Windows on the Wild

Smart Consumers
An Educator’s Guide
to Exploring Consumer Issues and the Environment
Smart Consumers: An Educator’s Guide to Exploring Consumer issues and the Environment is part of Re, Live, Buy Different—Make a Difference, a national initiative from World Wildlife Fund (WWF) and the Center For a New American Dream (New Dream). The goal of the program is to help young people understand how their consumer choices connect to the environment and how they can make a difference by buying differently.

Smart Consumers is part of a larger initiative that includes an interactive Web site for young people (www.buydifferent.org) that has information for learning more and taking action. The program also features on-the-ground activities in pilot cities around the country to engage young people in thinking about how they can buy differently.

Re, Live, Buy Different and Smart Consumers have been made possible by the generous support of the David and Lucile Packard Foundation.

Known worldwide by its panda logo, World Wildlife Fund (WWF) is dedicated to protecting the world’s wildlife and the rich biological diversity that we all need to survive. The largest privately supported international conservation organization in the world, WWF has sponsored more than 2,000 projects in 116 countries and has more than one million members in the United States alone. WWF believes that education is critical to achieving its conservation mission.

World Wildlife Fund • 1230 Twenty-Fourth Street, NW • Washington, DC 20037
www.worldwildlife.org

For additional copies of Smart Consumers, contact:
Acorn Naturalists • 165 El Camino Real • P.O. Box 2423 • Tustin, CA 92781
(909) 412-8040 • www.acornnaturalists.com

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The Center for a New American Dream helps Americans consume responsibly to protect the environment, enhance quality of life, and promote social justice. New Dream works with individuals, institutions, communities, and businesses to conserve natural resources, counter the commercialism of our culture, and promote positive changes in the way goods are produced and consumed.

Center for a New American Dream • 6930 Carroll Street, Suite 900 • Takoma Park, MD 20912
www.newdream.org

Smart Consumers is part of WWF’s environmental education program called Windows on the Wild, or WDW. The goal of WDW is to educate people of all ages about biodiversity and to stimulate critical thinking, discussion, and informed decision making on behalf of the environment. The program also promotes creative partnerships and interdisciplinary education at all levels. Taking advantage of WWF’s expertise in addressing biodiversity issues, WDW incorporates current data from projects around the world and draws on the work of many science, development, education, and conservation organizations: government agencies; businesses; and individuals who work closely with WWF to maintain and enhance the Earth’s biodiversity.

The Center for a New American Dream is proud to partner with WWF in the creation of this Smart Consumers guide. The Center for a New American Dream helps Americans consume responsibly to protect the environment, enhance quality of life, and promote social justice. Our programs, publications, and online resources help adults and young people examine the consumer, environmental, and cultural connections in their everyday lives. Through Smart Consumers and I Buy DIFFerent, the Center seeks to engage youth more fully in our efforts to shift markets toward products and services that are better for the planet and for the people who live on it.

Suggested support for Windows on the Wild comes from Eastman Kodak Company.
Dear Educator,

Your students are part of an active and growing consumer group—a group that spends more than $178 billion a year and influences more than $150 billion in purchases. Young people of all ages are bombarded with thousands of ads a day that encourage them to buy more or influence others to buy something for them, and yet few of them understand the impact of their purchases. Whether they’re picking out a pair of jeans or a bunch of bananas or influencing a parent about what type of car to buy, many kids don’t realize that every purchase they make or influence affects the environment in some way—and may even affect the lives of people in other parts of the world. The consumption of products and services uses natural resources, supports processes or companies that affect the environment and people’s well-being, and makes a statement about what the consumer thinks is important. Many young consumers also don’t realize the power they have—both individually and collectively—to influence the systems and processes that create more environmentally friendly consumer choices.

This module is designed to help young people explore consumer issues, understand more about the links between what they buy and the health of the environment, and develop the critical thinking skills to become more informed consumers—consumers who weigh the impacts of different products in terms of their environmental, social, and economic costs and benefits. The module also tackles some of the complexity of consumer issues, dealing with everything from how purchasing choices can affect biodiversity to how culture, values, and advertising affect our consumer patterns. However, we couldn’t cover everything in one module, so we encourage you to explore the many related social and economic sides of consumer issues, such as workers’ rights, economic trade-offs, and quality of life. We’ve listed a variety of resources and organizations that can help you go deeper on the issues that fit your needs and interests.

We encourage you to combine information and activities from Smart Consumers with those found in a variety of sources, including other Windows on the World (WOW) modules and current newspaper, magazine, and Internet articles. (We’ve listed a number of additional resources in the appendix.) By drawing from a range of sources, including those found locally, you will be able to provide a diversity of
viewpoints while adding depth and breadth to your students' consumer studies. We also encourage you to check out the companion Web site at www.buydifferent.org. In addition, you should visit the Center for a New American Dream's Web site (www.newdream.org), which includes information and resources for protecting the environment and promoting positive changes in the way goods are produced and consumed. And finally, the WOW Web site (worldwildlife.org/window) offers more information about WWF's educational programs and provides supporting materials for biodiversity education.

Like most complex environmental and social issues, exploring consumption touches on a range of disciplines, including science, social studies, reading, and the arts. The activities and background information also work at many levels in a variety of formal and nonformal settings—from schools and museums to nature centers and zoos. While the target audience for this module is middle school (grades six through nine), many of the activities can be adapted for use with older and younger students as well.

Given that consumption in the United States by almost all measures has increased in the past decade—including our use of energy, seafood, meat, fresh water, grains, metals, and wood—we believe it's important that young people understand their role as consumers and learn how to become "smarter consumers." By integrating consumer issues into your teaching, you can also give young people a perspective on how American consumption compares to that in other countries. Your students will also learn how our disproportionate use of resources affects the environment, the quality of life across the globe, and how others view us. And finally, we hope that by giving kids a chance to dig into consumer issues, you can also help inspire them to take an active role in using their consumer power to help protect people and the planet.

Judy Braus, World Wildlife Fund

Diane Wood, Center for a New American Dream
Acknowledgments

WWF Development Team

Director of Education
Judy Braus

Manager of Conservation Education
Jeffrey England

Manager of Education and Outreach
Betty Olivia

Environmental Education Specialists
Florence Miller, Robyn Mofsky, Ethan Taylor

Administrative Assistants
Susan Kevin, Cindy Wischow

Writers and Editors
Nicole Arvidson, Deirdre Bishop, Judy Braun, Jeffrey England, Joe Kent, Jimmy Karlan, Christy Merrick, Florence Miller, Sara St. Antoine

Research Assistants
Lauren Arvidson, Tracey Bonita, Christine Dell'Amarco, Sara Esquinoza, Elizabeth Falk, Kimberly Scott, Anja Turgis

Module Design
Katharine Dore, Kim Meek

Illustrators
Bettye Braus ("Trash to Treasure"), Meryl Lee Hall ("Polar Bears and Petroleum"), Marcia Miller ("Buy-O-Diversity")

Marketing and Outreach Coordinator
Barb Pitman

Center for a New American Dream Review Team

Diane Wood
Executive Director

Betsy Taylor
President

Tracey Fisher
Youth Campaign Director

Dave Tiford
Senior Writer

Amy Rutledge
Executive Assistant

Kim Posich
Managing Director

Karalie Hill
Youth Campaign Intern

Paul Kaiser
Youth Campaign Intern
WINDOWS ON THE WILD
Advisory Board and Council

Janet Ady
Chief, Division of Education Outreach,
National Conservation Training Centre,
U.S. Fish and Wildlife Service

Julian Agyeman
Assistant Professor, Department of Urban and Environmental Policy,
Tufts University

Gerry Bishop
Editor, Ranger Rick Magazine,
National Wildlife Federation

Rich Block
Chief Executive Officer/Director,
Santa Barbara Zoological Gardens

Dan Bogan
Environmental Scientist, Environment and Natural Resources Institute,
University of Alaska Anchorage

Bruce Carr
Director, Conservation Education,
American Zoo and Aquarium Association

Randy Charpeau
Director, Wisconsin Center for Environmental Education,
University of Wisconsin, Steenstrup Point

Dwight Chandell
Executive Director,
St. Louis Science Center

Nora Deans
Environmental Education Consultant

Carol Filipkowski
Conservation Education Director,
Field Museum of Natural History

Paul Grayson
Vice President,
Indianapolis Zoo

Steve Hage
Environmental Science Educator,
School of Environmental Studies,
Monterey

Joe Heimlich
Associate Professor, School of Natural Resources,
The Ohio State University

Leo Itzak
Professor of Natural Resources and Education,
Rutgers University

Tihane Maynard
Vice President, Conservation Foundation,
Cincinnati Zoo & Botanical Garden

Kathy McGluffin
Vice President of Education, Project Learning Tree,
American Forest Foundation

Annie Miller
Educator,
Jefferson Junior High School,
Washington, D.C.

Terry O’Connor
Manager of Conservation Education,
Woodland Park Zoo

Mary Schlieppegrell
Assistant Professor of Linguistics and Director of ESL Program,
University of California, Davis

Danie Schrueder
Professor of Environmental Education,
University of Stellenbosch, South Africa

Samuel Scudder
Educator,
Hart Junior High School,
Washington, D.C

Talbert Spence
Consultant,
Talbert B. Spence Consulting

Cynthia Yemon
Vice President for Education and Conservation Programs,
Montgomery County Aquarium

Cherie Williams
Grant Funded and Teacher Education Coordinator,
Seattle Aquarium

Keith Winston
Curator of Education,
Brookfield Zoo

EXPERT REVIEWERS

Louise Bradshaw
Director of Education,
St. Louis Zoo

Robin Braun
President,
MacDonald and Company

Randy Charpeau
Director, Wisconsin Center for Environmental Education,
University of Wisconsin, Steenstrup Point

Gail Ellis
School Programs Manager,
Oakland Zoo
Acknowledgments

John Tien
Professor, LeoCentre,
Griffith University, Australia

Kathy Foat
Curator of Education,
Baltimore Zoo

Kevin Forbes
Director, Center for the Study of Energy
and Environmental Stewardship,
Catholic University of America

Norman Gershun
Director,
Center for Ecosystem Survival

Stephen Gough
Director of Advanced Courses,
University of Bath, England

Robert Herendeen
Professional Scientist,
Illinois Natural History Survey

Carole Jarvis
Executive Director,
Maryland Council on
Economic Education

Jim Jordan
Associate Curator of Education,
Saint Louis Zoo

Jimmy Karlson
Academic Director and Director of
Teacher Certification Program,
Department of Environmental Studies,
Antioch New England Graduate School

Bill Krangel
Global Ecology Studies Program,
Poolesville High School, Maryland

Chuck Lennox
Conserve Interpretive Consulting

Sara Lustbader
Park Naturalist II,
Brookside Nature Center

Stefanie Malone
Content Manager, "Don't Buy It,"
KETS Television

Lori Mann
Environmental Education Consultant

Lisa Masny
Research Associate,
Watching Institute

Michelle Mazzola
Director,
Coordinated Resource
Management Program

Vince Meldrum
President,
Earth Force, Inc.

Penelope Miller
Freelance Editor

Kathryn Owen
Audience Research Coordinator,
Woodland Park Zoo

Jeanne Ray
Education Director,
Northwest Earth Institute

Dan Schmude
Professor of Environmental Education,
University of Stellenbosch, South Africa

William Scott
Director, Centre for Research in
Education and the Environment,
University of Bath, England

Seán Sheehan
National Outreach Director,
Center for a New American Dream

Kathleen Sullivan
Senior Communications Officer,
World Wildlife Fund

William Taylor
Environmental Education
Program Manager,
Puget Sound Energy

Chris Wille
Chief of Sustainable Agriculture,
Rainforest Alliance

Cherie Williams
Grant Funded and Teacher
Education Coordinator,
Seattle Aquarium

Carole Wright
Program Manager,
Loyola Marymount Watershed Association

Roger Yerke
Manager of Education Programs,
Oregon Zoo

PILOT EDUCATORS

Valerie Godet
The New Orleans Center
New Orleans, Louisiana

Deann Boyd
Home School,
Yelm, Washington

Pam Brandt
Prairie Mountain School,
Eugene, Oregon
Meghan Callahan
St. Philomena School, Des Moines, Iowa

Roy Carlson
Mill Pond Intermediate School, Yelm, Washington

Matthew Carpenter
Roland Park Country School, Baltimore, Maryland

Elaine Jane Cole
Pacific University, Forest Grove, Oregon

Ruth Cruz
Tolt Middle School, Carnation, Washington

Andrew Dickson
New Hope Christian Academy, Memphis, Tennessee

Cynthia Foreman
Cadette Girl Scout Troop 278, Eau Claire, Wisconsin

Jack Greene
Elgin High School, Elgin, Utah

Koralie Hill
Center for a New American Dream, Takoma Park, Maryland

Jennifer Hoffman
Green Woods Charter School, Philadelphia, Pennsylvania

Leslie Isaacs
Beverly Hills Middle School, Upper Darby, Pennsylvania

Todd Jewell
Forest Glen Middle School, Gaithersburg, Maryland

Jamie Kachensparger
Lucas Soil and Water Conservation District, Maumee, Ohio

Sandra Kopp
Hatfield Elementary School, Hatfield, Pennsylvania

Tina Leonard
Capital City Public Charter School, Washington, D.C.

Joanne Mann
Bench Tree Elementary School, Faith Church, Virginia

Ben McDuffie
Iona High School, Iona, Alaska

Gloria McPherson
Cedar Run School, Camp Hill, Pennsylvania

Stephen Miguel
Evergreen High School, Seattle, Washington

Artiss Moll
Cougar Creek Elementary, N. Lakewood, Washington

Dana Murphy
Brookfield Zoo, Brookfield, Illinois

Amy Pike
Gaithersburg Middle School, Gaithersburg, Maryland

Bernie Sheppard
Parks A People Foundation, Baltimore, Maryland

Helen Jean Sinal
Hollidaysburg Area Junior High School, Hollidaysburg, Pennsylvania

Cheryl Skipworth
Central East Middle School, Philadelphia, Pennsylvania

Patricia Songer
St. Julie Billiart School, Hamilton, Ohio

Elizabeth Zylstra
Cougar Creek Elementary, N. Lakewood, Washington
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Welcome to Smart Consumers and Windows on the Wild

"The power we can exercise outside the voting booth, not only by consuming less but by consuming products that are environmentally benign, is a giant just stretching its limbs."

—Evan Eisenberg, author
"Many of our planet's most pressing environmental problems can be linked directly to the goods and services purchased every day by consumers in the U.S. and around the world... But don't underestimate the impact of consumers' purchasing habits. This 'consumer power'—individuals' ability to 'vote' for environmentally responsible companies, products, and services with their purchases—can be a potent force."

—Joel Makower, environmental and business journalist
scientists and others are calling on us to look more closely at our consumer choices. The good news is that exploring consumer issues can be empowering rather than depressing. Consuming is an essential part of life, and there is a wide variety of options for maintaining our quality of life in ways that are in line with what the planet can support. New products, such as hybrid cars, hold promise for reducing our use of limited natural resources. New technologies are cutting emissions of heat-trapping gases, and environmentally friendly goods such as organic produce and sustainably harvested wood products are becoming more popular and readily available.

By exploring the pros and cons of the different consumer choices available, young people can learn more about how their buying affects the environment and people around the world. And learning about consumer issues now, while they're still developing their consumer values and preferences, helps them realize their power as consumers and how they can benefit the world by being more informed and conscientious about what they buy.

An Overview of Smart Consumers

Smart Consumers: An Educator's Guide to Exploring Consumer Issues and the Environment is the fourth educator’s guide in the Windows on the Wild (WOW) middle school program. As part of Be, Live, Buy Different—Make a Difference, a joint initiative of World Wildlife Fund and the Center for a New American Dream, Smart Consumers is part of a larger initiative that includes an interactive Web site for young people (www.ibuydifferent.org) that has information for learning more and taking action. The program also features on-the-ground activities in pilot cities around the country to engage young people in thinking about how they can buy differently. With the activities and other resources in Smart Consumers, students will discover how consumer patterns affect biodiversity and other natural resource issues; question what makes consumer patterns sustainable or unsustainable; examine how our culture, values, and advertising affect our consumer habits; consider the ethical implications of consumer choices; and become empowered to make a difference by becoming more informed consumers and community members.

We've designed this module for use with students in grades 8, 7, 6, and 9, but it can be adapted for younger and older audiences. We've also designed the module for use in both schools and nonformal education settings, such as museums, nature centers, zoos, aquariums, botanical gardens, science centers, and other community education institutions. Many of the activities can be adapted for use in home teaching and after-school programs. Although we've tried to be as specific as possible in providing suggestions for how to use the activities and other resources, you should feel free to break them up, skip sections, change their sequence, or make any other adjustments that you think will help the materials work best in your context.
Smart Consumers Key Concepts and Ideas

- Many of the products we buy affect the health of biodiversity and natural resources around the world. By making informed consumer choices, we can support products that minimize effects on the environment while still providing for our needs.

- Consumer patterns have varied over time with changes in production technologies, shifting consumer interests, and continuing growth in our world population. With an increasingly international economy, we rely on products from around the globe and, as a result, our impact on the world's biodiversity is greater than ever before.

- Consumer choices and buying decisions are influenced by a wide range of factors, including need, advertisements, availability, aspirations, peer pressure, price, style, and quality. While people have different values and viewpoints regarding consumer impacts, "smart consumers" make informed choices by asking critical questions, weighing the costs and benefits of alternative choices, and seeking out options that are better for the environment and for people.

- We all play a part in determining how products are made and used, whether we're growers, manufacturers, wholesalers, retailers, or consumers. By understanding a product's life cycle, and the environmental effects at all stages in the cycle, we can identify ways to reduce the environmental effects of products, even if those approaches aren't always viable at the present time.

How Smart Consumers Is Organized

Together with the other WOW modules—focused on biodiversity, wildlife trade, marine biodiversity, and sustainable communities—Smart Consumers educates young people about the diversity of life around them and how they can help protect it. Specifically, the Smart Consumers module contains the following resources:

- Background information to help educators develop a broad understanding of consumer issues and help field questions about this complex topic.

- Fourteen activities that introduce the topic of consumption and the environment while helping students analyze their personal consumer patterns, examine products and producers, and gain a global perspective on consumer issues.

  - A Community Action Guide that includes background information on how to design and implement action projects, a list of 25 ideas for group actions, and step-by-step suggestions for how to carry out three different community action projects.

  - A list of resources that provides more information and ideas.

Smart Consumers is designed to help you and your group explore the links between consumer issues and
the environment in a creative and thought-provoking way. We hope it provides you with ideas about how to present the issues and activities in ways that highlight the effects of consumption, but also the many opportunities that individuals and communities have to make wiser purchasing decisions that help protect the environment.

Why Use This Guide?

Almost everything we do involves consuming natural resources, from driving a car to buying our groceries to watching television. And the impact of our consumer practices on the natural world is creating a host of problems, ranging from global climate change—considered by many scientists to be the single greatest threat to the survival of species—to increasing rates of deforestation and a decline of the world's major fisheries.

Although the trends are depressing, there are many positive ways that individuals and communities can replace destructive practices with "smarter" ones. And that's what this guide is about—weighing our consumer options, thinking about the choices we make, and exploring opportunities for getting the products and services we need in ways that have less of an effect on the environment and other people around the world.

Although this module targets middle schoolers who don't yet drive, own houses, or have full-time incomes, their potential consumer impact is huge and growing. Thirty million people between the ages of 18 and 24 live in the United States, and they are spending a staggering $38 billion a year. If the amount of money those young people's parents spend on them is included, that figure more than quadruples to $164 billion per year.

These 30 million young spenders will grow up to be even bigger spenders. In a few years, they will be voting, working in careers that influence consumer products, owning homes and houses, and having children of their own. By learning more about the effects of consumption and the power they have as consumers now, they can develop the critical thinking skills they will need to be responsible and thoughtful consumers for the rest of their lives. They'll also get a chance to see how biodiversity, culture, economics, advertising, ethics, and values are all involved in the consumer choices we make.

Factoid

BORN TO CONSUME: A child born in the United States will use about 35 times more resources over his or her lifetime than a child born in India.
What Is a Smart Consumer?

World Wildlife Fund and the Center for a New American Dream have a goal of creating smarter consumers for the future who have the skills, knowledge, and attributes that encourage them to:

- weigh the impacts of different products in terms of their environmental, social, and economic costs and benefits;
- spend money thoughtfully, not needlessly;
- analyze reasons for buying a particular product and determine whether the product will improve their quality of life;
- critically analyze advertisements and other marketing efforts and not be misled by false claims;
- educate others about smarter consumer habits, including those who work in, manage, and own businesses;
- analyze current information about better consumer options and try to keep up with new information;
- buy environmentally friendly products (such as those that are harvested sustainably and use fewer toxic chemicals).

Although everything we buy has an effect on the environment, some purchases are more environmentally friendly than others. By helping your students develop lifelong “smart” consumer habits, they can begin making wiser choices every time they think about spending money.

