheaval in a certain industry. How did they adjust? Does the person feel that he or she has moved on, or explored new skills?
2. Have students use their local library, historical society or some other group to put together a pictorial history of their town, complete with timeline. (Ask the owners of valuable original photos to scan their images for you and archive them on a CD.)
3. Later, with everyone's permission, your students might consider using film-editing software to script and create a documentary of their town. Screen the movie at a local theater or library.

Career Corner

Besides hearing from a town historian, your class would benefit from the opinions of business leaders, entrepreneurs, and the former employees of defunct factories during this unit.

TOPIC: SEA Streets and Swales: Improving drainage naturally

Background

With the health of salmon and other wildlife riding on the reduction of pollutants in storm and rainwater, the city of Seattle is using natural drainage techniques to purify water and keep it from contaminating local waterways. The key to these projects is getting the water to seep into the ground as quickly as possible, minimizing the chance that it will cause floods or wash toxins into streams or storm drains. To do this, the city is installing "swales" in various neighborhoods. Swales, which are mentioned throughout our book and extensively in the Los Angeles chapter, are V-shaped or U-shaped trenches in the earth that have been refilled with highly porous materials such as gravel, sand, and soil. Swales are usually sloped so water runs into them and quickly drains into the ground. Some people call swales "French drains"; the same technology is used to build water gardens, mentioned in the Philadelphia chapter. In Seattle's Street Edge Alternative (SEA) program, swales were constructed throughout entire neighborhoods, where sidewalks typically meet the street. The swales are attractively landscaped with rocks and water-tolerant plants. In Seattle's new High Point neighborhood, swales are used to minimize the flow of car oils, fertilizers, and

other wastes from washing into Longfellow Creek. Swales are applicable in every part of the country.

Discussion Topics

1. If rain naturally wants to seep into the ground, what is the advantage of digging a swale? (You do the work so the rain doesn't have to. If the ground is hard, the rain may simply run off into sidewalks, driveways, and streets.)
2. How does the design of a swale mimic what happens on a larger level with all rainwater in nature? How do you think spring water—naturally pure water—is created?
3. Can you explain how swales help reduce pollution and replenish underground reserves of water?

Classroom Activities

1. Have students build a working model of a swale in a classroom terrarium. (If they dig their trench close to the edge of the glass, they can better observe the action of the water as it drips down layers of rocks, sand, and soil. Have them fill a second terrarium with densely packed soil. Which absorbs water quicker?)
2. Water naturally wants to fall vertically to the lowest point possible. If it bubbles out of the ground in a natural spring, what has happened? (The stream of water has struck an impervious or near-impervious layer of rock, and moves horizontally until it flows out of a hole in the ground.) Have students research and show in a diagram the route spring water takes on its way to purification. How does this action replenish spongy underground layers of rock called aquifers? Why is this good for humans?

3. Seattle is building an entire neighborhood with swales. Have students design a fictional "swale" community. Seattle's SEA Streets program made swales part of a network of expanded sidewalks. Where would your students install swales so they blend seamlessly into the neighborhood? Challenge them to design a sloped parking lot so that rainwater flows off the pavement and directly into a swale.

Beyond the Classroom

1. Gardeners note that even in summers when rain is plentiful, gardens planted with nearby swales do better than those without. Have students construct a swale or water garden for their home, school or community garden. Let them map it out, construct it, and design an experiment to measure the results of their efforts.
2. Every gardener has his or her secrets for collecting rainwater. Visit a nearby farm, arboretum, nursery, or community garden to learn about different water collection and management techniques.
3. As part of a consumer awareness project, have students read and evaluate the labels of different brands of bottled water. Some come from true springs, others are simply municipal tap water that has been filtered. Have students debate whether or not the bottlers are selling a worthy product.

Career Corner

Watershed issues have become so important that several officials will likely be available to talk to your students. Contact your cooperative extension office, water and sewer department, a local landscape architect, and even your nearby home center store to find a suitable speaker.

EPILOGUE

TOPIC: The Importance of Change

Background

Idealism is one of the hallmarks of youth. So is impatience. Your students may grow tired of the work of sustainability because it seems to take a long time to get anything done. In this last chapter, the authors address this issue of change in an interesting way. Yes, they say, change takes time. The problems facing large metro areas didn't happen overnight, so they can't be solved overnight. However, human beings do have the capacity to change quickly—if they see the benefit of doing so. If you give someone a good reason to modify his or her behavior, he or she will do it happily. Think how many older people now recycle when they never did as kids.