FACTOID

MALL-ADJUSTED: On average, Americans go to malls 3.2 times per month and spend $71.04 each time.
Tying It All Together

Although we think that students would benefit from doing all of the activities in Smart Consumers, we know that many of you will be able to conduct only a few, given your time constraints and interests. No matter how much time you spend on consumer issues, we recommend that you adopt a unifying “task” that will help connect the activities conceptually and highlight the main themes of the module for your students. Here are some suggestions for tying your lessons together:

- **Guiding Questions**: Adopt a class “guiding question” that your students can reflect on each time they do a Smart Consumers activity. Examples are: “What is a good way to consume?” or “How is a ‘smart’ consumer different from a regular consumer?” At the end of each activity, students should consider the question, using the new information and skills they learned to answer the question a little differently each time. Consider creating a bulletin board or display case relating to the guiding question.

- **Journals**: Have your students keep a Smart Consumers journal in which they reflect on the activities as they do them. Encourage students to write their opinions about the consumer issues covered in the activity they have just completed. For example, after “Car Quest,” students could write about how their feelings about cars did or did not change; after “Polar Bears and Petroleum,” students could record their thoughts on energy use. We’ve recommended some writing and portfolio ideas, along with other extensions, at the end of each activity.

- **Reflection Time**: Reserve time at the end of each activity for students to discuss their thoughts on the activity. Encourage the students to examine their own values about the topics covered. Did they agree with the ideas they learned about? Why or why not? Did different students react differently to the activity? Why? One way to help students articulate their values is to use a values continuum. Read a values statement to the students and have each of them stand in a spot on an imaginary line, where one end of the line represents “strongly agree,” the opposite end represents “strongly disagree,” and the space between the ends represents a continuum between the two. A sample statement is “Humans have a responsibility to protect biodiversity when they consume.” After the students have taken a position on the line, have them discuss their viewpoints with those around them or those at other points on the continuum. You might try a values continuum before and after an activity, using the same statement each time so that students can gauge how the activity affected their values and those of others. When talking about values in class, you may want to refer to the “Dealing with Controversy” box [page 16].

Using one of the ideas above can help to make consumer issues more cohesive, allowing students to make connections between the ideas presented in each activity.
Dealing with Controversy

Our goal for this program is not to teach your students what to buy or not to buy, but to introduce them to some fascinating topics, raise some challenging questions, and guide them to explore, analyze, evaluate, and discuss consumer issues and the environment from an informed position. Nonetheless, many of the topics raised in this module could be considered controversial by your students or their parents because they are inherently linked to values. When dealing with controversy, you might want to keep the following in mind:

- The activities in the Smart Consumers guide aim to encourage students to develop their own opinions on the topic of consumer issues and the environment. The strongest message we hope to impart in this guide is that consuming should be a thoughtful process, in which different choices and the effects of those choices are weighed by the consumer before making purchases.

- When students (or parents) feel strongly about an issue, values almost always underlie their convictions. Create a supportive atmosphere among your group so that students can voice and explore their values. You may want to prepare students for a discussion of different points of view by going over the following guidelines:

  1. Encourage active listening so that discussions are meaningful and everyone feels respected. Explain that it's important to pay attention when someone else is speaking and not to interrupt. But make sure to leave time for people to ask clarifying questions so that they understand what the speaker is saying.

  2. Promote appropriate language and avoid offending others.

  3. Explain that different people have different opinions and values, and that it's important to respect others for those opinions and values even if they do not match your own.

  4. In situations where it is evident that the "facts" are not known, encourage students to say, "I don't know" and to follow up the discussion with research. Conflict arises as much from misinformation and misunderstanding as from differing values.

You may want to create ground rules for discussions with your students, and remember that shutting down heated debates for a cooling-off period is always an option.

FACTOID

"FLEeced! The Patagonia Corporation has used 40 million 2-liter recycled plastic bottles to make fleece clothing."
The Building Blocks of Windows on the Wild

The Windows on the Wild series aims to open students' minds to the wondrous diversity of life around them. It also engages students in thoughtful dialogue about their place on the planet—and about the future of the world we all share.

WOW is built on a set of underlying principles about education. As you read through the activities in this module, you'll see many familiar strategies and approaches—from constructivist education, which values prior experiences and knowledge, to innovative assessment strategies, group learning, problem solving, interdisciplinary teaching, and experiential learning.

Education should challenge students to think critically and creatively about our world—to question how and why we do things, and how we might do them differently. It should promote positive change (both personally and within communities), help students envision a better society, increase respect and tolerance for others, and build effective citizenship skills and stewardship. In the WOW program, we emphasize four overlapping themes that we believe can help create a more sustainable society: futures education, community action and service learning, education for sustainability, and creating a sense of wonder. We've touched on each in the following subsections.

Futures Education: Looking Ahead

When kids watch movies about the future, they often see a world gone wrong. In fact, many writers and moviemakers center their fictional future breakdown on environmental disasters. So how can we teach about biodiversity loss and other environmental issues without making students cynical, or even terrified, about the future they'll inherit? The answer may lie in futures education—education that encourages students to envision a positive future and the role they can play to make such a future happen.

Thinking constructively about the future may be more important now than ever before. For the first time in history, the way we choose to live is affecting global natural systems, from the atmosphere to the oceans. Rather than letting your students start to feel like victims of an inevitable future disaster, you can encourage them to see themselves as active participants in creating a more livable future.

In this module, a number of activities are designed to help your students look forward. These activities encourage them to imagine futures and options that will contribute to their own quality of life, as well as to the well-being of both local and global communities. (For more information on futures education, contact the World Future Society at 7910 Woodmont Avenue, Suite 450, Bethesda, MD 20814 or online at www.wfs.org.)
Learning from the Community

In schools and communities around the world, educators are finding that one of the best ways to prepare students for their future roles as active, voting citizens is to get them involved in local issues. By addressing real community needs, students can learn about the political process, environmental issues, careers, project planning, and what it means to be a responsible citizen.

Learning about consumer issues lends itself to service learning and community investigations. Every community faces environmental challenges stemming in part from consumer issues that affect the well-being of both people and wild species: pollution, rapid development, transportation problems, and so on. By getting involved in a local consumption-related project, your students will invest energy in their community and see that they can help to improve it.

At best, service learning and community action are learner-centered and teacher-facilitated, with constant opportunities for both students and facilitators to reflect on the problem, approach, and achievements of the project. This cycle of action, reflection, and revised action is known as action research. Many educators already rely on action research to improve their teaching. And educators report increased motivation and maturity among their students as the students become more involved in and thoughtful about their learning process. For more about service learning, see Enriching the Curriculum through Service Learning, edited by Carol W. Imely and Katie McPherson, Association for Supervision and Curriculum Development, 1996. For related insights, read Environmental Education for Empowerment: Action Research and Community Problem Solving by William B. Stapp, Arjen F. J. Wals, and Sheri L. Stankorb, Kendall/Hunt Publishing, 1996. For ideas to get your students involved in the community, see the Community Action Guide on pages 228-266.

Service Learning—A Closer Look

More and more schools across the country are embracing service learning as a way to engage students in community activities that solve real-life problems, apply academic skills, and help others in the process. The National and Community Service Act of 1990 defines service learning as “thoughtfully organized service experiences that meet actual community needs ... and that help students learn and develop through active participation.” Many educators predict that service learning will continue to grow and that, by encouraging students to take part in projects that focus on the environment, health, the arts, the elderly, politics, and other important community issues, we will produce a nation with more caring, committed, and skilled citizens.
Education for Sustainability

Many of the activities in Smart Consumers explore pathways to sustainability—meeting the needs of the present without compromising our ability to meet the needs of the future. In the process, the activities examine the relationships between ecological integrity, economic prosperity, and social equity. And, because these three goals often come into conflict, the module also works to develop students’ ability to negotiate, listen, compromise, persuade, and analyze.

Thinking in terms of sustainability—and finding ways to balance economic issues, social equity, and ecological integrity—also requires thinking beyond our immediate needs and interests. The activities in this module encourage students to consider the perspective of other individuals, communities, and cultures, and to look forward to assess the way that actions today will affect the lives of people and other species in the future. These activities also challenge students’ thinking about fairness, individual and community responsibility, and other concerns that are critical to our understanding of sustainability. At the same time, the activities in Smart Consumers, and many of those listed in the resources section, also encourage students to work on developing a set of personal ethics—a framework by which they can make decisions.

Smart Consumers introduces the theme of sustainability to help students, educators, and the public create a more positive vision of the future. To facilitate this process, the activities encourage creative thinking and problem-solving skills—both of which are vital to taking action toward a more sustainable and equitable future.

"The frog does not drink up the pond in which he lives."
—Native American Proverb

One View of Sustainable Development

"Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs. Choosing to be sustainable in businesses, schools, government institutions, and in our individual lives demands a national commitment to the nation's economic prosperity, ecological integrity, and social equity."
[President's Council on Sustainable Development, April 1995]
Environmental Education and Agenda 21

In 1977, at the first meeting of its kind, representatives from more than 70 countries gathered in Tbilisi, Georgia, to discuss education and the environment. The goal was "to create new patterns of behavior of individuals, groups, and society as a whole towards the environment." Since then, environmental education has been evolving to meet the challenges facing the environment and society.

Today, many countries have national environmental education programs and are trying to implement Agenda 21—the detailed plan resulting from the 1992 Earth Summit, which was sponsored by the United Nations Conference on Environment and Development (UNCED). Held in Rio de Janeiro, Brazil, the UNCED Summit embraced education as a key to our efforts to build a more sustainable society. That theme was continued during a ten-year follow-up in 2002 at the World Summit on Sustainable Development in Johannesburg, South Africa, where it was recommended that the United Nations General Assembly should adopt a decade of education for sustainable development, starting in 2005.

Environmental Justice for All

The Environmental Justice movement is an effort to make sure people of all races, cultures, and incomes have equal opportunities to live and work in a healthy environment. By encouraging students to examine issues from all sides and to develop an ethical framework for making decisions and taking action, you can help them understand the role that social equity plays in creating a more sustainable world. (For more information, visit the Environmental Protection Agency's Office of Environmental Justice Web site, www.epa.gov/compliance/environmentaljustice)
Creating a Sense of Wonder

Increasingly, the wonders of the natural world are lost on many of us. Each day the saga of human affairs dominates the media and demands our attention, leaving little room for any awareness of what's happening right outside our doors—in the soil beneath our feet, the trees lining the block, the sky overhead.

We believe that it's important to nurture a perspective that includes an understanding of natural processes and rhythms. After all, how can people be expected to value or protect something that they've had little or no exposure to and have little or no understanding of?

When people become aware of the fantastic phenomena that routinely take place in the natural world, it's probably safe to say that most experience a sense of awe and appreciation. The intricate dance a honey bee performs when communicating information about a food source, the unexpected appearance of a rainbow, the 22,000-mile annual migration of the arctic tern, the delicate craftsmanship of a bowerbird's nest—our planet is full of wonders such as these. Some have argued that we're "hard-wired" to respond to these things with a sense of wonder, or at least with curiosity. In Smart Consumers, students will also learn about the many, often surprising, ways humans depend on the natural world and all its diversity.

In the Windows on the Wild program, we provide many opportunities for educators to draw out students' own natural curiosity and sense of wonder. We can think of no other subject that's better suited to stimulating these natural predispositions—and no better way to help students understand biodiversity. But there are also important educational advantages to presenting the wonder and "gee whiz" of biodiversity. Provoking curiosity leads students to ask questions and think creatively, to explore, and to challenge previous knowledge.

To help your students learn more about their local environment, we encourage you to spend as much time outside with them as you can—and to make use of the many natural areas and outdoor educational institutions that exist in your communities, from local nature centers to zoos to city and rural parks.

"If I had influence with the good fairy—I should ask her that her gift to each child in the world be a sense of wonder so indestructible that it would last throughout life."

—Rachel Carson, ecologist
Our lives are full of consumer choices: what clothes to wear, what foods to eat, how to get around, how to decorate our homes, where to go for vacation. Every choice we make has an effect on the environment. This section includes background information that focuses on the links between what we buy and the effects of those purchases on the environment. The information includes a history of consumer patterns, rates of consumption around the world and the impact of that consumption on the environment, personal and business connections to consumer issues, and how we can make more informed consumer choices that can lead to a more sustainable society.
It's a typical day at the mall. After searching for ten minutes for the perfect parking space, you head inside to pick up one simple item: a shower curtain, say, or a new pair of running shoes. Once inside, though, you notice a sale at your favorite clothing store and stop to take a look at some shirts. Later, after grabbing a quick sandwich to quiet your growling stomach, you see that your favorite band has released a new CD and you pause to listen to the first song. By the time you finally return to your car two hours later, your arms are filled with purchases. You're feeling pretty good, but in the back of your mind you're wondering how you'll feel about this shopping spree when your next credit card bill arrives—and how much you really need any of the stuff you bought.
When you go to the mall, you’re taking part in what has become one of America’s favorite pastimes: shopping. According to recent surveys, Americans spend an estimated four hours shopping every week—nearly one-quarter of our estimated leisure time.

When you shop, you’re also taking part in the use of biodiversity, Earth’s diversity of life. Many of the products we use every day—food, clothing, personal care products, medicines, and more—are derived from wild plants and animals or affect their lives in some way. Whether you’re buying rayon pants made from tree fibers, shampoo made from an aloe plant, a loofah sponge made from a rain forest gourd, or apples pollinated by honey bees, you’re tapping into the busy life of the planet with every cent you spend.

Our hearty consumer habits have their benefits: They fuel economic growth, creating jobs and bolstering governments’ abilities to meet citizens’ needs. And in some cases, they encourage people to manage and protect natural resources for long-term use and profit.

But our consumer patterns have some major downsides, too. Many of the products and services we demand place strains on the Earth’s natural resources and cause some of our most pressing environmental problems. Global climate change, air and water pollution, habitat degradation, and loss of biodiversity are all directly connected to our consumer patterns. Consumer problems aren’t just limited to the natural world. There are many social, economic, health, and psychological problems caused by our buying habits (see the “Different Issues, Different Lenses” box on page 28 for more). For example, many people are spending more than they can afford, piling up debt and reducing savings. And many admit that shopping is an attempt to fill an emotional void that, in the end, is left unfilled.

A New Future

Because many people believe the costs of our consumer culture are beginning to outweigh their benefits, scientists, business leaders, economists, and others are looking for new approaches to what and how we consume. They’re developing new products, new manufacturing methods, and other innovations that hold great promise for preserving the Earth’s natural resources and protecting wild spaces and wild species, while still satisfying human needs.

WELCOME BACK, POTTER: In Canada, all first-edition copies of Harry Potter and the Order of the Phoenix were printed on 100-percent recycled paper, saving almost 40,000 trees and about 17,000,000 gallons of water throughout the “muggle” world.
Imagine carpeting that is installed in small sections that can be easily removed and replaced—and recycled—whenever necessary. Or a vending machine that saves energy by being smart enough to turn on when someone walks up to it. Imagine hundreds of bicycles parked throughout your city that you could access and ride whenever you wanted. Imagine a water treatment facility that relies entirely upon the natural filtration capacities of plants to transform wastewater into safe drinking water, thereby avoiding the use of chemicals harmful to people and wildlife.

These are just some of the many innovations that have recently been developed to offer us ways to meet our needs while doing less harm to the planet. Other environmentally friendly products and services are more common, but no less important. For example, consumers across the country are choosing organic foods at the grocery store, using public transportation more often, buying energy-efficient appliances for their homes, and taking many other small steps that add up to big changes for the better. And as consumer demand for more environmentally friendly products grows, businesses are responding with innovations that are making such products more practical, affordable, and desirable. Governments, too, are playing an important role—from promoting energy efficiency to creating national programs that support organic farming, sustainable buying practices, and research on issues such as renewable energy and green building.

Every consumer decision we make involves trade-offs that reflect our values, our economic means, and practical considerations in our day-to-day lives. Whatever values and beliefs we hold, though, it’s clear we can all benefit from being more informed about consumer and environmental issues and more aware of our options for the future. Fortunately, today more than ever, consumers have a wide assortment of products to choose from, and with those choices come increasing chances that our consumer habits will better support Earth’s living diversity.
Different Issues, Different Lenses

As you can see from its title, this module is about consumer issues and the environment. Both the background information and the student activities explore the connections among the things we use and buy and the health of Earth’s diversity of life and other natural resources. But of course environmental concerns aren’t the only issues people are taking a closer look at as consumer habits these days. In fact, there are many important social, political, and economic issues that are directly affected by consumption patterns. You may want to research and explore some of these other topics as you consider the ways consumer decisions can help shape a more sustainable future.

Social Justice. Our is a truly global economy, and the consumer choices we make can affect the well-being of people living in villages on distant continents as much as the residents of our own state. For example, our inexpensive clothing may be made possible by low wages and substandard working conditions in overseas factories. Our basic needs may be exposed to communities too poorly organized or too impoverished to resist it. By becoming better informed about the social effects of our purchases, we can make individual choices, demand corporate reform, and insist on government policies that better support people around the globe. As one example, many consumers are buying fair trade coffee at a higher price than conventional coffee, knowing that their purchases support fair wages and sustainable growing practices in tropical countries.

Public Health. Our consumer choices don’t just affect the health of wild species and wild places around the world; they also affect our own health and well-being. Our food choices can increase our susceptibility to such problems as obesity and diabetes. The pollution we generate through driving and other activities can exacerbate asthma and emphysema.

Ingredients used to make everything from window cleaners to plastic toys may be harmful to ourselves and our children. Fortunately we have many options for what we buy and consume. What’s more, almost every choice that makes sense for the planet—from non-toxic cleaners to natural lighting—has a parallel benefit to people’s health.

Psychology. “When the going gets tough, the tough go shopping” is a phrase you’ve probably heard more than once. While generally spoken in jest, the phrase isn’t without a basis in reality. An increasing number of people are taking time that they once spent in religious activities, civic involvement, and physical recreation and are now spending it shopping. But how does shopping measure up? Studies suggest that acquiring new goods provides joy.
Different Issues, Different Lenses (cont’d.)

that doesn’t last, especially once the bills roll in. They also suggest that once people pass the threshold of poverty, there’s no correlation between material gains and happiness. Instead, the primary factors in individuals’ happiness are generally strong relationships, good health, fulfilling work, and a sense of control over their lives. For these and other reasons, a growing segment of the population is rejecting peer pressure and advertising pressure for unchecked consumption, and they’re embracing a simpler (and they hope more psychologically rewarding) way of living.

Economics. A probing analysis of our consumer society inevitably raises important questions about economics. For example, how can we reduce current rates of consumption without undermining our economic viability? Should we be recalculating economic growth to account for losses and gains to natural resources? How do we balance short-term and long-term economic gains in our quest for a more sustainable future? Despite obvious challenges, many people remain hopeful that we can find solutions to achieve a more lasting economic and ecological prosperity for our nation and our world.

For more about the social side of consumer issues (including social justice issues and quality of life issues), check out the Web site for the Center for the New American Dream at www.newdream.org. We also encourage you to find out more about the many organizations that focus on the economics of consumption and the influence of advertising on consumers. (See Resources on pages 286-292 for some additional ideas.)

FACTOID

BACKSEAT DRIVERS: Sixty-seven percent of families buying a new car base their decision on advice from their kids who are not yet old enough to drive.
We humans consume all the time—whether we’re eating an apple, taking a trip, or building a new house. Of course, there’s nothing wrong with consuming per se: It’s the current level of consumption that has some people concerned. Just how much are we consuming these days? A lot. Believe it or not, Americans have consumed more natural resources in the last 50 years than the entire global population consumed up to that time.\(^5\)

Overall, consuming is up worldwide because of increased population sizes and increased rates of consumption per person: Since 1960, the human population has doubled, reaching 6.3 billion,\(^6\) and since 1970, this growing world population has doubled its spending on consumer goods.\(^7\)

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"Rising consumption has helped meet basic needs and create jobs. But as we enter a new century, this unprecedented consumer appetite is undermining the natural systems we all depend upon."

—Christopher Flavin, President, Worldwatch Institute
The Goods on Goods

In the United States, shopping and consuming are so much a part of our way of life that it's easy to think that ours has always been a nation of big spenders. But that's not the case. Early Americans put a huge value on their resourcefulness and thrift. Just think about some of the sayings Benjamin Franklin coined: "A penny saved is a penny earned," or "Kill no more pigeons than you can eat," or "If you would be wealthy, think of saving as well as getting." In his day, Americans prided themselves on their careful, responsible "home economics."

In fact, it wasn't until the early decades of the twentieth century that consumer spending rose significantly. The Industrial Revolution created a surge in the production of manufactured goods that was followed, in the early 1920s, by an economic downturn. Business and political leaders feared that the market was saturated: Americans had acquired everything they needed to meet their basic needs, and now the burgeoning industries would suffer unless people consumed more. Searching for ways to bolster the economy, business and political leaders settled on an all-out campaign to spur consumer interest, with slogans such as "Buy Now," "Put the Money Back to Work," and "Your Purchases Keep America Employed."  

While these efforts did help boost consumption ratios, things didn't really pick up until the 1950s, in the years after World War II. Growing American families began buying more homes, appliances, and an increasing variety of consumer products, spurred on by advertising. The American economy entered a boom era based largely on the production and purchase of consumer goods. In fact, according to President Eisenhower's Council of Economic Advisers, the American economy's "ultimate purpose" was "to produce more consumer goods."

Since that time, rates of consumption in almost every category have continued to climb, with noticeable surges in the last couple of decades. House size in the United States—averaging as little as 700 square feet in 1800 and 1,500 square feet in 1970—has soared to well over 2,000 square feet in the last decade. The average number of vehicle

Happy Days?

In the short term, most of us feel excited about acquiring a new gadget or piece of clothing. But it doesn't appear that the effects are long-term or that acquiring more necessarily correlates with increased happiness. Although Americans' spending for personal consumption has nearly doubled since the mid-1950s, we have reported the same level of happiness in regular surveys by the National Opinion Research Center throughout this period.  

The World Values Survey, a global assessment of socioeconomic and political change, examined "life satisfaction" in more than 65 countries between 1990 and 2000. The results indicated that income and happiness tend to correlate well until about $33,000 of annual income per person. After that, additional income appears to yield only small increases in happiness as reported by individuals.  

World Values, World Values.

Design for a New American Dream.
miles driven in the United States has risen from 6,000 miles per year in 1975 to more than 12,000 miles per year today. Since the middle of the twentieth century, per capita consumption of energy, meat, steel, copper, and timber have grown about twofold. Car ownership has grown fourfold. Plastic use per person has grown fivefold, and aluminum consumption per person has grown sevenfold. Over the past 35 years, the amount of solid waste each American generates has almost doubled.

Marketers continue to encourage consumers to buy more. The fashion industry, through heavy advertising, sends millions of men, women, and children into stores to update their wardrobes each season. Many people continually upgrade their phones, computers, video games, and other electronics to take advantage of the latest advances in technology. Companies have found more and more creative ways to ensure that people continue to shop and buy goods, well after their basic needs have been satisfied.

**U.S. Shares of World Consumption, 1990s**

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<th>Percent</th>
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<tr>
<td>Computers</td>
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<tr>
<td>Plastic</td>
<td>33</td>
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<td>32</td>
</tr>
<tr>
<td>Aluminum</td>
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<tr>
<td>Copper</td>
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<td>Beef</td>
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<td>Coffee</td>
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<tr>
<td>Grain</td>
<td>36</td>
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</tr>
<tr>
<td>U.S. share of world population</td>
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</tbody>
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**FACTOID**

TRIMMING OUR WASTE LINES: Today, the United States recycles 28 percent of its municipal solid waste. This rate has almost doubled in the past 15 years.
Consuming Around the World

According to some calculations, the human population has already exceeded the world’s capacity to support it over the long term by as much as 20 percent. Obviously, part of the cause is the rapid population growth occurring around the globe, especially in many developing nations. But rates of consumption play at least as big a part in pushing us past Earth’s natural resource capacity. For example, if everyone on the planet consumed at the rate of an average American, we would exceed the Earth’s sustainable output by four times.

Rates of consumption aren't evenly distributed around the world. According to the United Nations (UN), the world's richest countries account for 20 percent of the global population but 80 percent of the world's personal consumption. The poorest 20 percent of the world's population, on the other hand, accounts for just 1.3 percent of personal consumption. The UN further estimates that a child born today in an industrialized country will consume more during his or her lifetime than 30 to 50 children born in a developing country.

Of course, consumer patterns aren't evenly distributed within nations, either. In the United States, one of the most prosperous nations on Earth, many people live below the poverty level, without adequate food, shelter, or access to health care. These disparities create some challenging problems. The higher levels of consuming translate into a tremendous demand on Earth's resources. Some people argue that innovation and market forces will ensure that we don't run out of any critical supplies. But others point to severe and accelerating losses of topsoil, old-growth forests, freshwater resources, wildlife habitat, and other biodiversity resources, combined with increases in pollution and global climate change—suggesting that our rates of consumption are not sustainable. They point out that the average American's ecological footprint—a figure that represents the amount of biologically productive area needed to produce the resources for and absorb the wastes of that person—is four times larger than the world average.

At the same time, half the people of the world exist on less than $2 a day and long to enjoy the benefits of increased consumer choices that richer individuals and countries are experiencing. Of the 4.4 billion people living in developing countries, nearly 60 percent lack basic sanitation, 30 percent lack access to clean water, and 25 percent lack adequate housing.

We face daunting challenges: Not only must we stem rising population rates, but we also must find ways to raise the standard of living among the poor while we shrink the footprint of those who are consuming in ways that are unsustainable.
Global climate change is an environmental issue that has generated international attention from the media, governments, scientists, and others. Many believe that, partly because of human activities (especially the burning of fossil fuels), the Earth's climate is changing. And many individuals have been left wondering what role they play in the problem and the solutions. The following is a quick overview to help put the issue into perspective.

Carbon dioxide is a gas that occurs naturally in the Earth's atmosphere. Its heat-trapping properties help keep the planet warm enough to sustain life. The problem is that the amount of carbon dioxide in the atmosphere is increasing dramatically because of human activities. Emissions of carbon dioxide and other gases from the burning of fossil fuels—coal, oil, and gas—build up in the atmosphere and blanket the Earth, trapping heat and causing global warming. Ever since the Industrial Revolution began in the second half of the eighteenth century, levels of carbon dioxide have been rising. That's because the gas is a by-product of burning fossil fuels, which have been burned in increasing amounts since the Industrial Revolution began. Fossil fuels have become our main source of energy—powering our factories, food production, forms of transportation, and most of our electricity-generating plants.

As levels of carbon dioxide have increased, the atmosphere has gotten warmer. Scientists are now monitoring the environmental damage already being caused by global warming and gauging its future impact on life on Earth. Coral reefs and marine species such as polar bears are already suffering the effects of global warming. Scientists agree that sea levels will rise as glaciers and Arctic ice continue to melt and that there will be extreme changes in weather patterns. They predict that crucial habitats will rapidly be altered or disappear, leaving species little time to adapt to the changing temperatures and landscape, which could cause some species to die out.

Scientists think that individuals can help reduce levels of carbon dioxide in the atmosphere by shifting their consumer habits. Buying products that are energy-efficient and locally produced or that are not heavily processed and packaged can help reduce the energy needed to produce, transport, and use the products. Buying fewer products and driving less whenever we have a choice, can also help. Our individual efforts need to be coupled with concerted efforts by governments and businesses around the world to significantly reduce emissions of carbon dioxide.
All around the Earth, our mounting consumption levels are having big effects. We’re using some things—such as fish, petroleum, and valuable plants—faster than they can be replaced. We’re extracting others—such as trees for wood products or minerals for metal production—in ways that disrupt wild animals and their habitats. We’re also using certain products, such as coal and toxic chemicals, that are polluting our atmosphere, land, and waterways. And as we consume, we’re creating waste that can be difficult to store or dispose of safely.

"Action focused on consumption has highlighted the need to address the creation of new systems of production and consumption, systems that might be truly sustainable, environmentally [and] economically."

—United Nations Environment Programme
Consumer Choices and the Natural World
The Biodiversity Connection

It may surprise some people to know how the products and services we use can affect species and ecosystems far away. Consider a simple thing such as using a cell phone or computer. These products use an ore called coltan, found in several parts of the world, including Canada, Australia, and the Democratic Republic of Congo. But demand for coltan has fueled illegal mining in areas of critical ecological importance in the Democratic Republic of Congo. Miners have illegally extracted the ore from wildlife parks, harming the habitat of rare gorillas. And to provide food for themselves and for sale to local populations, they’ve been hunting a variety of species that are endangered or threatened.⁹

Our taste for shrimp is also causing troubles. A growing demand for this tasty crustacean around the world has spurred a rapid increase in the number of shrimp farms in coastal Asia. These farms are often constructed in areas where coastal mangroves once thrived. Without the mangroves, wild animals such as crabs and fish lose their natural habitat. And the region’s water quality suffers because mangroves provide a natural filtration service.⁹

Or consider something as basic as heating your home or driving your car. Not only does the extraction of oil and natural gas threaten wildlife populations directly through habitat loss and pollution, but the burning of fossil fuels contributes to global climate change, which also affects species’ viability. Polar bears, seals, corals, songbirds, and many other living things are susceptible to the effects of rising temperatures associated with climate change.¹⁰

Our consumer actions also affect the health and well-being of wildlife right around us. Across the United States, we’re claiming more and more wildlife habitat for our homes, businesses, and roads. In fact, if all of the highways, roads, buildings, and car parks in the contiguous United States were pieced together, they’d cover more than 43,000 square miles, or an area almost as large as Ohio.¹¹ In addition to eating up wildlife habitat, we’re isolating wildlife populations with roads and fences. And recreational activities such as jet-skiing, off-road vehicle driving, and even downhill skiing—all types of consuming—can disrupt habitats and create significant amounts of pollution in sensitive areas.¹²

Personal Connections

Probably everyone who has ever learned about the effects of consumer actions on the natural world has had moments of exasperation or despair. How can we do anything without affecting wild places and other living things? And do we really have to give up the quality of life we’ve come to expect and enjoy?

Lowering our impact doesn’t mean we have to have a lower quality of life, though we may need to redefine what a high quality of life actually means. As individuals, the most important thing we can do to become better consumers is to be better informed. That means that, in addition to weighing factors such as cost and fashion, we need to consider the environmental effects of products when we shop. In some cases, labels can help identify environmentally friendly products (see the “Eco-Labeling” box on page 39). In other cases, shopping guides have been developed by using the best available science to help consumers decide which products to buy (see the “Food” section on page 40). And sometimes we just have to do the research ourselves. We probably won’t choose the most environmentally friendly option in every situation, but if we understand the connections and consider the consequences of our consumer actions, then we’ll surely make better decisions overall.

It’s also helpful to realize that you don’t have to sweat the small stuff. If comparing brands of nontoxic dishwashing liquid makes you dizzy, maybe
Eco-Labeling: Tips for Consumers

A growing trend is emerging that promises to help consumers make smarter environmental choices when they shop. A variety of organizations are applying labels to everything from pencils to pet fish in the hopes that the labels will help consumers choose options that help protect biodiversity. The following are just a few of the labels currently being used or being developed to identify environmentally friendly products:

This is the logo of the Forest Stewardship Council (FSC), a consortium of government, business, and conservation organizations concerned about sustainable forestry. The FSC label guarantees that your choice, snowboard, guitar, or other wood product was made from wood that was harvested sustainably and supports responsible forest management, as verified by a credible, independent certifier.

This is the seal of approval from the Marine Stewardship Council (MSC), an association of scientists, environmentalists, and business leaders. The presence of the label indicates that seafood was harvested sustainably, as verified by a credible, third-party certifier.

This is the logo of the Rainforest Alliance, which certifies coffee, cocoa, bananas, and some citrus fruits that are grown sustainably.

While these labels are handy tools for consumers, it's important for consumers to know that other labels can be misleading. Many companies assert that their products are "all natural," "environmentally friendly," "recyclable," and so on, but in reality there may be little or no substance to their claims, and well-meaning consumers can be duped. See the activity "Investigating Green Claims" on pages 242-254 in this module for more information on green claims and what they really mean.
that's more than you need to be doing. Experts suggest that making changes in just a few key areas—especially our food, homes, and transportation—can have an enormous effect. The "Priority Actions for American Consumers" box summarizes these areas and the most important things we can do within each of them. We've highlighted some of the most important aspects of these steps in the following sections.

Food. Our vast food production system provides some of the great conveniences of modern life. Growers and producers transport their goods to our local stores, where we can enjoy steady supplies of fresh fruits and vegetables throughout the year, even if we live in a cold climate. We can select prepared foods of almost every kind. We can find meats such as beef, chicken, and pork at affordable prices. The variety of foods we consume helps provide a wide range of nutrients, and the convenience of processing and packaging helps cut our time in the kitchen.

But there are downsides to some of these conveniences. Many of the foods we eat today are heavily packaged to help the products stay fresh for longer and to get consumers' attention with colorful graphics and product information. But packaging requires large amounts of paper, plastic, glass, and metal. Once used, these packaging materials account for about 33 percent of household trash by weight (and 20 percent by volume). Frozen foods not only require energy and resources for packaging, but keeping them frozen uses large amounts of energy. Frozen foods typically require about 10 times more energy to produce than fresh foods of the same type.

Transporting food from around the world to our stores also requires huge amounts of energy. According to one study, produce traveled an average distance of 1,518 miles to reach the Chicago area. In the United States, food production—from

agricultural and livestock operations to food processing and packaging to transportation, sales, refrigeration, and cooking—accounts for about 17 percent of energy used across the country. In addition, some consumers question whether the increased production provided by hormones fed to poultry, pesticides sprayed on crops, and intensive farming of livestock justify the costs. Because of the significant impacts of our modern farming methods, the Union of Concerned Scientists estimates that household meat and poultry consumption is responsible for about 25 percent of all threats to wildlife and natural habitats.

Fortunately, there are plenty of ways to reduce the detrimental effects of our food consumption. Many communities are enjoying a revival of farmer's markets as well as a relatively new development known as Community Supported Agriculture, in which local farmers provide produce to members. Buying local produce can prevent thousands of pounds of carbon dioxide from entering the air from the exhaust of the trucks, planes, and trains required to ship produce over long distances each year. Also, organic foods are becoming more widely available and more popular, reducing the use of harmful chemicals that can affect wildlife and people.

Many people are also steering away from heavily processed and packaged foods and adding a few

FACTOID

McCHICKEN SAVVY: By the end of 2004, McDonald's will only purchase chicken from suppliers that do not give their birds antibiotics.
more meals made from fresh foods to their weekly menus. What's more, cutting the average household's consumption of poultry and red meat in half—to about 4.5 pounds a week—and replacing it with the nutritional equivalent of grains could cut food-related land use by 30 percent and water pollution by 24 percent.  

Seafood is another type of animal protein whose consumption affects biodiversity. And making smarter choices about the types of seafood we eat can help protect populations of wild fish. Organizations such as the Blue Ocean Institute have developed guides to help consumers select seafood species that are plentiful and that are not being overfished—in other words, fish that are being sustainably harvested. Choosing those species not only reduces pressure on dwindling populations of seafood species, but it also sends a message to the fishing industry that consumers want more sustainable fishing practices.

Homes. Having a roof over our head is a necessity, but how big a house do we really need? That question has been on a lot of people’s minds in the last two decades, an era in which more and more super-sized houses are being built throughout the United States. The average house size was about 1,500 square feet in 1970 and is now well over 2,000 square feet. And today’s super-sized homes sometimes measure upward of 5,000 or 6,000 square feet.

Bigger houses have a disproportionate effect on the environment. Heating, cooling, and lighting such houses requires burning enormous amounts of fossil fuels, which contribute to global climate change. Building, maintaining, and furnishing them uses many more resources than for average-sized houses.

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**Priority Actions for American Consumers**

According to the Union of Concerned Scientists, the following are the 11 most important steps consumers can follow to reduce their impact on the environment.

**Transportation**

1. Choose a place to live that reduces the need to drive.
2. Think twice before purchasing another car.
3. Choose a fuel-efficient, low-polluting car.
4. Set concrete goals for reducing your travel.
5. Whenever practical, walk, bike, or take public transportation.

**Food**

6. Eat less meat.
7. Buy certified organic produce.

**Household Operations**

8. Choose your house carefully.
9. Reduce the environmental costs of heating and hot water.
10. Install efficient lighting and appliances.
11. Choose an electricity supplier that offers renewable energy.

From The Consumer's Guide to Effective Environmental Choices by Michael Brown, Ph.D. and Warren Leon, Ph.D., copyright 1999 by The Union of Concerned Scientists. Used by permission of Three Rivers Press, a division of Random House, Inc.
But just because bigger houses are a clear example of our consumer appetite doesn't mean that people who live in average houses are off the hook. People in small and medium-sized homes consume resources too, just on a smaller scale. The building of new houses accounts for about two-thirds of the wood harvested in the United States each year. In the 12 months between May 2002 and May 2003, new housing also consumed an estimated 7 million acres of U.S. land. Much of this development occurs in suburbs and beyond, where prospective homeowners find the larger houses and bigger lots they desire. These suburban households consume twice as much land and drive their cars 31 percent more than their urban counterparts, who live in areas with higher population density.

Wherever we live, it's important to remember that there are many things we can do to minimize our resource use. First, when choosing a home, it's important to consider how much space we really need. Heating and cooling a home requires an amount of energy that is roughly proportional to the home's area. Choosing a home that is, say, 25 percent larger than is needed will require 25 percent more energy—and result in 25 percent more heat-trapping gas emissions.

Second, it's important to carefully consider what types of appliances, heating and cooling systems, and other household items we use throughout our homes. Making sure our homes are well insulated can ensure that energy is not wasted. Also, replacing outdated heating and cooling systems with newer, more efficient models can save energy and money. Household appliances from microwaves to computers are available in energy-efficient models. And using more efficient light bulbs such as compact fluorescents throughout the house can mean that we don't have to sit in the dark to save energy.

Transportation. Every day we depend on cars, buses, trains, boats, and airplanes to help us get where we're going. Almost all burn gas or other petroleum products for power and pump increasing amounts of carbon dioxide into the atmosphere. The buildup of this gas in the atmosphere is closely connected to our changing climate, which threatens to disrupt the world's ecosystems and our global economy.

Household transportation is responsible for almost 30 percent of heat-trapping gas emissions in this country, along with almost 50 percent of toxic air pollution. While automobiles carry us to work, to the store, and on road trips, each one emits, on average, about two tons of carbon every year. The U.S. Environmental Protection Agency has called driving a car a typical citizen's most polluting activity. Because of its significant contributions to the load of carbon dioxide in the atmosphere, many experts think that no consumer decision has a greater impact on the global environment than our choice about what kinds of transportation we use.

FACTOID

INCREASINGLY HOMELY: More than 10 million Americans own 2 or more homes.
Luckily, there are a growing number of options in transportation that can cut the amount of heat-trapping gases we send into the atmosphere and still help us get where we're going. Leading car manufacturers, for example, now offer hybrid-electric vehicles that provide all the convenience of gasoline-powered cars with lower emissions and better gas mileage.10

What's more, opportunities to share rides, use public transportation, and make current car models work more efficiently all add up to real opportunities for consumers to reduce their impact and save money. And more and more cities are looking into greenways and bike paths that will allow residents to walk and bike to work, shops, and around town. These innovative solutions are not only increasing our options, but they can also help our communities—and planets—become healthier places for people and wildlife.

**The Business Connection**

Consumers aren't the only ones rethinking how we consume. Many companies are also looking for new ways to make products and provide services that support nature. Those changes not only benefit biodiversity, but they also can boost a company's profits.

As part of a World Wildlife Fund program called Climate Savers, companies including Nike, Johnson & Johnson, and IBM have committed to a reduction of their heat-trapping carbon dioxide emissions—demonstrating that such efforts are simply good business. For example, Nike's world headquarters in Oregon are 25 percent more energy-efficient than average commercial buildings. Nike continues to find ways to increase the efficiency of the building through such methods as natural lighting, which reduces the need for electric lighting and increases worker productivity. And in addition to adopting energy conservation measures, Nike is purchasing large amounts of renewable energy for use at its headquarters.10

Other companies have led the way toward setting higher environmental standards for businesses. Unilever, a giant in the food industry and the world's largest seafood buyer, became concerned over the long-term sustainability of fish stocks. Working with conservation groups and other businesses, the company helped establish the Marine Stewardship Council (MSC) to set standards for independently certifying sustainable fisheries. At the same time, Unilever set a company target of buying all of its fish from suppliers using sustainable management practices by 2005. In 2007, more than one-third of the fish sold by Unilever came from sustainable sources.11

Still other companies are thinking creatively about how they can improve the environmental performance of their factories and offices. William McDonough, a leading “green” architect, has helped companies like Gap, Ford Motor Company, and Nike to build better offices with innovations such as roofs covered with grasses and wildflowers, natural lighting, and improved ventilation systems that help save energy. Gap's headquarters, for example, exceed California's strict energy efficiency requirements by 30 percent.11
Companies that want to make their businesses more sustainable but are not sure how can get help from a variety of organizations, including The Natural Step. The scientists, businesspeople, researchers, and educators who work at The Natural Step help companies move toward long-term sustainability while also increasing profits. The organization has helped Home Depot map the life cycles of the products it sells, giving the company a more realistic picture of its environmental impact. And the group has also helped Home Depot create an aggressive 10-year plan to increase sustainability. The Natural Step and Home Depot are banking on the changes not only to decrease the company’s environmental impact, but also to increase profits and strengthen its image as a socially responsible company.16

According to William McDonough and other leaders in the business of “greening” industry, a key to sustainable business is finding solutions with three key features: equity, economy, and ecology.16 Equity refers to finding ways to do business that support social justice. Economy means finding solutions that are cost-effective and give businesses a competitive edge. And ecology means finding ways to produce and use products that are in line with what nature can support. Many people are working to find solutions that meet these criteria and create a society where business and nature are not at odds and where both can thrive.

Bigger Connections

Those same three ingredients—equity, economy, and ecology—are part of most efforts to steer a more sustainable course and reduce consumption of resources, whether on a local, state, national, or international level.

For towns and cities, a movement has emerged known as smart growth or sustainable development. This movement aims to strengthen local economies and quality of life while protecting natural resources for present and future generations. Much of this effort has grown out of concern about the impacts of rapid development in recent years—the loss of open space, increase in traffic and pollution, changes in regional character, and so on—that have occurred as rates of population growth and resource consumption have risen. Places like Portland, Oregon, have created urban growth boundaries to encourage communities to concentrate new development and avoid heavy consumption of land and resources.16 Chicago and other cities have improved their public transportation networks to minimize energy consumption.16 Some communities have even gone so far as to encourage innovative transportation programs such as bike- and car-share programs18 (for more on car-sharing, see the box “Zipping Around the City” on page 45). Efforts such as these show that changes in consumer activity can occur on much bigger scales than individual actions. And when they do, the results can be enormous.