In this section, we'd like to encourage your students to share the stories of their good work with others, with an eye to convincing them of the wisdom of doing the same. If they can change others quickly, then the more complicated job of changing your community can begin and proceed more quickly. One person can absolutely make a difference. Recall that in the Los Angeles chapter, it took Mr. Lipkis a long time to convince officials that his idea for saving water was a good one. Once he convinced them, the whole community's priorities shifted in the direction of water conservation.

Discussion Questions

1. In this chapter, the authors write, "When we all learn a better way of doing things, we act fast." Do you agree with this statement? The authors use the example of the Internet revolution as an example of rapid change. Can you think of other examples—either from current events or from your own life?
2. Throughout this book, you have met people who worked to change their communities. The authors say that one person can make a difference. Based on what you have seen in this book and film series, does that claim ring true to you? Why or why not?
3. The famous anthropologist Margaret Mead is often quoted as saying, "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it's the only thing that ever has." What do you think Mead was saying? Do you agree? What does it mean to be a "thoughtful, committed citizen"?

Classroom Activities

1. Have students reflect on the activities they've participated in as a result of the *Edens Lost & Found* project. Ask them to create, singly or in small groups, a chart that lists each project, its stated goals, its long-term benefits, and its short-term benefits.
2. Have students think about how they would persuade an open-minded audience of the wisdom of changing their behavior to help their community be more sus-

tainable. What would your students say? What examples would they give to persuade others that small actions by one person really make a difference?

3. Have students develop a strategy for giving talks on their work. For example, they could write a speech that a) describes the importance of a particular action, b) the benefits of that action, c) a recent project they participated in, and d) the results of that project.

Beyond the Classroom

1. Challenge students to use their talents of persuasion—honed in the above activities—to convince local officials to try a new environmental measure.
2. Challenge them to figure out a way to quantify, measure, and gauge the local response to this new measure. (It may be difficult to do this if the new measure is enacted late in the school year. If so, suggest students study the response to a school-wide project.)
3. To hammer home that "one person can make a difference," suggest that students perform one action over a weekend to improve their community. Resist the temptation to over-organize this assignment, or turn it into a group event. Let them decide what they'd like to do. It may be as simple as picking up trash in a local park, or donating plants to a local garden.

TOPIC: The Future of Environmental Education

Background

It's fine to rely on local government and officials to improve our communities, but citizens are empowered when they themselves act. Educational projects like *Edens Lost & Found* go a long way toward fostering citizen action. Many communities do not have specific environmental or sustainable education classes in their schools. If the activities in this project have enriched you and your students, why not partner with your students to share what you've learned with other teachers, schools, and classes? We do not intend for you to simply pass along the teaching strategies and extensions contained in this Guide, but rather, we hope to inspire you to create, sharpen and disseminate original activities you have developed on your own in the course of this project. Your success at a teacher's conference, for example, could be one you share with your students, and we would be delighted if it furthered the cause of sustainability. That success also speaks volumes about your students' ability to package and communicate their knowledge.

Discussion Questions

1. Review your *Edens Lost & Found* related work with your class. What were the highlights? What did they enjoy most and least?
2. What events that took place as a result of this project do

they think ought to be repeated in future years at your school—whether or not they were there to participate?

3. Which projects do they think would be fun for students a year or two younger than themselves? For elementary school students?

Classroom Activities

1. Have the class debate whether environmental or sustainable education should be mandatory in the United States. What benefit would be derived?
2. Have the class brainstorm ways that you and they could write up and present some of the activities you've participated in. Example: You could produce a website or a spiral-bound booklet including lesson plans along with photos, wherever appropriate. What sorts of things would be included in this site or booklet?
Examples: Sample lesson plans, books to read, websites to visit, activity descriptions, essay assignments, etc.
3. Work with the class to analyze your activities and determine which are science-based, and which are social studies-, current events-, or civics-based. Which are appropriate for fourth graders? Create a format—such as the one used in this booklet. Then assign groups of students to write point-by-point descriptions of each activity. You will want to tailor the language to the appropriate audience, such as teachers like yourself or fourth graders.

Beyond the Classroom

1. Share your knowledge. Select one activity and test it on a group of younger students at a local school. Be sure to rehearse so the activity will conform to your allotted time.
2. Create an empowering partnership. The demand for this material is growing. You may find your work in demand at conferences and PTA meetings. Consider sharing the spotlight and the work with your students as part of a service-learning project. In certain settings, it may be more appropriate for you to lead the discussion and have students distribute materials or step in for short presentation segments. In other settings, it would be wonderful to have them teach a class to young students. Be sure the events schedule and students' roles are clear.
3. Research venues for your talks, demos, and classes, and work with students to contact potential audiences, such as local city councils, colleges, and so on.