Changes also can occur within governments themselves. In Massachusetts, for example, one of the first cost-cutting steps taken by incoming governor Mitt Romney in 2003 was to reduce the fleet of state-owned SUVs and allow them to be driven only by state employees with a demonstrated need for off-road driving.16

Powerful changes also can be realized when governments work together to shift policies and consumption patterns. In the late 1980s, for example, when the world faced a global problem with the depletion of the protective ozone layer, the Montreal Protocol brought together nearly 100 countries to dramatically cut back on chlorofluorocarbons (CFCs) and other ozone-depleting chemicals. By 1996, the chemicals were almost completely phased out of use in developed
countries—and will be phased out by 2010 in developing countries. If the countries continue their commitment to the agreement, the ozone layer is expected to recover within the next 50 years.\textsuperscript{8}

**It All Adds Up**

Changing consumer habits on any level is no easy feat. But around the world, people and institutions are moving in that direction. Ultimately, many are driven by an ethical commitment—to other people around the world who do not yet have enough to meet their basic needs, and to future generations who may depend on the health and supply of resources we protect today. Their ethical commitment also extends to the vast array of living things that share the planet with us, whose future depends on our choices about what and how we consume.

Every individual, corporation, community, and nation will have to decide what sustainable consuming means in everyday terms. Finding sustainable solutions will require conducting research; developing new methods of producing, using, and disposing of products; weighing economic considerations; educating people about the impacts of their consumer choices; investigating the ways our patterns affect other people and other species; and reevaluating how we define success. In a sustainable future, our success might not be measured by what or how much we consume, but by the quality of our lives and how well we balance that quality of life with the health of the planet.

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**Zipping Around the City**

In many densely settled communities, residents don't need a car on a regular basis, but they own one for the special occasions when they do. Because of high insurance rates, property taxes, and parking rates in most urban areas, one innovative company saw the potential for an all-new transportation option: Zipcars. Members of Zipcar have access to dozens of cars parked throughout the city. Once they make a reservation online, they can open their selected car with their electronic pass and take it anywhere they want. Zipcar pays for the car, parking, insurance, repairs, and gas. Members pay a membership fee, and an hourly rate of $4 to $5.4 (depending on the city, the day of the week, and whether mileage is included). Most members find that their annual Zipcar costs are less than just insuring a personal vehicle for a year.\textsuperscript{9} And having to pay for each use makes members think twice before driving, which encourages them to walk and take public transportation when driving isn't absolutely necessary.

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**FACTOID**

**STAR CARS:** Cameron Diaz, Leonardo DiCaprio, Billy Joel, Jay-Z, and Woody Harrelson are just a few of the celebrities who own hybrid-electric cars.
Endnotes for Background


31 Redefining Progress. 2002.


44 Alan Durning. 1992, pp. 69–70.


46 Alan Durning. 1992, p. 83.


49 Michael Brower and Warren Leon. 1990, pp. 95–96.


56 Michael Brower and Warren Leon. 1999, p. 54.


61 Unilever. "Fish." www.unilever.com/environmentsociety/sustainability/Fish


70 Zipcar. www.zipcar.com

Note: All Web sites accessed August 2004.
"Would it kill you to compost?"
Introducing the Activities

“All education is environmental education. By what is included or excluded we teach students that they are part of or apart from the natural world.”

—David Orr, author and professor
Welcome to the activities section. We've included 14 activities that help explore the topic of consumer choices and the environment.

You'll see that the activities vary in length, depth, and approach. Every activity follows the format described in the sample below.

We encourage you to adapt these ideas, combine them with other resources, and devise organizing themes that will best meet your objectives.

We also encourage you to check out the "Resources" (pages 288-292) to find dozens of exemplary educational materials that can help you build the best possible program on consumer issues and the environment.

1. **Overview**: Provides a summary of the activity and what students will do.
2. **Subjects**: Lists specific disciplines.
3. **Skills**: Lists the key skills that students will use in the activity. You can find complete lists of skills in the "Education Skills Framework," available on the Web at www.worldwildlife.org/windows.
4. **Framework Links**: Shows specific connections to the "Biodiversity Education Framework," which can be found online at www.worldwildlife.org/windows.
5. **Vocabulary**: Highlights important words used in the activity that students might not know. Words in bold are defined in the glossary on pages 270-272.
6. **Time**: Gives an idea of how much time the activity will take based on pilot testing and educator comments. We have estimated that each session takes about 45 minutes.
7. **Connections**: Lists related activities in this module and other Windows on the Wild resources that could be used before or after the activity to create more effective lessons and units.
8. **Outside the Classroom and Challenging**: The symbol indicates that parts of the activity take place outside the classroom. The symbol indicates a more challenging activity.
9. **Introduction**: Starts each activity and often includes related background information. Sometimes this background information is contained in boxes outside the normal text. In other cases, it's integrated into the introduction of the activity.
10. **What to Do**: Includes step-by-step directions about how to conduct the activity. The first part of each step is in bold type. The last step in the directions brings closure to the activity.
11. **Assessment**: Suggests strategies for evaluation at the end of most activities. The assessment also includes examples of what excellent, satisfactory, and unsatisfactory results might include. (Some of the introductory activities used to spur interest or to gauge students' understanding do not include assessments.)
12. **Writing Ideas**: Encourages creative and technical writing skills. Writing ideas can be integrated into the activity or used as an extension.
13. **Extensions**: Provides additional activities that relate to the core activity and can be used to encourage more in-depth investigation or discovery. Some can also be used as assessment strategies.
14. **Resources**: Provides more comprehensive exploration of a topic. We also recommend that you review the "Resources" on pages 288-292 to find additional materials that will complement many of the activities.
4. Money Matters

OVERVIEW

Money matters are not only important for personal success but also for the overall health of our communities and the nation. Understanding the role of money in our lives can be challenging, but it is essential to make informed decisions about spending, saving, and investing.

SKILLS

It is important to develop the following skills to effectively manage your finances:

- Budgeting
- Financial planning
- Understanding interest rates
- Investing

CONNECTIONS

Understanding money matters is crucial for making informed decisions about your personal finance. This section will help you develop the skills necessary to manage your finances effectively and make informed decisions.

VOCABULARY

- Budget
- Interest rate
- Investment
- Savings

What to do!

1. List the major types of money matters.
   - Banking
   - Investing
   - Insurance
   - Taxes

2. Identify the role of money in society.
   - Personal
   - Community
   - National

WRAPPING IT UP

Summarize the key points discussed in this section.

Choosing an outfit for the week

- Identify the key aspects of the outfit.
- Consider the style, color, and accessories.

Before you begin

- Review the key points discussed in this section.
- Practice the skills learned in this section.

Assessment

- Evaluate your understanding of the material.
- Identify areas for improvement.

Conclude

- Summarize the key points discussed in this section.
- Reflect on the importance of money matters in your life.
The activities in this section introduce the connections among biodiversity and consumer choices and the different values people have regarding consumer behaviors. For background information, see pages 24–29.
"Without knowing it, we utilize hundreds of products each day that owe their origin to wild animals and plants. Indeed our welfare is intimately tied up with the welfare of wildlife. Well may conservationists proclaim that by saving the lives of wild species, we may be saving our own."

Norman Myers, conservationist
Buy-O-Diversity

OVERVIEW
Solve shirt mysteries and take a quick, just-for-fun quiz highlighting the connections between buying and biodiversity. Then go on a simulated shopping hunt to explore the "consumer connection" in more depth.

SUBJECTS
social studies

SKILLS
gathering (investigating), analyzing (identifying components and relationships among components, discovering, interpreting (drawing conclusions), identifying cause and effect, applying (predicting), generating (reporting), citizenship (working in a group)

FRAMEWORK LINKS
1, X, 17, 20, 30, 37

VOCABULARY
biodiversity, climate change, consumers, fossil fuels, heat-trapping gas, natural resource, pesticide, sustainable

TIME
one session

MATERIALS
copies of "Buy-O-Diversity Connections" (page 63); one copy of each of the "Shopping-Spree Products" cards (pages 64-70) cut, folded, and stapled; copies of the "Shopping Challenges" cards (pages 71-73); cut apart

CONNECTIONS
To get students thinking about various aspects of biodiversity, try "What's Your Biodiversity IQ?" in Biodiversity Basics. For more on the hidden connections between products and the environment, try "A Day in the Life" (pages 164-176). And to find out more about the connections between everyday products in your community and wildlife around the world, try "Investigating Wildlife Trade in Your Community" in Wildlife for Sale.

When you think about the connections between shopping and wildlife, what comes to mind? Tropical fish? Ivory figurines? Pet parrots? All of these items, and many others, are part of wildlife trade—the market in animals and plants or products made from them. But only a small fraction of purchases that affect biodiversity fall into this "wildlife trade" category. Everything from the coffee we drink to the detergent we use to clean our clothes can affect the health of natural resources and biodiversity. Learning about those connections—and about choices that can reduce our effects on the environment—is a key step in becoming a more informed, responsible consumer.

"Buy-O-Diversity" provides an introduction for students beginning a unit on smart consumption. Or, if you don't have time to undertake an entire unit on the topic, it can be used as a stand-alone activity to highlight the main issues. In the activity, students will "shop" for products that match certain criteria having to do with biodiversity and natural resources. (We've provided descriptions of those products in the form of informational cards.) After their shopping spree, they can discuss the issues and consider whether what they learned will influence their shopping habits in the future.
Before You Begin

Make enough copies of "Buy-O-Diversity Connections" (page 62) for each student, or have students share copies. Make one copy of each of the "Shopping-Spree Products" cards (pages 64-70). Cut them apart along the dotted lines and fold each card on the solid line to create a tent that can stand up on a tabletop. Make a copy of each of the "Shopping Challenges" cards (pages 71-73) and cut them apart. On the day of the activity, set up the tented products in different sections of the room.

What to Do

1. Organize the class for mystery challenges.
Begin the activity by dividing the students into teams of two or three and telling them that they are going to be given two short mysteries. The teams will have two minutes to discuss possible solutions to each mystery among themselves before sharing their ideas with the class. Tell the students that each mystery has several possible solutions. Then read the following mysteries aloud. (You may wish to give the students time to discuss their answers to the first mystery before reading the second.)

Mystery One: Mary Martinson lives in Indiana, where she runs her own business and often entertains her clients at a steakhouse near her office. She has never left the United States and has a phobia of snakes and insects, but her actions connect her to the rain forests of Brazil every day. How?

Mystery Two: Charlie Thwaite is a traveling businessman. He is an avid amateur naturalist, but he was recently upset to discover that something he does every day is threatening the existence of several species and habitats around the world, from the polar bear to Australia's Great Barrier Reef. What is it that Charlie is doing?

Ask the teams to share their solutions to the mysteries. (Answers will vary. Possible answers to the first mystery include: Mary uses paper and wood products that come from rain forest trees; Mary likes to eat beef, which may have been raised in areas cleared of rain forest; Mary sends money to an organization that is helping to protect rain forests.)

Possible answers to the second mystery include: Charlie is driving a car, flying in airplanes, or using electricity that comes from fossil fuels to run a number of appliances, all of which are contributing to climate change through the production of carbon dioxide and other heat-trapping gases. Climate change is threatening the existence of habitats around the world and the species that depend on them—from polar bears to coral reefs.)

Tell the students that while there may be several ways in which Mary is connected to the rain forests of the world, the fact that Charlie is driving a car, flying in airplanes, or using electricity that comes from fossil fuels to run a number of appliances is of particular concern to environmentalists.

FACTOID

DRIFT FOR EXCESS: In the 5 years between 1996 and 2001, the number of garments Americans purchased each year rose by 73 percent.
Brazil and Charlie to habitats and species around the world, this activity is going to focus on their roles as consumers. Can anyone define the word consumers? (Consumers are people who buy or use products and raw materials.) Write the definition on the board. What were Mary and Charlie consuming? (Answers will vary depending on the solutions given to the mysteries. Wood, paper, gas, electricity, and beef are all possible answers.) Now ask the students if they can define the word biodiversity. (Biodiversity is the variety of life on Earth.) Write the definition on the board. Can the students give examples of biodiversity affected by Mary? (Answers will vary. Possible answers include tree species and animals such as golden lion tamarins, jaguars, sloths, and toucans.) Now, going around the room, ask the students to identify one product in the classroom and think of a connection that product might have to biodiversity. Tell the students that they will be learning more about some of these and other biodiversity connections in this activity.

2. Hand out “Buy-O-Diversity Connections.”
Distribute copies of “Buy-O-Diversity Connections” and tell the students that this short, just-for-fun quiz will introduce them to more of the connections between the things we buy and the natural world. Tell the students that they won't be graded on their responses. Give them 5 to 10 minutes to complete the quiz. When they've finished, review the answers.

3. Divide the students into pairs.
Next, turn the students' attention to the ten cards around the room. Explain that these cards represent products that the students will consider as they go on a simulated shopping spree. Divide the students into teams of two, and give each team one or two of the “Shopping Challenges” cards. (Alternatively, give each team one card and save any remaining cards for those who finish early.) Tell the students that their assignment is to find at least one product that matches the criterion on their “Shopping Challenges” card. As they'll see, each product description includes information about its connections to biodiversity and natural resources, such as wildlife, water, air, and topsoil. You might want to tell the students that they can try to think through the answers by skimming the material in the “Shopping-Spries Products” cards for key words related to their question, or by quickly moving on if the card they're reading is clearly unrelated to their shopping challenge.

4. Discuss the results.
Ask the students what they learned from this activity. What negative effects can our purchases have on natural resources? What positive effects can they have? Why might it be useful to consumers to have information available related to environmental effects? Do your students think they will change any of their behaviors based on the information they learned today? If so, how? If not, why not?
WRAPPING IT UP

Portfolio
The students can keep their completed "Buy-Diversity Connections" quizzes in their portfolios.

Writing Idea
If rain forest birds could talk, what would they have to say about sustainable coffee? What would sea turtles have to say about our appetites for shrimp cocktail? Have the students write a letter from a plant or animal to a person whose consumer choices affect its life in some way. The students might select plants or animals mentioned in the "Shopping-Spoke Products" cards or those of their own choosing. Whatever they choose, the species and the consumer product selected will affect the tone and content of the letter and whether it's informational, a complaint, or a thank-you.

Assessment
There is no direct assessment for this activity.

Extensions
* Have students think about some of their favorite products—CDs, makeup, blue jeans, and so on. Send them on a fact-finding mission to explore what kinds of connections those items have to biodiversity. Are there better alternatives? They can summarize what they've learned in short articles to be published in a student newspaper or local newsletter.

* As a class, create a mini-shopping guide for other students with consumer tips based on some of the things the students learned in this activity as well as through additional research.

* Have your group review some of the products purchased by their family, school, or organization (such as paper, computers, light bulbs, and pencils). Based on the information they've found in the product cards or through their own research, have them make recommendations about more environmentally responsible alternatives to the products currently in use.

RESOURCES
If you're interested in further exploring the topic of biodiversity with your students, visit World Wildlife Fund's Windows on the Wild Web site. Find out more about educational materials—such as discovery stories, an educator's guide to exploring biodiversity—and check out many interactive games and activities at www.worldwildlife.org/windows.

For more information about the links between consumer choices and the environment, visit World Wildlife Fund's and the Center for a New American Dream's joint Web site at www.buydifferent.org. The site includes animated product life stories, quizzes, and an Active Center where visitors can see the positive effects of smarter consumer choices.
Buy-O-Diversity Connections

Answers

1) a. and b. Alligators and ostriches. Farms aren’t just for cows, sheep, and pigs these days. Ostriches, the world’s largest bird and a native of Africa, can be seen in farms across the United States and the world. Alligators are grown in large enclosed ponds and then harvested when they’re a year to 18 months old and 4 to 5 feet long. Old MacDonald would have been baffled.

2) d. All of the above. When you bite into a pepperoni and mushroom pizza, you’re eating all sorts of organisms, including fungi (the mushrooms), pigs (the pepperoni), and bacteria (used to create cheese). And you thought biodiversity had nothing to do with your life!

3) a. Wood. A key ingredient of rayon is cellulose, which is a material found in plant cell walls. Purified cellulose used to make rayon generally comes from wood pulp, and that wood may come from trees growing in plantations, temperate forests, or tropical rain forests. The world’s largest producer of rayon is Indonesia, where deforestation of rain forests threatens local economies and wildlife such as orangutans, which some scientists predict might become extinct within the next few decades.

4) d. All of the above. Bananas, coffee beans, and cacao (used to make chocolate) grow well in the warm, moist conditions where tropical rainforests also thrive. Often, those forests are cut down and then converted to farmland, which can destroy habitat and displace wildlife. But some farmers are growing bananas with fewer pesticides, raising coffee and cocoa in the shade of rain forest trees, and using other techniques that are less harmful to workers and the environment. These techniques allow some cocoa and banana producers to get a “Rainforest Alliance Certified” label and coffee growers to sell their coffee as “shade grown” or “sustainable,” all of which allow consumers to support these environmentally friendly growing practices.

5) d. All of the above. Coral has been used to make a substance that can replace broken human bones. It also may offer treatments for such ailments as viral infections, arthritis, asthma, and cancer. Vampire bat saliva has been used to make blood-thinning medication. And parts of sharks have been used for everything from artificial skin for burn patients to anticoagulants for people with heart problems. All of these examples show just how much the diversity of life on Earth improves the quality of human life.

6) c. Mostly from sugar and gelatin. Marshmallows are plants that grow in marshes. Although sap from the plants’ roots was used to make marshmallow candies until the 1800s, the marshmallows we eat today are a blend of sugar or corn syrup, gelatin, and other ingredients.

7) b. Crushed fish scales and insect wings. These natural additives lend a sparkly appearance to many cosmetics.

8) c. Old television sets. Did you know that each picture tube in a television contains four to eight pounds of lead? If you toss a TV into a landfill, that lead can leach out into the soil and groundwater, causing health problems for people and wildlife alike. Mining ore to produce more lead to make more TV sets also harms fish and wildlife habitats. You can make a difference by working hard to keep your old TV set going as long as possible, investigating the best way to dispose of it in your community, and checking into the latest innovations that will make any new TVs you buy more environmentally friendly.
Shopping Challenges

Answers

1. Find a product that contributes to global climate change.
   - All of the products in the shopping spree are connected in some way to climate change, either through the energy they use directly, the processes necessary to produce them, or the transportation needed to get them to the stores where we purchase them.

2. Find a product that saves energy, reduces heat-trapping gas emissions, and costs less than half the price over its lifetime of a similar product that doesn't have the same energy-saving features.
   - Compact fluorescent light bulb

3. Find a product that helps save energy and reduce air pollution.
   - Energy Star computer
   - Microwave oven
   - Compact fluorescent light bulb
   - Low-flow showerhead
   - Locally grown fruits and vegetables
   - Recycled paper
   - Skateboard
   - Hybrid car
   - Bicycle

4. Find a product that helps reduce contributions to landfills.
   - Recycled plastic backpack
   - Recycled paper
   - Rechargeable batteries

5. Find a product that helps reduce water use around the house.
   - Low-flow showerhead

6. Find a product that can harm wildlife because of the pesticides needed to produce it.
   - Traditional T-shirt
   - Veggie burrito
   - Hamburger patty

7. Find a product that can help protect biodiversity because it doesn't require pesticides.
   - Organic cotton T-shirt

8. Find a product that can pass through five or more countries before it's ready to be sold.
   - Running shoes

9. Find a product that can endanger ocean wildlife.
   - Coral jewelry
   - Shrimp

10. Find a product that is a wild animal.
    - Shrimp
    - Fish with the MSC label

11. Find a product that would not be here today if not for honey bees.
    - Apples

12. Find a product that depends on coastal wetlands, such as mangroves.
    - Shrimp

13. Find a product that can help keep populations of marine animals healthy.
    - Fish with the MSC label
Shopping Challenges

Answers (Cont'd.)

14. Find a product that can require over 600 gallons of water to produce.
   - Hamburger patty

15. Find a product that can cause the loss of over a pound of topsoil.
   - Hamburger patty

16. Find a product that contains more than five different species of plants.
   - Veggie burrito

17. Find a product that comes from the rain forest.
   - Sustainable coffee
   - Loofah sponge
   - Chocolate bar

18. Find a product that can encourage local residents to protect the rain forests around them.
   - Sustainable coffee
   - Loofah sponge
   - Chocolate bar

19. Find a product that helps protect the forests of California.
   - Pencil with the FSC label

20. Find a product that can harm biodiversity by crushing plants and startling wildlife in remote areas.
   - ORV

21. Find a product that can require toxic chemicals, such as cyanide, arsenic, and mercury, to produce.
   - Gold jewelry

22. Find a product often made from maple trees.
   - Skateboard

23. Find a product made from cedar trees.
   - Pencil with the FSC label

24. Find a product that should be disposed of carefully because of the toxic chemicals it contains.
   - Rechargeable batteries
Buy-O-Diversity Connections

How much do you really know about the products you buy, use, and eat? Take the following quiz to see how Buy-O-Diversity savvy you are. There may be more than one correct answer for each question.