TOPIC: Profile of an Activist—You!

Background

When the authors and producers of *Edens Lost & Found* interviewed people for this massive, three-year project, they found a number of students actively involved in bettering their communities. Recall, for example, the beauty

of a grade-schooler's prose dedicated to the Los Angeles River, the spirit of the young women of Proyecto Jardin, and the enthusiasm of young kids releasing salmon in Seattle. Clearly, young people do not need to wait to become active voters to become active citizens. If they care about where they live, they are mature enough and old enough to pitch in. But their lifetime of activism is just beginning. In the course of teaching this book and film series, your students have slowly become more aware citizens, capable of researching and acting on local issues. As you wrap up your teaching in this book, we urge you and your students to take time to evaluate what you've accomplished, how it has affected you, what results you've achieved, and where you can go from here.

Discussion Questions

1. What parts of the *Edens Lost & Found* film and book affected you most strongly? Why do think this was so?
2. Has this project inspired you to make a change about the way you live? Please explain that change.
3. How would you feel if someone described you as an “activist” or “volunteer?” Are these positive or negative words?
4. What “action” would you like to take to make your neighborhood, town, or city a better place to live?

Classroom Activities

1. As part of your service-learning projects, have students prepare sample press releases and petitions, along with templates and instructions for using them.
2. Have students research the names, phone numbers and emails of all the people covering local news in your area. This “contact list,” along with the above press release and petition packet, are valuable tools that can be made available to any of the volunteer groups, teaching organizations, and schools with which you work.
3. Study your local newspaper's editorial page. Which parts appear to be written by the editors of the paper? Which are written by local and syndicated columnists, and which by readers? Read the guidelines for submitting your own letters to the editor or opinion articles. What are the differences of each? Consider writing and submitting your own letter or opinion piece.

Beyond the Classroom

1. Visit with local activists (for groups such as the Sierra Club, etc.) and ask them how they do what they do and their day-to-day responsibilities. If it is early in the year, suggest that students seek an internship with an organization that is important to them, and report periodically to the class on their duties.
2. Ask students to use their new understanding of the media to publicize an event the school is hosting, such as a rally, dance, or march. Get others involved, publicize it, and try to get coverage.

RESOURCES

BOOKS

Environmental literature encompasses a vast number of books that are now regarded as classics. Some, like Rachel Carson's, may seem slightly dated to the modern reader, but still have much to teach us.

Silent Spring, by Rachel Carson
(Houghton Mifflin, 40th Anniversary edition, 2002)
First published in 1962, this book is generally credited with founding the environmental movement. Carson examines the danger posed to the American landscape by the rampant use of herbicides and pesticides in the post-World War II years. As mentioned, the book will seem dated to your students, but selections should be read to provide a sense of history.

Walden: 150th Anniversary Illustrated Edition of the American Classic, by Henry David Thoreau
(Houghton Mifflin, 150th Anniversary edition)
The granddaddy of them all. American transcendentalist Thoreau builds a cabin in the Massachusetts woods and allows himself to commune with nature. The language is remarkably simple. You might consider having your students read selections aloud. The sentences at times read like poetry.

Small Is Beautiful: Economics As If People Mattered: 25 Years Later, by E. F. Schumacher
(Hartley & Marks Publishers, 1999)
A classic book used in many college courses, Schumacher suggests that mankind would fare better if only it would think smaller instead of bigger. Smaller homes, smaller farms, smaller debts, and thus greater connections and happiness.

Gaia: A New Look at Life on Earth, by James Lovelock
(Oxford University Press, 2000)
Lovelock puts forth the idea of our planet as a single functioning organism, and how that might affect the interrelation of humans and their environment.

Miracle Under the Oaks: The Revival of Nature in America, by William K. Stevens
(Diane Publishing Co., 1995)
Wonderful telling of Steve Packard's brave quest to restore the native lands of the Illinois prairie. Reads like a mystery story.

Tree Boy, by Shirley Nagel
(Sierra Club Books for Children, 1978)
Tells the story of Andy Lipkis's early days as a young activist trying to save California's trees. This book is "young" in feel for grades 9-12, but your students might consider using it in their service-learning projects with elementary students.

The Man Who Planted Trees, by Jean Giono
(Chelsea Green, 25th Anniversary edition, 2005)

Heartwarming fable about a Frenchman who plants 100 acorns a day for 30 years and transforms his native hills into a teeming forest. The new edition features excellent supporting materials on protecting trees and using paper products wisely. It will inspire your students to plant trees.

Eden by Design: The 1930 Olmsted-Bartholomew Plan for the Los Angeles, by William Deverell & Greg Hise
(University of California Press, 2000)
Scholarly work for determined students who want to understand how Los Angeles commissioned a master city plan, then quashed it, condemning the city to a path of rampant growth.

RESOURCE DIRECTORY

This list of organizations and resources is not meant to be comprehensive, but a good first start toward contacting the groups mentioned in this book or researching ideas for getting involved in your own community. For more groups and suggestions, see the directory at the end of the companion book.

Edens Lost & Found

Media & Policy Center Foundation
Wiland-Bell Productions, LLC
2125 Arizona Avenue, 2nd Floor
Santa Monica, CA 90404
(310) 828-2966
www.edenslostandfound.org
www.mediapolicycenter.org
www.wilandbellprod.com

NATIONAL RESOURCES

Agriculture

EPA's Biopesticides Website
www.epa.gov/pesticides/biopesticides

USDA's Backyard Conservation advice
www.nrcs.usda.gov/feature/backyard

The Environmental Protection Agency's Landscaping with Native Plants website
www.epa.gov/greenacres

USDA's PLANTS National Database
www.plants.usda.gov

Community Service

Corporation for National & Community Service
(Senior Corps, AmeriCorps, Learn & Serve America)
1201 New York Avenue, NW
Washington, DC 20525
(202) 606-5000
www.nationalservice.org

Energy

American Solar Energy Society
2400 Central Ave., Suite A
Boulder, Colorado 80301
(303) 443-3130
www.ases.org

U.S. EPA ENERGY STAR Program
Climate Protection Partnerships Division
ENERGY STAR Programs Hotline
& Distribution (MS-6202J)
1200 Pennsylvania Ave NW
Washington, DC 20460
(888) STAR-YES
www.energystar.gov

U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585
(800) DIAL-DOE
www.eere.energy.gov
www.doe.gov

Environmental Protection and Activism

Director for Sustainable Development
Office of Research and Development
U.S. Environmental Protection Agency
1200 Pennsylvania Ave. NW
MC 8101R
Washington, DC 20460
(202) 564-4772
www.epa.gov/sustainability
www.epa.gov

National Audubon Society
700 Broadway
New York, NY 10003
(212) 979-3000
for state offices and chapters, see:
www.audubon.org

National Resources Defense Council
40 West 20th Street
New York, NY 10011
(212) 727-2700
www.nrdc.org/

The Rocky Mountain Institute
1739 Snowmass Creek Road
Snowmass, CO 81654-9199
(970) 927-3851
www.rmi.org

Sierra Club
85 Second Street, 2nd Floor
San Francisco, CA 94105
(415) 977-5500

– Or –

Sierra Club
Legislative Office
408 C St., N.E.
Washington, DC 20002
(202) 547-1141
www.sierraclub.org

Green Building

Greenroofs.com
3449 Lakewind Way
Alpharetta, Georgia 30005
(675) 580-1965
www.greenroofs.com

Green Spaces and Urban Forestry

American Forests
734 15th Street, NW 8th floor
Washington, DC 20005
(202) 737-1944
www.americanforests.org

Center for Invasive Plant Management
733 Leon Johnson Hall
Montana State University
Bozeman, MT 59717-3120
(406) 994-5557
www.weedcenter.org

City Parks Alliance
733 East 15th Street, NW, Suite 700
Washington, DC 20005
(202) 783-6604
www.cityparksalliance.org/

Forest Stewardship Council US
1155 30th Street, NW Suite 300
Washington, D.C. 20007
(202) 342-0413
www.fscus.org

International Society of Arboriculture
P.O. Box 3129
Champaign, IL 61826
(217) 355-9411
www.treesaregood.com

National Arbor Day Foundation
211 N. 12th Street
Lincoln, NE 68508
(402) 474-5655
www.arborday.org

Urban & Community Forestry Program
USDA, Forest Service
STOP Code 1151
1400 Independence Avenue
Washington, DC 20250
(202) 205-1054
www.fs.fed.us/ucf/

Land Conservation

The Nature Conservancy
4245 North Fairfax Drive, Suite 100
Arlington, VA 22203-1606
(703) 841-5300
www.nature.org

The Trust for Public Land
116 New Montgomery St., 4th Floor
San Francisco, CA 94105
(415) 495-4014 or 1-800-714-LAND
www.tpl.org
Government agencies

Edible Schoolyards

Martin Luther King Jr. Middle School
Berkeley, CA
www.edibleschoolyard.org

Carl Sandburg

“Chicago Poems”
www.carl-sandburg.com

Carl Sandburg Home National Historic Site
www.nps.gov/carl