1) Which of the following are raised on farms and harvested for their meat and skin?
   a. alligators
   b. ostriches
   c. koala bears
   d. all of the above

2) Which of the following is needed to produce a pepperoni and mushroom pizza?
   a. pigs
   b. fungi
   c. bacteria
   d. all of the above

3) What is one of the key ingredients in a rayon shirt?
   a. wood
   b. leather
   c. pigs' feet
   d. all of the above

4) Which of these products typically comes from plants that grow on land that was once tropical rain forest?
   a. bananas
   b. coffee
   c. chocolate
   d. all of the above

5) Which of the following has been used to make medicines?
   a. coral
   b. vampire bat saliva
   c. sharks
   d. all of the above

6) Where do the marshmallows you eat come from?
   a. they grow in the ocean
   b. they grow on plants found in marshes
   c. they are made mostly from sugar and gelatin
   d. they are made from milk

7) Which of the following are sometimes used in cosmetic products such as eye shadow, nail polish, and lipstick?
   a. ground-up feathers
   b. crushed fish scales and insect wings
   c. crushed diamonds
   d. all of the above

8) Which of the following did Massachusetts and California classify as toxic waste?
   a. old issues of The National Enquirer
   b. used dental floss
   c. old television sets
   d. all of the above
Shopping-Spree Products

INCANDESCENT (STANDARD) LIGHT BULBS

Although these bulbs were once a bright idea, they also have a dark side. Using one causes the release of hundreds of pounds of carbon dioxide—a major heat-trapping gas—every year. That's because incandescent bulbs, which most people use to light their homes, require lots of energy. The energy that powers bulbs is usually produced by burning fossil fuels—a process that emits carbon dioxide. Carbon dioxide has been linked to the Earth's rising global temperatures.

COMPACT FLUORESCENT LIGHT BULBS

Compact fluorescent light bulbs (CFLs) can save money and energy. Although CFLs cost more to purchase than incandescent (standard) bulbs, they last up to 10 times longer and consume about one-quarter the energy of an incandescent bulb. This means that, over the long term, using CFLs costs less than half of what it costs to use incandescent bulbs. And, if you replaced 4 indoor and 2 outdoor incandescent bulbs at your home with CFLs, you'd prevent over 800 pounds of carbon dioxide from entering the atmosphere every year.

RECHARGEABLE BATTERIES

Are you burning through batteries using portable CD players, hand-held gaming systems, and other electronic gadgets? If you want to reduce your waste, and the amount of resources you're using, then rechargeable batteries may be the product for you. Regular alkaline batteries are tossed out after one use. While it might cost more to buy rechargeable batteries and a charger at first, these batteries can save you money in the long run. One rechargeable battery can take the place of hundreds of regular batteries. Just be sure to send rechargeable batteries to specially designated recycling centers when you're done with them, as they contain toxic chemicals that shouldn't be mixed with regular trash.

MICROWAVE OVEN

Microwave ovens "zap" foods in just a fraction of the time it would take to heat the same food in a conventional oven. Not only are microwave ovens big time savers, but they're also big energy savers. A microwave oven uses just one-third the amount of energy of a conventional oven. That means it uses fewer resources and helps cut down on emissions of heat-trapping gases.
LOW-FLOW SHOWERHEAD

The shower accounts for up to 30 percent of total household water use, and the toilet accounts for approximately 40 percent of all domestic water use in the United States. Installing a water-saving plumbing fixture, such as a low-flow shower head or low-flush toilet, can help save money and natural resources by lowering water, sewage, and energy bills.

LOOFAH SPONGE

You might think that, because they're commonly called "sponges," loofahs come from the ocean. But loofahs are gourds that grow on vines in forests—including rain forests. Some companies are helping people who live in and near rain forests process these gourds into shower products. It's a partnership that helps local people earn a profit, protect the rain forest, and keep us clean.

TRADITIONAL COTTON T-SHIRT

It's comfortable, inexpensive, and looks great with jeans. But the low price of a cotton T-shirt doesn't always reflect the high price the environment pays when companies produce cotton with pesticides. Cotton crops account for 25 percent of the pesticides applied in the United States. These chemicals can harm wildlife, reduce water quality, and impair human health.

ORGANIC COTTON T-SHIRT

Like any T-shirt, an organic cotton T-shirt starts in a cotton field crawling with bugs. Organic farmers use a variety of non-chemical techniques, including insect predators, to control pests. Organic cotton shirts usually are made without the chlorine bleaching process, which involves harsh chemicals, and instead are made using more environmentally friendly hydrogen peroxide. All this adds up to a T-shirt that is better for the environment—and human health—than a traditional cotton T-shirt.
<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RUNNING SHOES</strong></td>
<td>You might be surprised at how much ground a pair of running shoes can cover before you buy them. A single pair of running shoes—from raw materials to the finished product—can pass through five or more countries before reaching their owner's feet. From Texas leather to Saudi Arabian oil, the material components of running shoes can come from far and wide. The raw materials may then be processed in one country, the shoes manufactured in another, and the finished product sold in yet another. Every time components are transported, energy is used and heat-trapping gases are released.</td>
</tr>
<tr>
<td><strong>CORAL JEWELRY</strong></td>
<td>While coral jewelry is pretty and often inexpensive, it comes at a high cost to the world’s oceans. Reefs are declining around the world, and one of the causes is mining corals to make jewelry. Since international trade laws don't yet protect many corals, you can help by avoiding buying products made from these beautiful sea creatures.</td>
</tr>
<tr>
<td><strong>GOLD JEWELRY</strong></td>
<td>When you see a glittering piece of gold jewelry, the last thing you might think of is a faraway river ecosystem, but the two are often closely linked. Gold can be dredged from river bottoms or mined from deep within the ground. Gold dredging can harm sensitive river environments by disturbing the sediments on the bottom, and gold mining often involves the use of toxic chemicals such as cyanide, arsenic, and mercury. If not carefully managed, the chemicals can pollute waterways and threaten the health of people and the environment.</td>
</tr>
<tr>
<td><strong>LOCALLY GROWN FRUITS AND VEGETABLES</strong></td>
<td>Thanks to refrigeration, rapid transportation, and other technological advances, you can buy a wide variety of fruits and vegetables year-round. But getting this produce to stores requires a lot of energy. The fossil fuels used to refrigerate and transport produce contribute to global climate change. Buying locally grown vegetables not only helps support nearby farmers, but it also helps reduce energy use. And if you buy organic vegetables, all the better.</td>
</tr>
</tbody>
</table>
**SHRIMP**

There's more to a shrimp cocktail than meets the eye. Shrimp live in coastal areas, where they depend on healthy wetlands such as mangroves for survival. Shrimp farms in coastal areas can destroy the wetlands that wild shrimp and other species depend on. But catching shrimp in the wild isn't necessarily a better choice: For every pound of shrimp caught in the wild using a typical trawl net, more than five pounds of other sea creatures (called bycatch) are also caught, and most are tossed overboard, dead or dying.

**FISH WITH THE MSC LABEL**

The MSC label represents the Marine Stewardship Council, an organization that certifies fisheries that use sustainable fishing methods. In a store or supermarket, if you see a fish sporting the MSC label, you can be sure that it was caught with minimum harm to other sea creatures and its wild populations are relatively healthy.

**HAMBURGER PATTY**

The beef cow from which this hamburger was made eats grain and other food supplements that were produced using large amounts of water, soil, pesticides, and energy. The energy required for producing one quarter-pound patty is equivalent to the energy in one cup of gasoline. The patty can also require more than 600 gallons of water and cause the loss of 5 times its weight in topsoil. The pesticides used to help the grain grow can wash off into rivers and lakes, threatening biodiversity far from the farm.

**VEGGIE BURRITO**

This burrito is made with corn, pinto beans, rice, lettuce, tomato, and onion. While the veggies in this bean burrito may have been grown with pesticides, which can cause water pollution and affect human health, the production of the burrito does less environmental harm than producing a burrito made with beef. And, if you really want to lessen your environmental impact, try a veggie burrito made with organic veggies.
**SUSTAINABLE COFFEE**

In some forests in Central and South America, coffee plants grow beneath the trees, where hummingbirds, swallows, warblers, and other migratory birds make their homes along with parrots, toucans, monkeys, frogs, butterflies, and other wildlife. Growing coffee under the shade of trees is much better for the forest community than traditional full-sun coffee plantations, which are planted after cutting down the native trees. Sustainable coffee is a solution that animal-loving coffee drinkers can raise their cups to.

**APPLES**

Apples depend almost entirely on honey bees for pollination. In fact, almost one-third of the plants that humans eat rely on insects for pollination.

**CHOCOLATE BAR**

Chocolate is made from the seeds of the cacao tree, which grows in tropical rain forests. Today, many of the cacao trees used for chocolate production are grown in plantations that replace native forests. But some chocolate makers still use seeds from wild cacao trees, which helps encourage local people to protect their forests and allows them to profit from their community’s natural resources.

**RUCKPACK (RECYCLED PLASTIC FIBER)**

Your old soda bottles might once have carried your drinks, but now they can carry your books! Companies are finding ways to turn recycled plastics into fibers that can be used to create a variety of products—from backpacks to houseboat clogs. These products help reduce the use of energy and new (often called virgin) raw materials, as well as help save space in landfills.
PENCIL WITH THE FSC LABEL

Most pencils today are made from a certain type of cedar tree that grows in California forests. Consumers can support healthy forests by looking for pencils marked with the Forest Stewardship Council (FSC) logo. FSC-certified pencils come from forests that are managed in ways that ensure that the forests stay healthy over the long term, providing habitat for wildlife, protecting water resources, and ensuring a sustainable supply of wood.

COMPUTER (ENERGY STAR)

This computer meets government requirements for an energy-efficient appliance. Energy Star computers in sleep mode use 70 percent less electricity than computers without power management features. Using an Energy Star computer can save up to $52 per year on energy bills. That means less pollution in the air—and more money in your pocket.

RECYCLED PAPER

You might think you've done your part by buying recycled paper for use in school or for a printer, but there's something more you can do to make the benefits of recycled paper go even further: Recycle it again! Compared to using and throwing away virgin paper, buying and then recycling recycled paper can reduce energy use by up to 40 percent, solid waste by 45 percent, heat-trapping gas emissions by up to 70 percent, and hazardous air pollution emissions by up to 90 percent.

SKATEBOARD

Walking is a great way to get around town. But if you want to go faster and have more fun, have you ever thought of using a slab of maple tree? Skateboards, which are often made of maple, get you where you want to go, but they don't have motors that burn fossil fuels, so the only heat-trapping gas you'll be emitting is the carbon dioxide you breathe out.
**SUV**
Sport utility vehicles (SUVs) were designed to help people drive across rough terrain. But most SUVs are never driven off-road, and they're being sold in such large numbers that they're contributing to one of the biggest environmental problems we face: global climate change. As cars burn fuel, they emit carbon dioxide, the gas most responsible for our warming climate. Traditional SUVs burn more fuel than smaller cars, so they emit more carbon dioxide. In fact, a large SUV can emit more than twice as much carbon dioxide as a smaller car.

**HYBRID CAR**
Many people are concerned about the environmental effects of driving. As cars burn fuel, they emit carbon dioxide, a heat-trapping gas that contributes to climate change. Just one passenger car can emit over 100 tons of carbon dioxide over its lifetime. That's why many people are looking for cars that burn less fuel and emit less carbon dioxide. The current leader is the hybrid car, which uses both electricity and gas. Since it is powered partly by electricity, it can go more than twice as far on one tank of gas as other cars in its class.

**ORV**
Driving an off-road vehicle (ORV) in rugged areas without roads is growing in popularity. Many of the people who enjoy this sport like to use ORVs in some of the country's most beautiful and remote areas. The downside is that ORVs can crush and destroy plant life, pollute air and waterways, and startle wildlife with their noisy engines. To help limit the damage caused by ORVs, riders should be careful to drive only in areas where ORVs are allowed and stay on marked trails.

**BICYCLE**
Have you ever coughed or sneezed on a "bad air" day? Cars and trucks emit all sorts of pollution into the air, including tiny particles of dust that enter people's lungs where these particles can cause breathing problems. Luckily, we don't have to drive everywhere we go, and bikes are a super-efficient way to cut down on car trips—and air pollution. In fact, replacing just one 4-mile car trip with a bike trip can keep up to 15 pounds of pollutants out of the air.
<table>
<thead>
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<th>Shopping Challenges</th>
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<tbody>
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9. Find a product that can endanger ocean wildlife.

10. Find a product that is a wild animal.

11. Find a product that would not be here today if not for honey bees.

12. Find a product that depends on coastal wetlands, such as mangroves.

13. Find a product that can help keep populations of marine animals healthy.

14. Find a product that can require over 600 gallons of water to produce.

15. Find a product that can cause the loss of over a pound of topsoil.

16. Find a product that contains more than five different species of plants.
17. Find a product that comes from the rain forest.

18. Find a product that can encourage local residents to protect the rain forests around them.

19. Find a product that helps protect the forests of California.

20. Find a product that can harm biodiversity by crushing plants and startling wildlife in remote areas.

21. Find a product that can require toxic chemicals, such as cyanide, arsenic, and mercury, to produce.

22. Find a product often made from maple trees.

23. Find a product made from cedar trees.

24. Find a product that should be disposed of carefully because of the toxic chemicals it contains.
2 Notable Quotables

OVERVIEW
Read and discuss quotes that reflect different attitudes and values about money and consumer choices. Then have students describe your own attitudes toward these topics.

SUBJECTS
Language arts, social studies

SKILLS
Gathering (reading comprehension, listening), analyzing (comparing and contrasting, discussing, interpreting [translating, inferring, drawing conclusions], evaluating [critiquing, presenting, explaining, articulating, writing], categorizing, working in a group, taking a position)

FRAMEWORK LINKS
37, 58, 60

VOCABULARY
Consumption

TIME
One session

MATERIALS
Copies of the "Quotation Cards" (pages 77-78)

CONNECTIONS
Copy out this activity after students have explored consumer issues in such activities as "Buy-O-Diversity" (pages 104-105), "Analyze an Ad" (pages 110-111), and "Measuring Your Footprint" (pages 124-129). Alternatively, you may wish to do this activity before and after conducting other activities to see how your students' opinions about consumption change. To encourage students to articulate their beliefs and values about biodiversity, try "The Spice of Life" in Biodiversity Basics.

Sometimes a sentence or two can speak volumes about what someone thinks about an issue. This activity gives your students a chance to ponder the meaning of a variety of quotes related to the topics of money, wealth, and our consumer habits. They'll think about whether they agree or disagree with the quotes, and then they'll try to develop their own clever, personalized statements about consumer issues.
Before You Begin

Make copies of the "Quotation Cards" (pages 77-78) and cut them out along the dashed lines. Students will be working in small teams, so you'll want to make enough copies for each team to have a pair of quotes. You don't need to use all the quotes we've provided; select those that you think will be most appropriate for your group. You may also find other quotes that you think will work well, and you can include them along with the quotes provided in the activity.

What to Do

1. Divide the group into teams.
   After dividing the students into teams of three or four, hand out two quotes to each team. (You can decide in advance whether you want to distribute the quotes randomly or construct predetermined pairs based on the viewpoints expressed in each of the quotes.) Explain that the quotes are from the speeches and writings of various celebrities, scholars, business people, authors, and others.

2. Discuss the quotes within teams.
   Ask a volunteer on each team to read the first quote aloud to the rest of the team. Have the students hand the quote around to each team member, who should read it again silently. Then give the teams time to discuss the quote.

   The students should begin by discussing the quote's meaning. What is the author saying or trying to convey? Then have the students discuss their views on the quote. Do they agree or disagree with the person's perspective?

   After discussing the first quote, the students can move on to their second quote. Once again, they should discuss the meaning of the quote, but this time they should also compare it to the first quote before sharing their personal views.

   Explain that, at the end of the session, each team will present its quotes and comments to the rest of the class; therefore, team members might want to take notes during their discussions. They won't have time in their presentations to repeat everything they've covered in the team discussions, so they should agree on the major points to highlight.

3. Share quotes with the class.
   Have representatives from each team read the team's quotes aloud to the rest of the class. Then the representatives should explain the meaning of each quote and describe some of their team's reactions to the quotes. After all of the teams have presented their views, ask the students if they have any general reactions to the quotes.

4. Have the students write their own quotes.
   Explain that the students will now be writing personal statements describing their own thoughts about our consumer habits. Before they begin, lead a short discussion about the features of a good quote. Highlight the importance of being clear and concise (the students should limit their statement to no more than two sentences), stating a strong point of view, and using humor or surprise to make a point. You can also ask the students to review all of the quotes they've studied to get a better idea of the broad range of approaches possible. If a student likes one style in particular, he or she might want to emulate it when crafting a personal statement.

   If you're doing this as a wrap-up activity, the assignment offers an opportunity to find out where students stand on the issues they've studied so thoroughly. If you're doing this as an introductory activity, you might consider repeating the assignment at the end of the unit to see whether students' thinking has changed.
WRAPPING IT UP

Portfolio
Add the students' quotes to their portfolios.

Writing Idea
Many essays and book chapters use a good quote as an "epigraph"—a short, well-worded sentence that sets up the writing to follow. Have the students pick one of the quotes from this activity (or another of their choosing) as an epigraph for a short essay summarizing their thoughts about consumer connections to the environment.

Assessment
On the board, draw a line. Make it a continuum by labeling the left end "low-level consumption" and the right end "high-level consumption." Have the students copy the continuum onto a piece of paper. Then have them individually mark and label where each of the two quotes they read as a group would fall along that continuum and where the personal statement they crafted would fall. Below the continuum, have them explain succinctly: 1) why they placed each statement where they did on the continuum; 2) how the quotations differ in the messages about consumer behavior; and 3) how their statement reflects their own attitudes toward consumer patterns.

Satisfactory—The quotation is supported by reasonable statements. The rationale presented by the student relates to the statement itself. There are different underlying values revealed in the description.

Excellent—The presentation of ideas is cohesive. The student's values are clearly represented in the explanation of the quotation.

Extension
Have students practice using quotes to support a position. Ask them to write a one-page argument taking a position on the issue of consumption, using at least three quotes from other people to help make their argument. The students might use the quotes provided in this activity, or they can do research to find other appropriate quotes.

Unsatisfactory—The ideas may be reasonable but do not explain the quotation. The ideas are random and do not rationally connect to the statement. Values are not revealed.

RESOURCES
The Most Delightful Thoughts of All Time (In Two Minutes or Less) by John M. Synnott can give your students more background about quotes. Because no quote in this compilation is longer than two sentences, it provides a helpful resource for demonstrating the effectiveness of clear and concise ideas. [Cliff Street Books, 1993].

Over 20,000 quotations can be found at www.quotationpage.com.
Shopping centers have become the centers of our public life, and consuming has become both our primary means of self-definition and our leading pastime.
—Alan Durning, author of *How Much Is Enough?*

I'm not just buying a car—I'm buying a lifestyle!
—Lynn Johnston, cartoonist

He who knows he has enough is rich.
—from the Tao Te Ching, an ancient book of Chinese philosophical poetry focused on the way humans interact with the natural world.

All of us have opted for environmental damage, albeit unwittingly, by voting for convenience with our dollars.
—Russell W. Peterson, former governor of Delaware

You aren't wealthy until you have something money can't buy.
—Garth Brooks, country musician

The hip-hop community is really about the American dream. They want everything on television . . . the things their parents didn't get.
—Russell Simmons, hip-hop mogul

You can tell the ideals of a nation by its advertisements.
—Norman Douglas, author

The world at large does not judge us by who we are and what we know: it judges us by what we have.
—Dr. Joya Brothers, psychologist and television personality
America is a consumer culture, and when we change what we buy—and how we buy it—we'll change who we are.
—Faith Poppen, trend expert

Too much of a good thing is wonderful.
—Mac West, film actress

For most Americans, progress means accepting what is new because it is new, and discarding what is old because it is old.
—Lewis Mumford, philosopher and urban planner

One way to be rich is to not want anything.
—Kenneth E. Boulding, philosopher and environmental economist

I do not read advertisements—[if I did] I would spend all my time wanting things.
—The Archbishop of Canterbury

The point is that you can't be too greedy.
—Donald Trump, businessman

Money isn't everything... but it ranks right up there with oxygen.
—Rita Davenport, time-management expert

Why spend so much of your life working if you don't use your earnings in a way that makes you most happy?
—Deborah Knuckey, author of The Art of Spent Money Guide
"You can never get enough of what you don't need to make you happy."

— Eric Hoffer, social philosopher
Understanding Our Consumer Patterns

The activities in this section examine factors that influence our consumer choices and how consumer habits vary over time and from place to place. For background information, see pages 30–35.
“Runaway growth in consumption in the past 50 years is putting strains on the environment never before seen.”

3 Back in the Day

OVERVIEW
Analyze graphs and then conduct interviews with parents, grandparents, or neighbors as part of an investigation into how consumer patterns have changed from the past to the present.

SUBJECTS
social studies, mathematics

SKILLS
gathering (interviewing); analyzing (identifying patterns, comparing and contrasting, questioning, discussing); interpreting (summarizing, inferring, drawing conclusions); identifying cause and effect; applying (predicting, proposing solutions); presenting (writing, illustrating, public speaking, reporting)

FRAMEWORK LINKS
37, 40, 58, 68, 89

VOCABULARY
climate change, consumer, consumerism, fuel, funds, interviewee, natural resources, per capita, qualitative data, quantitative data, vehicle miles

TIME
two sessions, plus time to conduct research

MATERIALS
copies of "Tips for Interviewing," "Consumer Habits Charts," and "Topic Tips" (pages 87-88)

CONNECTIONS
This activity addresses changes in consumption patterns over time. To look at differences in consumption patterns across space (among different countries, for instance), try "Measuring Your Footprint" (pages 116-126) or "Solving Planet X" (pages 130-136).
Before You Begin

Make copies of "Tips for Interviewing," "Consumer Habits Charts," and "Topic Tips" (pages 87-88) for students to share, or copy them onto overhead transparencies.

What to Do

1. Discuss consumer habits.
Ask your students to think about their consumer habits. On average, do students think they consume more or less than their parents or grandparents did at their age? How about generations even further back—such as early Native Americans or European pioneers? (Answers will vary.) Tell your students that this activity will help them look at historical changes in consumer patterns.

2. Hand out the graphs.
Hand out or project the "Consumer Habits Charts." Ask the students to describe what the graphs show. (The graphs show historical changes in consumer habits in four different categories: house size, vehicle miles traveled, waste produced, and paper recycled and discarded.)

Ask the students to look at the first graph. What does it tell them about changes in house size? (U.S. houses are growing in size.) Have them look at the changes from 1900 to 1970 and from 1970 to 2000. What do they notice? (While the average house size rose only slightly from 1900 to 1970, it rose dramatically from 1970 to 2000.) What environmental impacts or changes might be tied to these trends in house size? (Consumption of natural resources such as trees used in building materials, use of natural resources such as fossil fuels to heat and cool the houses, and so on.)

Now consider the second graph. Can anyone define the terms "vehicle miles" and "per capita"? (Vehicle miles are the miles traveled on roads and highways by motorized vehicles such as cars and trucks, including those used for commercial purposes. Per capita means per person.) What trend do the students see in vehicle miles driven? (The number of miles driven is rising.) What explanations can the students think of for this increase? (Answers will vary. Students might theorize that people are taking more car trips, commuting farther to work, making fewer trips on foot, and so on.) Again, ask the students if they can tie these developments to environmental impacts? (Increased automobile usage is generally tied to climate change, as well as to increased air pollution, water pollution [from oil spills and oil runoff], land use and habitat loss [from construction of roads, parking lots, and so on], noise pollution, and so on.)

Now turn the students' attention to the third graph. What does it show? (Total amount of solid waste...
generated per capita in the United States, before recycling.) What is the relationship between consumer patterns and solid waste? (Many of the things we buy and use are later thrown away or come in packaging that must be thrown away. That’s why the amount of waste per person often echoes spending and the consumption of resources.) What trends do the students see in this graph? (The amount of waste seems to be leveling off.) Why might that be? (Answers will vary. Experts tie it to the economic downturn after the 1990s.) How do waste and recycling tie to the quality of the environment? (Disposing of waste can contribute to air, water, and land pollution; recycling not only reduces the waste stream, but it also reduces the consumption of raw materials and generally generates less pollution than producing goods from virgin materials.)

Finally, what does the last graph show? (Amount of paper recycled and discarded in the United States.)

What is the relationship between discarded paper and recycled paper? (Both the amount of discarded paper and recycled paper are increasing. Although recycling does not yet make up for the increased consumption of paper, it has put a significant dent in total paper waste.)

3. Discuss quantitative and qualitative information.

Explain to the students that the four graphs that you have just discussed show a quantitative change in consumption of resources over past decades. Tell the students that, for the next part of this activity, they’ll be looking both quantitatively and qualitatively at historical changes in consumer patterns. Ask whether anyone can explain the difference between quantitative and qualitative? (Quantitative information is generally expressed through numbers. For example, quantitative information about consumer habits might be “the number of cans owned by the average household” or “the amount of money spent each year on coffee.” Qualitative information is expressed through words and numbers. For example, some qualitative information about consumer patterns might be a list of reasons why households own more cars now than they used to, or an expert’s suggestion that increased coffee consumption is tied to the fact that attending coffee shops is a new and popular pastime, especially among young people.)

What might be the relative advantages and disadvantages of using quantitative and qualitative information to describe situations or trends? (Quantitative information helps to summarize, compare trends, and measure change, especially in larger sample sizes. Qualitative information is more personal or anecdotal, providing a picture and possibly a more detailed explanation of what the data show.) In short, the graphs capture the data, but not the stories, behind certain consumer changes. The students’ assignment in the next part of this activity is to find those stories.

4. Introduce the oral history project.

Tell the students that their assignment over the next week or two is to interview an older member of the community, such as a grandparent, neighbor, or family friend, about their childhoods, specifically focusing on some aspect of consumer choices. Alternatively, you could invite several older members of the community to your class for group interviews.

Students might want to focus their interviews on topics from the “Topic Tips” handout or come up with their own topics. We’ve provided some sample questions for each topic in the handout, but your students should generate more questions of their own. Encourage them to think about questions that will elicit interesting responses and shed some light on historical consumer trends, especially as they relate to natural resource use and environmental change. For example, if they ask an interviewee what he ate as a child, they should encourage the interviewee to discuss how much of the food was homegrown or bought...
6. Discuss changes in consumer habits.

Ask the students to reflect on what they learned from their own interviews as well as those conducted by their classmates. You may want to start the discussion by using some of the following questions: Did the students discover any consistent differences between their own consumer habits and those of the people they interviewed? What were those differences? What are some of the changes the students found most interesting? What do they think those differences mean for the environment, then and now?

Ask the students to reflect on the differences between the anecdotal, qualitative information they gathered (along with any quantitative information) in their interviews, and the purely quantitative data in the graphs they discussed at the beginning of the activity. In what ways were their interviews more interesting or revealing than the graphs? In what ways were they less helpful as a way to understand larger trends in consumer habits? Have the students comment generally on the unique insights one can gain from quantitative information and qualitative information, respectively.

You might also ask: Did any of the interviewees’ past experiences seem better or worse than the students’ current experiences? Did the interviewees have any judgments about the students’ levels of consumption? Did any of them comment on associated changes in environmental quality? What do the students predict will happen with the level of consumption in the future, both in the United States and the rest of the world? How might this affect environmental concerns such as pollution, wildlife habitat, and so on? What are some ways that people can affect consumer patterns and help change them for the future?

5. Share the oral history findings.

After students have finished gathering their oral histories, find a way for the students to share those histories with the larger group. They may want to create a display and spend time reading one another’s works. They may want to give presentations on what they learned. Or they may want to invite family members and the interviewees to a celebration and ask them to discuss their pasts.

in a store, how much was grown locally or in other regions, whether it was grown with pesticides, and so on. The students have two options: They can (1) interview at least one person in depth, or (2) conduct shorter interviews with a number of people. (If they choose option 2, students need to be sure that the interviews always cover the same topics.) Before students start with the interviews, you should review the “Tips for Interviewing.” You might encourage them to practice their interviewing techniques by interviewing a classmate about one of the topics on the list.

Tell your students that, after the interviews, they will need to present the results in a format that can be shared. They might write a one-page narrative about their interviewee, write an essay comparing that person’s consumption habits with their own (for example, how that person celebrated birthdays versus how the student celebrates birthdays), or write a short newspaper article about the interviewee. Whichever format students choose, they should illustrate their narratives, essays, and reports with photos and other pictures from the past and today, if possible. Such pictures could be obtained from local libraries, county archives, or their own families’ photo collections.

In their write-ups, students should draw inferences about the environmental effects of their interviewees’ past consumer habits compared to the effects of their own current consumer habits. Did their interviewees consume more or less in the past than the students do now? For instance, did they travel by car less? Did they live in a smaller house, buy clothes less frequently, and eat less packaged food? Or, did they consume more? What do such differences in consumer habits imply for the environment “back in the day” and now?
WRAPPING IT UP

Portfolio
The interview report can be saved in the portfolio.

Writing Idea
Have the students write a letter to their future grandchildren discussing their consumer habits. Remind them to give some specific examples, such as how much clothing they buy, how often they go shopping, and where their spending money comes from. Put the letter in an envelope and write "For My Grandchildren" on the outside. They can save it in a drawer or file.

Assessment
Have the students draw a picture that shows the differences between their own experiences and the experiences of the person they interviewed. Label the pictures with what is different, why they believe it is different, and why they think the changes between the past and the present are positive or negative.

Unsatisfactory—The pictures do not represent either the student's or the interviewer's reality, differences are not identified or explained, and positive or negative changes are not discussed.

Satisfactory—The pictures represent the differences between the generational experiences, differences in the pictures are labeled and briefly explained using information from the interview, and changes are addressed.

Excellent—Differences are highlighted in the pictures, there are rational hypotheses for the differences explained in part by data from the interview, and the student's perceptions of change are supported by evidence from the interview or personal perspectives.

Extensions
• Have the students create math problems for each other to solve using the "Consumer Habits Graphs." Or have the students create their own graphs with data they collect on other consumption-related trends.
• Have the students research some of the connections between consumer trends and biodiversity. For example, if the students interviewed people about cars and cars usage, they may research how cars affect air quality, climate change, and road building. If students talked to people about houses, they may investigate ways that the location, size, and energy efficiency of houses can help or harm biodiversity.
• Obtain a videotaped episode of "Frontier House," a public television program that depicts several contemporary families trying to live as frontier families did in the 1800s. (www.shop.pb.org). After showing it to your students, have them talk about consumer issues raised in the program.

RESOURCES
Visit Without Cost: Abandoning Modernity for the Frontier West by Benjamin Kline. Kirkland traces the political, intellectual, and social changes influencing the American concept of work. (Temple University Press, 1988.)


Over There Were Small Towns. New Urban Sprawl: Understanding America's Environmental Footprint and Social Norms by F. Reid Birken, Matthew D. Rabe, and Donald J. Elie. This provides information on communities and individual consumption. (Natural Resources Defense Council, 1999.)

The National Association of Homebuilders provides information on the increase in house sizes in the United States and how various construction methods affect the environment. (www.nahb.org/page.mux/category/sectionID=211)
Tips for Interviewing

Before the Interview
✓ When you call to set up an interview, introduce yourself by stating your name, school, grade, and the purpose of the interview.
✓ Set up an appointment far enough in advance to give you and the interviewee time to prepare.
✓ Carefully prepare your questions in advance. Limit the number of questions to about 10 or so. (Most people don’t have time for long interviews, and too many questions will make it difficult for you to process all of the information.)
✓ Find out if the interviewee would like a list of your questions in advance. If so, send them out as soon as you can.
✓ If you want to use a tape recorder or camera, ask the interviewee’s permission first. Make sure that the equipment works and that you know how to use it before your interview.
✓ If you are working in pairs, decide who will ask the questions and who will take notes. (If the person taking notes thinks of additional questions during the interview, he or she can ask them.)

During the Interview
✓ Be polite and considerate.
✓ Before you begin asking questions, explain how you will use the information.
✓ Ask your questions clearly and give the interviewee time to think and respond.
✓ Before you end the interview, thank the interviewee for taking the time to help you with your project.
✓ If you will be using the interview to write an article, ask the interviewee if he or she would like a copy of it. If so, get the interviewee’s address, and then be sure to follow through on getting the article to him or her as soon as you can.
✓ Ask for the interviewee’s mailing address so that you can send a thank-you note or any other material after the interview.

After the Interview
✓ Send a thank-you note a few days after the interview.
✓ If you are working in groups, meet with your interviewing partner soon after the interview to compare notes, impressions, and information.

Consumer Habits Charts

1: Average House Size in the United States, in Square Feet

2: Average Vehicle Miles Traveled per Capita in the United States

3: Total Waste per Capita in the United States (Before Recycling), in Pounds

4: Amount of Paper Discarded and Recycled in the United States, in Millions of Tons
Topic Tips

Use these topics as possible areas of focus during your interview. (You can also come up with your own topics.) Use the suggested questions to guide you, but be sure to generate questions of your own.

**Food.** Discuss topics related to family meals.
- Where did the family's food come from?
- How it was packaged (if at all)?
- How many meals were cooked at home versus ordered in or eaten out at restaurants?

**Houses.** Discuss the size and style of the house the interviewee grew up in.
- How many bedrooms and bathrooms were in the house?
- How many people shared each bedroom?
- How large were those bedrooms and bathrooms?
- If there was a yard, how big was it?
- Was there a garage? How many cars did it hold?

**Cars.** Discuss transportation options, particularly as related to cars.
- Did your family own cars?
- If so, what kind and how many?
- How often did you ride in your family car?
- Were you driven to school, friends' houses, stores, and so on?

**Recreation.** Find out what your interviewee did for fun as a child.
- How much free time did you have as a child?
- What kinds of activities did you pursue?
- Did you spend more of your free time indoors or outdoors?
- Did you buy things to pursue your hobbies?
- Do you think what you owned made you happier, and, if so, how?

**Clothes.** Discuss issues related to clothing choices.
- What kinds of clothes do you remember wearing as a child?
- How many new outfits did you get each year?
- Did you buy everything new, or did you wear hand-me-down clothes?
- Were your clothes handmade?
- Where did you shop for clothes?
- How much advertising for clothes do you remember?
4 Money Matters

OVERVIEW
Explore how attitudes affect behavior by surveying and analyzing people's beliefs and behaviors concerning consumer choices and the environment. Write and seal a confidential letter to yourself about your own consumer behaviors and your plan to reduce your impact on biodiversity.

SUBJECTS
social studies, mathematics

SKILLS
gathering (observing, collecting), organizing (categorizing), analyzing (identifying patterns, comparing and contrasting), discussing, interpreting (generalizing, summarizing, referring, defining, problems), applying (synthesizing, preparing (writing, reporting), citizenship (working in a group, planning and taking action)

FRAMEWORK LINKS
30, 31, 42, 56

VOCABULARY
attitude, consumer, conventionally grown, insecticide

TIME
two sessions, and at least one session two to three months later

MATERIALS
copies of the "Consumer Survey" (pages 94-95), one business envelope per student, one mailing envelope per pair of students

CONNECTIONS
To further explore students' attitudes toward consumer issues, try "Notable Quotations" (pages 74-76) and "Aisle Hopping" (pages 156-157)

It's no secret that, in our culture, money matters. With high levels of personal debt and the lowest levels of personal savings among developed nations, we are a nation of spenders. And our habits start early. Today's kids have a surprising amount of money to spend: more than $50 per month for an average 12- to 14-year-old. And most are, indeed, spending—not saving! It. Businesses estimate that kids aged 8 to 14 spend around $38 billion each year, and that teens aged 13 to 19 spend over $84 billion each year.

While unchecked spending can lead to personal debt, decreased savings, and bad financial habits, it's also bad for the Earth. According to environmental leaders, higher rates of consuming are straining natural resource supplies, increasing pollution, and directly using up many of the world's wild places—adding up to big costs for people, wildlife, and the planet. But money can also matter when it's spent in ways that benefit the environment. According to a 2001 poll, for example, 90 percent of teens surveyed said they would switch to a brand that supports a good cause, and 80 percent would urge their friends to do the same. But that support doesn't always translate into action at the checkout register. Another survey found that only 20 percent of shoppers were willing to buy an environmentally friendly alternative product if the cost were greater than that of the conventional product by 10 percent or more.

In this activity, students will investigate how beliefs, attitudes, and behaviors are interrelated. The students will examine their own feelings and survey other people's, and then analyze the results to draw some conclusions about why people make certain consumer choices.
Before You Begin

Make one copy of the "Consumer Survey" (pages 64-65) for each student and enough copies to distribute to other respondents outside of the class.

What to Do

1. Hand out copies of the "Consumer Survey."
Ask the students to complete the survey about their consumer attitudes and behaviors. Make sure they know that the surveys are anonymous. Collect these surveys. You'll want to compile the results onto a blank survey and bring it to class for Step 3. We suggest putting numbers next to each answer to indicate how many students gave that response. You might also list some representative examples of responses to questions 2, 3, 4, and 5.

2. Discuss the wider survey.
Tell the students that they're going to have a chance to solicit responses to the survey from other people. Make a list of different groups of people they would like to survey (for example, different grade levels of students, teachers, administrators, friends, and family members). Have the students divide into teams of two or three, and ask each team to select one of these groups to survey.

Each team should then make a plan for when and how they will survey their group. How many copies of the survey will they need? When can they distribute these to their group? Explain that each team will receive a manila envelope to use for anonymously gathering respondents' surveys. Where will they place this envelope (for example, in a classroom or staff lounge)? The teams should practice explaining the survey process among themselves so that they can explain it clearly to respondents. Once each team has made a plan, make enough copies of the survey and distribute them. Then select a day when all the students will bring in the results of their surveys.

3. Compile, share, and analyze survey results.
Show the students the compiled results of their personal surveys. Explain how you added up the responses and wrote these numbers beside each answer, and how you went about choosing sample responses to questions 2, 3, 4, and 5.

Tell the students that they'll be compiling the results of the surveys from their groups in the same way. Give each team a blank survey and have them compile their results on it. When they're finished, have each team display their compiled survey results around the room.

Now ask all the students to walk around the room and look over the survey results that have been posted. Ask each student to record a specific observation about a (new or interesting result in the surveys. For example, do they notice a big difference in how students in

Wealth Accumulation: People today are, on average, four-and-a-half times richer than their great-grandparents at the turn of the twentieth century.
5. Write letters about consumer choices.
Ask the students to write a letter to their future selves describing a plan for reducing the environmental consequences of their consumer choices. You might encourage them to think about the following types of actions and to explain their environmental benefits:

- Reduce the quantity of a particular item that is purchased regularly.
- Refuse to buy a particular item.
- Purchase a green alternative to a product purchased regularly.
- Replace a consumptive activity (like shopping) with a non-consumptive activity (like walking or playing a game with friends).
- Write to a company that makes a product purchased regularly, encouraging the company to produce or carry more environmentally friendly products.

Encourage the students to write down what obstacles they think they will encounter during their efforts to change their consumer habits. Then pass out the business-sized envelopes and ask the students to seal their letters inside before handing them in for safe keeping.

6. Open the mail.
After 2 to 3 months, have students open their sealed envelopes. In groups of 3 or 4, encourage them to share any thoughts about how and why their attitudes and behaviors toward consumer choices have or have not changed. Were they successful? Why or why not? What obstacles did they face? How did they overcome them? (Answers will vary.) Have each group share their impressions and discoveries with the rest of the class.
WRAPPING IT UP

Portfolio
Save a copy of the students' personal survey results and their analysis of the group surveys. They can also save their letters to themselves.

Writing Idea
Challenge the students to keep a shopping journal for two weeks. At the end of each day, ask them to write down what they purchased that day, how much it cost, and how it made them feel. At the end of two weeks, have the students re-read their entries and write an update. Which of the purchases are still making them happy? How much money did they spend altogether? Do they feel OK about this spending? How might their shopping patterns affect the natural world? Is there anything about their habits they'd like to change?

Assessment
Have each student describe the group they surveyed. Then have them explain how their own answers would be different from those of the group. Why do they think this?

Unsatisfactory—The group is identified, but few differences or similarities between the student and the group are identified and reasons for the differences or similarities are missing or not logically connected.

Satisfactory—The group surveyed is clearly described, similarities and differences between the group's responses and the student's responses are compared, and reasonable explanations are provided.

Excellent—The group surveyed is described in detail, similarities and differences are clearly enumerated, and the explanations for differences highlight the difference in attitude between the student and the group.

Extensions
- Have students make charts or graphs to summarize a particular set of data from the wider surveys.

- Not only do our spending habits affect us financially, but they also affect the planet. Ask the students to choose one type of product that they buy and research some of its environmental effects, both positive and negative. Then, ask the students to consider how this information might affect their future purchasing. Will they change the amount or type of products they buy?

- Have students view the video "The Cost of Cool" (see Resources, below) as a way to further explore how shopping is a part of the teenage lifestyle, as well as to explore some of the ways that lifestyle affects the planet. The National Wildlife Federation has produced an educator's guide to accompany the video, and it can be used to explore some of the issues in more detail.

RESOURCES

"The Cost of Cool" is a half-hour video that helps students explore the environmental and social costs of buying the newest, coolest stuff. The video is available online through the Video Project, and the site also provides information on ordering the accompanying teacher's guide. www.videoproject.net.

"Think Twice" is a seven-minute video that follows two high school students through a typical day at school to explore the issues of teenage consumption and the pursuit of happiness. www.videoproject.net.

Consumer Reports' Web site "All4Kids" provides information to kids about various money matters. www.all4kids.org.
Consumer Survey

DATE: ____________________

Circle: Student / Administrator / Staff / Educator / Other

If student, what grade? ______

Directions: Please complete and return this anonymous survey to the envelope located in ________

1. How often do you shop (i.e., order online, order from a catalog, or go to a store to buy things)?
   - 0-1 times/week
   - 2-3 times/week
   - 4-5 times/week
   - 6+ times/week

2. What do you mostly shop for?
   - Things I need. For example:
   - Things I want. For example:

3. If you could buy anything right now, what would be the first three things you would buy, and why?
   - a.
   - b.
   - c.

4. List the last six products you bought (or were bought for you) that you can remember.
   - a. ____________
   - b. ____________
   - c. ____________
   - d. ____________
   - e. ____________
   - f. ____________

5. Do you think that the products you buy affect the environment? Do your choices take that into account? Explain why or why not.

World Wildlife Fund
Center for a New American Dream
6. If money were no factor, which of the following activities would you choose to do this weekend? Rank them from most preferable to least preferable, with 1 being most preferable and 2 being least preferable.
- Read
- Do arts & crafts (e.g., photography, knitting, drawing)
- Play sports
- Shop
- Watch television
- Hike, camp, or go kayaking
- Other (please describe)

8. Rank the relative importance of each of these factors and its influence on your most recent purchases. (1 = most influence; 7 = least influence)
- The way it looks
- Other people who have it
- Cost
- Quality
- Where it was manufactured
- The working conditions of the people who make the product
- Environmental harm caused by its manufacture

9. Suppose your friend was about to buy a shirt made from conventionally grown cotton. If you knew that conventionally cotton farming accounts for 25 percent of the world’s insecticide use, and you also knew your friend could buy a similar shirt a block away made from 100-percent organic cotton but costing $10.00 more, which of the following would you do?
   a. Encourage your friend to buy the organic cotton alternative.
   b. Say nothing.
   c. Let your friend buy the conventional cotton shirt, but share what you know about traditional cotton and insecticides.
   d. Other (please explain)

7. How likely would you be to buy something even after someone told you that making, using, or disposing of it would harm wildlife (through habitat loss, pollution, and so on)?
   (1 = not likely; 10 = likely)
   1 2 3 4 5 6 7 8 9 10
   Not likely     Likely
A Material World

OVERVIEW
Analyze the lyrics in pop songs and discuss the songs' perspectives on human needs and wants. Explore definitions of needs and wants, and then create an original song or poem that describes the needs and wants of young people.

SUBJECTS
Language arts, social studies

SKILLS
Gathering (reading comprehension), listening, organizing (categorizing), analyzing (identifying patterns comparing and contrasting, questioning, discussing), interpreting (listening, drawing conclusions, identifying cause and effect), applying (creating, presenting (writing, public speaking))

FRAMEWORK LINKS
37, 40

VOCABULARY
Assimilation, consumer, consumption, goods and services, money, literary technique, needs, wants.

TIME
One session

MATERIALS
 Copies of "Material Girl" and "Money" (pages 102-103), copies or overhead transparencies of "Not For002:04, ""I Don't Care," "The Best Things in Life Are Free," and "You Don't Care Too" (pages 104-105), recordings of "Material Girl" and "Money" (optional)

CONNECTIONS
You may want your students to complete the survey in "Money Matters" (pages 90-91) before doing this activity, so that students can look at their most recent purchases and decide which items represent goods and which represent wants. For further exploration of the motivations behind purchasing decisions, try "Analysis on Art" (pages 110-114) and "Art in Advertising" (pages 115-116).

The United States is a nation of shoppers. We buy clothes, food, music, cell phones, and a host of other products that provide for our needs and wants, and our consumption levels are growing. Much of this consumption is driven by pleasure-seeking, but is there a limit to how happy buying things makes us? Research suggests that, as Americans' consumption levels have increased, the number of Americans that report that they are "very happy" has not increased accordingly. In terms of the things we buy, what makes us most happy? Which things that we buy help us survive (needs)? Which are things that we think will make our lives better, but are not necessary for survival (wants)? Do our motivations for buying products matter?

In this activity, students will begin to tackle some of these tough questions by analyzing the lyrics to two pop songs performed by Madonna. The songs use a variety of literary techniques to explore consumption patterns. Your students will use these songs as a jumping-off point to begin an exploration of consumption's effectiveness at satisfying wants and needs. Then they'll get a chance to tap their creativity to develop a song or poem of their own that expresses their perspective on consumption, wants, and needs.
Before You Begin

Make one copy of the "Material Girl" and "More" handouts (pages 102-103) for each student (or, make copies for students to share). (Note publisher restrictions at the bottom of "Material Girl.") Make copies or overhead transparencies of the other songs provided (pages 104-106). If possible, find recordings of any of the songs in the activity and use a tape or CD player to listen to them.

What to Do

1. Read, listen to (optional), and discuss "Material Girl" and "More."
   Hand out one copy of each song to each student or have students share copies. After students have read through the song lyrics and listened to recordings of the songs (if you have them), ask students for their first impressions of what the songs are about. (Answers will vary. Students may recognize that the song "Material Girl" describes the opinions of a woman who is intensely focused on material possessions. According to this view, the nature of today's modern world makes material goods the most important consideration for people—even more important than love. "More" is about material possessions, becoming rich, and having lots of things. The song seems to suggest that material possessions make people even happier than intangible things such as love, music, and an ocean view. Students may or may not pick up on the song's ironic ending, which implies that people who strive to have everything will never be satisfied because they will always want more.)

2. Examine literary techniques used in lyrics.
   First, have students read or listen to the song "Material Girl" more closely. How do the songwriters use puns, or double meanings of words, to support the song's theme? (In the first verse, the songwriters use the word "credit," which means "recognition," but also play on the financial use of the word, as in credit cards or adding to the balance of an account. In the fourth verse, the songwriters use the word "interest," literally meaning "attention," but also play on the word's financial meaning. In the sixth verse, the songwriters play on the word "rich," implying that the singer is both rich with experience and money.)

Next, have students read the lyrics to "More." Tell students that this song could be considered a fairy-tale story with an ironic ending. (If students are not familiar with the term "irony," explain that it's a literary technique in which the author creates an outcome that is the opposite of what the reader might expect.) What evidence can students find in the song that it is a fairy tale? (The song begins with the words "Once upon a time," and suggests a rags-to-riches type of life story.) In what ways is the song's ending ironic? (Although most of the song is about how material possessions can make a person happy, and suggests that the more possessions you have the happier you'll be, in the end it argues that you can never have everything because you'll always want more, so you can never be truly happy.)

Explain to students that this song was written for the movie "Dick Tracy"—a big-screen version of a cartoon that depicts the life of a 1930s detective. The movie's producers hired Stephen Sondheim, a famous Broadway songwriter, to compose the movie.
score, which includes "More." Sondheim alludes to several other songs in the first few verses of the song. (You may want to explain that "allusion" is a technique used by writers to make a reference to something in an indirect way.) There are three allusions to other songs in the first two verses of "More." Next have the students read "I Got Plenty O' Nuttin'," "The Best Things in Life Are Free," and "I Got Rhythm." Point out that the lyrics to "I Got Plenty O' Nuttin'" and "I Got Rhythm" are written in 1930s slang, highlighting some of the cultural issues of the times. Can the students find allusions to these three songs in "More"? The allusions include:

"... I had plenty of nothing"
(line 1): This is an allusion to the song "I Got Plenty O' Nuttin'" from the musical Porgy and Bess, which opened in 1935.

"That was when the best things in life were free"
(line 6): This is an allusion to the song "The Best Things in Life Are Free" from the musical Good News, which opened in 1927.

"Who could ask for anything more?"
(line 11): This is an allusion to the song "I Got Rhythm," which was written in 1930 for the musical Girl Crazy. ("I had rhythm" [line 2] is a less subtle allusion to the same song.)

(Students may also recognize the allusion in line 50 to the nursery rhyme "Old Mother Hubbard," who could not feed her dog because her cupboard was bare.)

How do allusions to these songs give meaning to "More"? (These songs from earlier musicals echo the sentiment described at the beginning of "More": that money can't buy the things that are most important in life.) How do the allusions help set the tone for the song? (These are all songs that were popular during the time period that the movie is meant to recreate. Alluding to these songs helps establish the time period for "More.")

Now that students have read "Material Girl" and "More" closely, ask them to describe the similarities and differences between the two songs. (On the surface, both songs seem to suggest that having many material possessions can make a person happy. The song "More," however, questions this thinking in the end, suggesting that it is impossible to be satisfied when you always want more.)

3. Discuss needs and wants.
Ask the students to review the lyrics to both songs. Do the students think the lyrics describe people trying to meet their needs or people trying to satisfy their wants? Can students define the terms needs and wants? (Although the terms are not easy to define, in general, things we need are things that help us survive, such as food, shelter, water, and medicine. Things we want are things that add comfort or interest to our lives, such as dishwashers, vacations, designer clothes, television, and so on. Sometimes needs and wants overlap and differ from person to person and place to place.) Both songs focus on fulfilling many wants as a way to be happier.

Ask your students to write down the last five things they can remember buying. How many of those purchases represented needs, and how many represented wants? Which purchases are difficult to categorize? (For example, a soda may help

**FACTOID**

**WEALTHY FEW:** In 2000, the richest 3 people in the world controlled more wealth than 600 million people in the world's least developed nations.
provide you with liquids to quench your thirst, suggesting it fulfills a need, but it also is much more expensive than tap water and is often purchased for its sweet taste, suggesting it fulfills a want.)

4. Evaluate reasons for consumers' increasing wants.

Write the following statements on the board or on an overhead transparency, or read them aloud to students:

- Since the mid-1950s, spending for personal consumption in the United States has nearly doubled.
- Worldwide, people have consumed as many goods and services since 1950 as all previous generations combined.
- Regular surveys by the National Opinion Research Center and the University of Chicago reveal that the percentage of Americans who say that they are "very happy" has stayed the same since 1957.

Ask students what this information has to do with the song lyrics that they read. (The statistics provide some indication that the sentiments in the song "More" are true for many Americans. Although consumption levels have increased, the percentage of people who say they are very happy has not increased accordingly. This suggests that increased consumption may not necessarily increase people's happiness.)

According to these statistics, consumption per person has increased dramatically since the 1950s. Ask students if they think this reflects increasing needs or wants. (Since human needs do not change dramatically with time, this increase is almost certainly caused by an increase in the number of products that people want.) Ask students why they think people have more wants today. Have them focus especially on people their own age. Some of the motivators you might discuss include the following:

Advertisements: People today are bombardad by advertisements in an increasing number of media, from television and magazines to buses and public restrooms. Many of the ads are designed to make people think they "need" a certain product, when in fact most of the products represent luxury items or "wants."

Music: Many songs today talk about success in terms of material goods. Music videos often feature artists in expensive cars, on planes, in clubs, and wearing fashionable and pricey clothes and jewelry. The portrayal of this type of life sends a message that material products are associated with fame, fortune, and being "cool."

Television and Movies: TV and movies often show famous and attractive actors with expensive luxury goods. This sends a message that you will be like these successful people if you have certain material goods.

Technological Advancements: Some new products make life a lot easier for people. For example, for many people it's easier to drive a car than take a bus. And, for that matter, it can be easier for every person in the family to have his or her own car than to share cars. Other inventions, such as dishwashers, air conditioners, and cell phones, save time and make life easier and more comfortable for people. And cheap consumer goods have become increasingly available over the past few decades, making it easier and easier for consumers to buy the things they want.

Longer Working Hours: According to many people, our lives are busier today than they were 50 or 100 years ago. New products, such as packaged foods, fast foods, and mobile phones, are intended to help us get more done in a day.
Peer Pressure: Perhaps most importantly, many people (and not just young people) feel as if they need to “keep up” with their peers. This might mean buying more clothes that are in style, buying the latest music CDs, driving the best cars, or doing other things just to keep up with their friends.

Your students will probably recognize a variety of other reasons for the growing list of wants in this country. Be sure to emphasize that, while many of our purchases do represent things that we want and don’t need, it doesn’t make us bad or greedy. Many of our wants are things that make our lives easier or more enjoyable. The key is to be aware of the differences between the things we need and the things we want so that we can make more informed decisions when we shop.

6. Create original song lyrics or poems.

Now that the students have a better idea of the differences between wants and needs and have discussed some of the reasons we have so many wants in this country, tell them that it’s their turn to write a song or poem about this topic. They can write their song or poem in a variety of different styles (for example, they might create a rap, ballad, or country-western song), and they can make their song serious or use irony, hyperbole, or other literary techniques to make light of our wants. The students should work to ensure that their song or poem creatively demonstrates that they understand the differences between needs and wants. In the songs, they should also take a position on the topic, using the lyrics to articulate how they feel about life as a consumer. If they need some inspiration, you can share the lyrics to the Jennifer Lopez song, “Love Don’t Cost a Thing,” to help them develop ideas.

An entertaining way for your students to educate others would be to record the songs they write and share them with the rest of the school or others in the community. Groups of students can even design a CD label, conduct an “interview” with the singer, and write a press release for the launch of their song. Ask them to come up with inventive ways to distribute the song to audiences without contributing to consumer problems.
WRAPPING IT UP

Portfolio
The students' song lyrics (or the recording, press release, and so on) can become part of their portfolios.

Writing Idea
Have the students write a short essay describing how the terms "needs" and "wants" relate to the purchases they make. What kinds of needs do they have? What kinds of wants? Do they buy things for both needs and wants? Is it hard to distinguish between the two? Do they ever have everything they need? Do they ever have everything they want?

Assessment
Have each student find an ad from a magazine or newspaper, cut it out, and tape it to a piece of paper (or have them describe in detail an ad from television, radio, or the Internet). For their ad, the students should describe how the product or service meets a need or satisfies a want. (In most cases, the ads will probably be satisfying a want, although students might be able to define an ad for medicine or a house as a need.)

Unsatisfactory—The description is superficial and does not reveal an understanding of the differences between needs and wants or the social motivations being appealed to by the advertisement.

Satisfactory—The description reveals a basic understanding of the terms needs and wants, and at least one clear need or one clear want is identified for the product.

Excellent—The description reveals a clear understanding of the terms needs and wants, and includes several concrete examples that show a depth of thinking.

Extensions
- Have each student choose a popular song that he or she would like to analyze. What messages does the song send about consuming and happiness? What does it say about modern needs and wants? Does the song have a music video? How does the video support the song's meaning?
- Have the students investigate how other aspects of pop culture also reflect consumer habits. The students might look for cartoons that poke fun at our consumer culture; television shows or movies that either encourage or discourage consumption; poems, short stories, or novels that tackle these issues; or other avenues of pop culture.

RESOURCES

- "Rethinking the Good Life" by Gary Gardner and Erik Akerblom is a chapter in the book "State of the World 2004" special focus: The Consumer Society, that explores the connections between well-being and the consumption of goods. (Worldwatch Institute, 2004)
"Material Girl"

Words and Music by Robert S. Rans and Peter H. Brown
Performed by Madonna

Some boys kiss me,
Some boys hug me,
I think they’re O.K.
If they don’t give me proper credit,
I just walk away.

They can beg and they can plead,
But they can’t see the light (that’s right).
’Cause the boy with the cold hard cash
Is always Mister Right.

Refrain:
’Cause we are living in a material world,
And I am a material girl.
You know that we are living in a material world,
And I am a material girl.

Some boys romance,
Some boys slow dance,
That’s all right with me.
If they can’t raise my interest, then I
Have to let them be.

Some boys try and some boys lie, but
I don’t let them play (no way).
Only boys who save their pennies
Make my rainy day.

Refrain:
’Cause they are living in a material world (material]
And I am a material girl.
You know that we are living in a material world.
And I am a material girl.

And I am a material girl
(repeat]

Living in a material world (material]
Living in a material world
(repeat]

Boys may come and boys may go,
And that’s all right you see.
Experience has made me rich,
And now they’re after me,

Refrain:
’Cause everybody’s living in a material world
And I am a material girl.
You know that we are living in a material world.
And I am a material girl.
Living in a material world and I am a material girl
(repeat and fade)

Note: According to the publisher’s restrictions, this song may not be photocopied more than 50 times by any one individual.
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"More"
Music and Lyrics by Stephen Sondheim
Performed by Madonna

Once upon a time I had plenty of nothing,
Which was fine with me.
Because I had rhythm, music, love,
The sun, the stars, and the moon above,
Had the clear blue sky and the deep blue sea.
That was when the best things in life were free.

Then time went by and now I got plenty of plenty,
Which is fine with me.
'Cause I still got love, I still got rhythm,
But look at what I got to go with 'em.
"Who could ask for anything more?"
I hear you query.
Who would ask for anything more?
Well, let me tell you, dearie.

Got my diamonds, got my yacht.
Got a guy I adore.
I'm so happy with what I got, I want more!

Count your blessings, one, two, three!
I just hate keeping score.
Any number is fine with me.
As long as it's more!
As long as it's more!

I'm no mathematician,
All I know is addition.
I find counting a bore.
Keep the number mounting.
Your accountant does the counting.
(More! More!)

I got rhythm, music too,
Just as much as before.
Got my guy and my sky of blue,
Now, however, I own the view.
More is better than nothing, true.
But nothing's better than more, more, more.
Nothing's better than more!

One is fun, why not two?
And if you like two, you might as well have four,
And if you like four, why not a few.
Why not a slow—more?
(More! More!)

If you've got a little, why not a lot?
Add a bit and it'll get to be an odd.
Every jot and tittle adds to the pot.
Soon you've got the kit as well as the caboodle.
(More! More!)

Never say when, never stop at plenty,
If it's gonna rain, let it pour.
Happy with ten, happier with twenty.
If you like a penny, wouldn't you like much much more?
Or does that sound too greedy?
That's not greed—no, indeed.
That's just stocking the store.
Gotta fill your cupboard.
Remember Mother Hubbard.
(More! More!)

Each possession you possess
Helps your spirits to soar.
That's what's soothing about excess—
Never settle for something less.

Something's better than nothing, yes!
But nothing's better than more, more, more.
(Except all, all, all)
Except all, all, all,
Except once you have it all (have it all).
You may find, all else above (find all else above),
That through "things" are bliss.
There's one thing you miss, and that's
More! More!
More! More! More! More!
More! More! More!

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“I Got Plenty O’ Nuttin’”
By George Gershwin, Du Bose and Dorothy Heyward, and Ira Gershwin

Oh I got plenty o’ nuttin’,
An’ nuttin’s plenty fo’ me,
I got no car,
Got no mule,
I got no misery.

De folks wid plenty o’ plenty,
Got a lock on de door.
’Fraid somebody’s a-goin’ to rob ’em
while dey’s out a-makin’ more.

What for?

I got no lock on de door,
(dat’s no way to be.)
Dey kin steal de rug from de flour.

Dat’s ukleh wid me,
’Cause de things dat I prize,
Like de stars in de skies,
Are all free.

Oh, I got plenty o’ nuttin’,
An’ nuttin’s plenty fo’ me,
I got my gal,
got my song,
Got hebben the whole day long.

Got my gal,
got my Lard,
got my song.

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“I Got Rhythm”
Music and Lyrics by George Gershwin and Ira Gershwin

Days can be sunny,
With never a sigh;
Don’t need what money can buy.

Birds in the tree sing
Their day’s of song.
Why shouldn’t we sing along?

I’m chipper all the day,
Happy with my lot.
How do I get that way?
Look at what I’ve got:

Refrain:
I got rhythm,
I got music,
I got my man—
Who could ask for anything more?

I got daisies,
In green pastures,
I got my man—
Who could ask for anything more?

Old Man Trouble,
I don’t mind him,
You won’t find him
‘Round my door.

I got starlight,
I got sweet dreams,
I got my man—
Who could ask for anything more,
Who could ask for anything more?

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“The Best Things in Life Are Free”
Words and Music by Lew Brown, B.G. DeSylva, and Ray Henderson

There are so many kinds of riches,
And only one of them is gold.
The wealth you miss, remember this:
Worthwhile things cannot be bought or sold.
The moon belongs to ev’ryone,
The best things in life are free.
The stars belong to ev’ryone,
They gleam there for you and me.
The flowers in Spring,
The robins that sing,
The sunbeams that shine,
They’re yours, they’re mine!
And love can come to ev’ryone,
The best things in life are free.

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"Love Don’t Cost a Thing"
Words and Music by Damon Sharpe, Greg Lawson, Georgette Franklin, Jeremy Monroe, and Amil Harris. Performed by Jennifer Lopez

Think you gotta keep meiced,
you don’t.
Think I’m gonna spend your cash,
I won’t.
Even if you were broke,
my love don’t cost a thing.
Think I wanna drive your Benz,
I don’t.
If I wanna floss, I get my own.
Even if you were broke,
My love don’t cost a thing.

When you rolled up in the Escalade,
saw the dub you gave to the valet.
Knew that it was game when you looked at me,
pullin’ up your sleeve so I could see the Rolle tine.
Saw you later in the corner booth,
raising up a toast so I would notice you.
But you’re hard to miss.
Think you oughta know.
 Doesn’t matter if you’re ballin’ out of control.

All that matters is
that you treat me right.
Give me all the things I need
That money can’t buy, yeah.

Love don’t cost a thing.
It don’t cost a thing.
a thing.
yeah, yeah, yeah.

You think the money that you make
can substitute the time you take
to get the keys into my heart.
Think you can win my heart;
don’t know what’s in my heart.

I think you need to take some time
to show me that your love is true.
There’s more than dollar signs in you.
Then you can win my heart,
and get what’s in my heart.

Refrain:
Think you gotta keep meiced,
you don’t.
Think I’m gonna spend your cash,
I won’t.
Even if you were broke,
my love don’t cost a thing.
Think I wanna drive your Benz,
I don’t.
If I wanna floss, I got my own.
Even if you were broke,
My love don’t cost a thing.

(Repeat)
"What is the good of having a nice house without a decent planet to put it on?"

—Henry David Thoreau, philosopher
6 Analyze an Ad

OVERVIEW
Create a formula to calculate the average daily rate of exposure to advertisements; analyze contemporary ads from the standpoint of a future archeologist, and critique green ads about the links between consumer choices and biodiversity.

SUBJECTS
Language arts; social studies; mathematics

SKILLS
Gathering (identifying, recording, organizing); evaluating (questioning, contrasting, interpreting); constructing (summarizing, drawing conclusions, identifying cause and effect); applying (investigating, creating, evaluatingpersons); presenting (illustrating, acting); collaborating (working in a group, taking a position)

FRAMEWORK LINKS
32, 47, 77

VOCABULARY
Advertisement, archeologist, architect, overconsumption

TIME
Two to five sessions, plus time for research and creating ads

MATERIALS
A variety of advertisements from old magazines and newspapers (approximately five ads for every two students), copies of the "Advertising Archaeology" and "Anatomy of an Ad" worksheets (pages 113-114); tape, drawing materials, examples of environmentally responsible and other positive ads

CONNECTIONS
"Money Matters" (pages 30-35), "A Material World" (pages 96-101), and "An Eco-Profile" (pages 516-519) provide further insight into the motivations behind our purchasing decisions. Try "Natural Quotations" (pages 74-78) with your students before and after carrying out your "Analyze an Ad" to see if their opinions about consumption change after they learn more about advertising.

Every day, the typical American is exposed to more than 3,000 advertisements in a variety of media. That same American will watch three hours of television ads over the course of his or her lifetime. And kids are no exception. Corporations know that kids have their own money to spend and that they often play a big role in their family's decisions about what to buy. Six millions of dollars are spent every year to draw kids' attention to products, leading them and their parents to purchase a range of goods, from food to clothing to electronic games.

It's important that young people learn to view ads critically. Being able to understand the mechanics of ads can help young people make more informed decisions about what they want to buy. If they buy more carefully, they'll be more likely to reduce pressure on limited resources and eliminate some of the waste that comes with overconsumption. What's more, some social scientists believe that young people who can think more objectively about advertising might lead happier, healthier lives because they'll be less likely to be fooled into thinking that products can deliver the better lives that advertisements sometimes promise.

In this activity, your students will take a closer look at the number of ads that surround them every day and what those ads try to tell us about our values, beliefs, and so on. They'll ask tough questions about the ways ads do and do not lead to wise consumption and, in turn, the health of the planet. Then, they'll create ads of their own to convey their messages about the connection between consumption and biodiversity.
Before You Begin

Gather a variety of advertisements from newspapers and magazines (including some that are directed toward kids) so that you have about five ads for every two students in your group. Try to find some advertisements that include images of wildlife or natural places. Make copies of the "Advertising Archeology" and "Anatomy of an Ad" worksheets (pages 313-314) for each pair of students. Gather sample ads that support environmentally or socially responsible products or ideas to share with students before they develop their own green ads (see Step 6 for ideas).

What to Do

1. Calculate personal exposure to ads.
   Ask the students if they have any idea how many ads they see each day. Divide the class into teams of two and tell the teams that their assignment is to come up with a formula for calculating the number of ads they see in a typical day. You may want to suggest that the students first think about how they would define an ad. (An ad is something that makes a product, service, or company known to the public.) Then encourage them to think about all the different places where they see ads (for example, magazines, billboards, TV, clothing, sports stadiums, radio, stores, Internet, mail, NASCAR cars, tennis tournaments, preview before a movie, product placements in a movie, and restaurants).

Tell the students that their formula should be as descriptive as possible. For example, they may write it as: [# magazines glanced at x 20 ads seen] + [# of billboards passed] + [# of times seeing a person wearing clothing with manufacturer’s logo] + [# hours watching television x # commercials per hour].

2. Assess ads in the room and building.
   Before the students share their formulas, have them assess the prevalence of ads in the room and building you are in. First have the students race to see who can count the most ads in the room within five minutes. Then have them work in small groups to search for ads in different areas of the building. Ask the students to share their observations. How many ads would they say they are exposed to on a typical day? Now invite the teams to revise their original formulas based on these assessments.

3. Share the calculations.
   Have the students write on the board their formulas and their estimates of the total number of ads they think they are exposed to on a typical day. Are the formulas very similar or very different? What are some of the strengths and weaknesses of the
different formulas? Now tell the students that some experts estimate that those of us in the United States are exposed to 3,000 ads per day. How does this number compare to the ones they came up with? If their numbers are very different, why do they think that is?

4. Interpret “ancient” ads. Now tell the students they’re going to have an opportunity to look more closely at ads. Organize the group into the same or different pairs. Then give each student pair five or so ads extracted from an assortment of magazines, newspapers, and other publications.

Ask the students to imagine that they are archeologists from the future who have just discovered this preserved pile of ads at an ancient burial ground thought to date back to around 2005. Assume that this is the first and only discovery of any artifact found around that time period (no one has yet discovered any books, buildings, journals, tools, or other materials from this culture). Ask the students to prepare a list of at least 10 assumptions that they would make about this ancient culture, based solely on their pile of advertisements. Then have them discuss the questions outlined on the “Advertising Archaeology” worksheet.

If time allows, invite the class as a whole to share the highlights of their small-team discussions, reviewing the assumptions they made and the questions listed above.

5. Create and interpret ads to figure out their tactics. Now tell the students that their next assignment is to create an ad of their own. Tell students they will have five minutes to imagine a one-page advertisement to sell a product and then sketch it. Emphasize that the ad only needs to be very rough, demonstrating one or two tactics that the students have noticed in regular advertising. For example, they could include an image of the product, a logo, or a slogan. You can either have each student choose a product or you can make a list of products and assign them.

When the ads are completed, post them around the room and invite the students to examine one another’s work. Challenge the students to identify at least three techniques that were used to attract a consumer. You can hand out copies of “Anatomy of an Ad” to help students with their analysis.

Note: The “Anatomy of an Ad” sheet is designed to provide a basic introduction to viewing ads more critically. See the Resources at the end of this activity for other sources that can help students learn more about how advertisements are designed to deliver messages.

Students’ lists should include techniques such as:

- Popular personality endorsements: Celebrities provide testimonials on behalf of the value of the product. Ad conveys the message that the product must be valuable, worthwhile, and so on, because the celebrity likes it.

Need to have it: Ad conveys the message that you can’t live without the product.

FACTOID

REAS States: The United States makes and consumes one-third of the world’s paper.
6. Introduce other kinds of ads.
Explain to the students that not all ads have to sell a product—some ads demonstrate responsible behavior or promote positive attitudes about the environment. Gather several examples and share them with the students. For example, in WWF’s Biodiversity Basics, you can find some biodiversity ads to copy for the students or display on an overhead projector. The Alliance to Save Energy Web Site (www.ase.org) includes humorous energy-related commercials such as “Static Electricity House” that you can project. Based on these ads, can the students make any additions to their list of advertising techniques?

7. Discuss advertising and consumer behavior.
Ask the students to reflect on the activities they’ve just done—calculating their exposure to ads, considering the values and beliefs embedded in ads, and analyzing the techniques that advertisers use to convince us to do or buy something. What are the students’ general thoughts about advertising at this point? What are the benefits of advertising? What are some of the potential drawbacks? Do your students think advertising encourages people to consume too much? Why or why not? How does overconsumption affect individuals? How does it affect biodiversity?

8. Create an ad about the connections between consumer choices and biodiversity.
Tell the students that their challenge is to use the strategies they listed in Steps 5 and 6 to create their own ads that encourage people to reduce the environmental effects of consumer choices. Have the students work individually or with a partner to create a full-color print ad or a live commercial that they think will help a target audience (students, teachers, and so on) change their consumer behavior to better support the environment.

Exhibit the ads and perform the commercials within the room so that everyone can review them and discuss their techniques for capturing their audience’s attention and delivering their message. Then, with permission from the administration, have your students post their ads around the building and perform their commercials for others to see.
WRAPPING IT UP

Portfolio
The students' ad exposure equations and green advertisements can be used for their portfolios.

Writing Idea
Ask the students to think of an ad they have encountered recently that they think was either manipulative or misleading. Have them write a letter to the business or group that is responsible for the ad, explaining their thoughts and concerns.

Assessment
Have the students create an ad (for print medium) that promotes critical thinking about advertisements. The ad should incorporate many of the elements of what they learned through the activity. Once their ad is completed, have them write a short explanation of why they developed the ad the way they did.

Unsatisfactory—The ad includes only three or fewer components from class. The explanation is missing or does not adequately explain the elements of the ad from the class activity. The description does not link to the ad itself.

Satisfactory—The ad and explanation incorporate at least four components of things discussed in the class. The explanation provides solid justification for the decisions.

Excellent—The ad clearly demonstrates what the description explains. More than five components of the class discussion are incorporated. The explanation reveals critical and creative thinking about the ways the ad uses the ideas from class.

Extensions
- Many public schools are turning to advertisements to help make up for large budget shortfalls. While these lucrative contracts can be a boon to cash-strapped schools, some people have questioned whether it is appropriate to expose young people to ads in school. Have the students conduct research on this topic and present a proposal to the school board regarding their position on the issue.

- TV commercials use many of the same tactics as print ads to deliver messages to their audiences. Have the students take a closer look at the kinds of commercials that appear on TV during shows targeted at different audiences. For example, one group of students might analyze commercials that appear during cartoon shows for very young children. Another group might look at commercials during a professional sports event, such as a football or basketball game. And a third group might watch commercials during prime-time network television. How are the commercials different, and what makes those ads effective at getting their audience's attention?

RESOURCES
The PBS Kids campaign, "Don't Buy It! Get Media Smart!" provides an overview of methods used in advertising, accompanied by many examples and interactive games. www.kids.org/dontbuyit

The Just Think Foundation helps young people think critically and independently about words and images in the media. www.justthink.org

The Media Awareness Network provides a variety of resources for parents and teachers who want to help young people better understand the role of the media. www.media-awareness.ca

Consumer Reports Web site "Alliance" provides information to kids about advertising. Click on the "Ad Smarts" link. www.alliance.org
Using only your pile of ancient ads, prepare a list of at least 10 assumptions about the ancient culture that created the ads. Then discuss the following questions.

- How would you explain the character of the people portrayed in the ads?

- What do you think this culture believes and values? What makes you think this?

- If these images are intended to sell something, what other things besides the obvious are they trying to sell? For instance, are they trying to sell a certain type of lifestyle?

- What do these ads imply about attitudes toward the environment and natural resources in this culture?

- If the ads feature pictures of animals or outdoor life, what can you determine about the role of wildlife and the environment in this culture?
Anatomy of an Ad

Step 1
Describe the Ad

What is the ad selling?
Who is the ad’s target audience?
How is the ad composed?
What objects or items are featured?
What elements of the ad are used to get the attention of the target audience?

Step 2
Analyze the Content

What is the general mood of the ad?
Are people featured in the ad? If so, what do they look like? What are they doing?
Is there any writing in the ad? What does it say? How does what the ad says contribute to its message?
Does the ad make any claims about the product? What are they?

Step 3
Uncover the Message

What would you say is the ad’s main message? This might be separate from what the text in the ad says. In other words, what do you think the words, design, colors, imagery, and other aspects of the ad are trying to convey? For example, many ads are designed to convince the reader that if you buy their product, one of the following things will happen:

- You’ll join a cool group of people
- People will respect you
- You’ll have great adventures
- You’ll be like rich and famous people
- You’ll be healthy and happy
- You’ll be prettier or more handsome, or sexier
- Your family will be happier
"By virtually any measure—household expenditures, number of consumers, extraction of raw materials—consumption of goods and services has risen steadily in industrial nations for decades, and it is growing rapidly in many developing countries."

—Worldwatch Institute, State of the World 2004, Special Focus: The Consumer Society
7 Measuring Your Footprint

OVERVIEW
Calculate your ecological footprint, determine whether it's sustainable, compare it to footprints of people in other parts of the world, and invent ideas about ways to reduce your ecological footprint.

SUBJECTS
Mathematics, science, social studies

SKILLS
Gathering (reading comprehension, listening, simulating, recording, brainstorming), organizing (grouping), analyzing (comparing and contrasting, calculating, discussing), interpreting (listening, drawing conclusions, identifying cause and effect, narrowing), applying (predicting, proposing solutions), citizenship (working in a group)

FRAMEWORK LINKS
5, 46, 60, 51, 51, 51, 66, 63, 69

VOCABULARY
Consumption, ecological footprint, natural resource, productive, sustainable

TIME
One to two sessions

MATERIALS
Two pieces of different colored chalk, computers with Internet access, copies of "Average American Ecological Footprint" chart, "Earth's Resources" sheet of pie charts, and "Six Families" photos (pages 122-729)

CONNECTIONS
To introduce your students to the connections between the energy component of our ecological footprints and biodiversity, try "Polar Bears and Petroleum" (pages 202-207). To explore the waste component of our ecological footprints, try "Trash to Treasure" (pages 179-196). And to investigate the connection between our ecological footprints and wildlife around the world, try "Facts and Figures in Wildlife Trade" with your students. "Food for Thought!" in Biodiversity Basics examines the connections among biodiversity, population density and distribution, and resource use.

We don't take a step without using some of the Earth's resources. From breathing to boiling, our activities depend on the Earth's supplies of oxygen, water, soil, trees, petroleum, wind, and other resources to fuel our bodies, power our vehicles, and light our paths. But how many resources do we actually use? And how does that amount compare to the resource use of other people and other nations?

Scientists have developed a tool called the "ecological footprint" that helps us compare the amount of resources individuals and nations consume and the amount of waste they produce. A footprint is essentially a calculation of the amount of the Earth's productive land and water required for all the crops, livestock pasture, oil fields, fishing grounds, mines, and so on to meet an individual or nation's current demand. It also takes into account the amount of the Earth's surface needed to absorb all of our waste, from the garbage we send to landfills to the carbon dioxide we release into the atmosphere.

Needless to say, an ecological footprint is a metaphor based on imprecise calculations. We don't actually use the exact amount of space that our footprints say we do since we do not, for instance, plant enough trees to absorb all of the carbon dioxide we release when we burn fossil fuels (while this might help prevent global warming, it would not be ecologically feasible). But footprints can be extremely helpful in allowing us to see the relative impact we're having on the Earth. For example, the United States has one of the largest footprints on the planet because it uses far more than its share of food, materials, energy, and so on. In fact, scientist Paul Ehrlich has calculated that the environmental impact of the average American is approximately 20 times greater than that of the average Costa Rican, 50 times that of the average Maragao, and 70 times that of the average Bangladeshi. The effects of our footprint are felt around the world because we often import the resources we need from (and export our wastes to) other places.

In this activity, your students will consider their own lives and the ecological footprint they create; they'll find out whether their consumption levels are sustainable, and they'll compare their family's way of living to that of families living in several other countries. Then they'll get a chance to tackle some of the challenges of finding ways to bring our ecological footprints more in line with what the world can sustain over the long term.
Before You Begin

Draw symbols (such as rectangles, squares, and circles) on the board to represent logs, marshmallows, and cups of water for the opening simulation. You'll need to draw 25 "logs," 25 "marshmallows," and 50 "cups of water." Familiarize yourself with the online footprint calculator at www.earthday.net/footprint/index.asp. For each student, make one copy of the "Average American Ecological Footprint" chart, "Earth's Resources" sheet of pie charts, and "Six Names" photos (pages 122-123). (If you prefer, you can have students share the worksheets.)

What to Do

1. Organize the class for a camping simulation.

Tell the students you'll be beginning this activity with a short demonstration about two sets of campers on an outing: the Tiptoe Troop and the Stomp Scouting. Ask for three volunteers to come to the front of the room to represent the Tiptoos and three to represent the Stompers.

Explain that you'll be reading a short description of how each group has spent one evening of their camping trip. The description will include references to three resources—marshmallows, wood, and water—consumed by each group. Point out the symbols you've drawn on the board for each of these resources. Give each team a piece of chalk (each a different color), and tell them to circle the amount of each resource they have consumed when that resource is mentioned. Tell them each rectangle equals one log, each square equals one marshmallow, and each circle represents one cup of water.

Now read the following description:

Two groups of campers head out into the woods and set up camp. As night falls and the air cools, the Tiptoe Troop puts on their sweaters and jackets and huts. The Stomp Scouting, outfitted with only T-shirts and jeans, make a big bonfire to stay warm. They keep the bonfire blazing for the next five hours, burning four logs every hour.

Later in the evening, the Tiptoe Troop start a small fire to heat water for hot cocoa and to roast marshmallows from the ends of thin twigs. They burn two logs on hour for the next two hours. They use six cups of water for their cocoa, and eat two marshmallows each.

The Stomp Scouting opt to fill a large pan with 18 cups of water—for their hot cocoa and so they can wash their faces with warm water before bed. They have trouble keeping their marshmallows from burning on the large flames of the bonfire and end up throwing seven blackened ones away. With bigger appetites than the Tiptoe Troop, they eat a total of 12 marshmallows, which they roast not on twigs but on special roasting tongs. Afterward they use five more cups of water to wash the tongs.

Before bed, the Tiptoe Troop spread the dying embers from their fire and douse them with soil and a cup of water. The Stompers' bonfire is still blazing hard, so it takes another 20 cups of water to get it safely out before they head to bed.
2. Discuss the campfire story.
Have the “campers” return to their seats and invite the class to calculate the resource consumption of each group. (The Tipoea Troop consumed four logs, seven cups of water, and six marshmallows. The Stomp Scout consumed 20 logs, 43 cups of water, and 19 marshmallows.)

Now discuss the following questions with your group:

- What were some of the reasons the Stampers used more resources than the Tipoea Troop? (They were compensating for wearing less clothing, eating more, throwing out more, and enjoying luxuries such as warm water for face washing before bed.)
- Is there anything wrong with what the Stampers did? (Answers will vary. Some students may think it’s better to consume less, but others may point out that the Stomp Scout were simply enjoying themselves and in no way hurting anyone else.)
- Suppose there were limited resources available to the two groups: 25 logs, 50 cups of water, and 25 marshmallows. Would both groups have had enough to meet their needs? (Yes.) What if the Tipoea Troop had decided to consume as much as the Stampers? Would there still be enough? (No.)

3. Introduce the concept of an “ecological footprint.”
Explain to your group that just as these two groups of campers consumed different amounts of resources and created different amounts of waste, all individuals and nations consume different amounts of resources such as oil, water, and forests and create different amounts of waste. Scientists have developed a tool to try to measure people’s impact. That tool is called an “ecological footprint.” An ecological footprint is an estimate of the area of Earth’s productive land and water that it takes to supply the resources that an individual or group demands and to absorb the wastes that the individual or group produces. In the case of the two groups of campers, the environmental impact is not simply the number of logs, marshmallows, and water consumed, but also the effects of this consumption on forests, freshwater supplies, air quality, and so on. For example, energy and resources are used to make marshmallows and transport them to the grocery store. Air pollution is produced by the burning of logs in the forest. The actions of these groups campers, as for any of us, can affect places all around the world. For example, we use oil from other nations and create air pollution that reaches across borders.

Which of the two groups has the larger ecological footprint on this camping expedition? (The Stomp Scout’s.) Can anyone come up with a ratio that roughly compares the impact of the Stampers to that of the Tipoea Troop? (About 4 to 1.)

As with this example, the final tally of an ecological footprint is a rough estimate at best, but it gives people a number to use for comparing ecological impacts from individual to individual or nation to nation. Can anyone name some of the reasons that ecological footprints might vary a lot among individuals and nations? (We have different ways of living, which often lead to different levels of consumption.)

4. Calculate footprints.
Tell the students that they’ll now have a chance to estimate the size of their own ecological footprint using an online calculator, available at www.earthday.net/footprint/index.asp.

Have each student complete the footprint calculator individually, and then ask the students to record the size of their cumulative footprint. You may need to give students the answers to some of the calculator’s initial questions about the place where students live. Also, you should be on hand to help with any other questions.

5. Analyze footprints.
What were some of the students’ footprint sizes? Ask students to share their results. Were they surprised by the area of land and water they required? Was the number smaller or larger than they expected?

Explain that it’s hard to know if a particular footprint is large or small without comparing it to other
footprints. It's also helpful to know how much of the total available space on the planet people are using.

To help students better understand what their footprint means, and how it measures up to others' footprints, hand out copies of the "Average American Ecological Footprint" chart. Explain that this chart shows how an average American's footprint is calculated.

Review the chart with the students, pointing out the different categories of consumption and the land and water areas used in providing for each of those types of consumption. (The footprint calculator the students used also asked about their levels of consumption in those same areas.) According to the chart, the average American's footprint is 23.6 acres. How do the students' footprints compare? If their footprints are higher or lower, can they make guesses about why?

6. Discuss sustainability.
The students may have noted that the calculator told them how many Earths would be needed if everyone had the same footprint as they do. Can the students explain what this means?

To help them better understand this concept, explain that not all areas of the Earth can provide the things we need for consumption. Many parts of the Earth can't support the forests, croplands, fishing grounds, and other areas that humans need to provide the things they consume. Scientists estimate that the Earth has about 32 billion acres of productive area, which represents less than one-quarter of the Earth's surface area. (You can illustrate this by using an apple with a quarter cut out of it to represent the amount of non-productive area compared to productive area on Earth.) An average American, as the students have learned, uses just 23.6 of those 32 billion acres. Ask the students if they think this footprint size is sustainable. (If they're unfamiliar with this term, explain that a sustainable footprint would be one that can support all humans on Earth today as well as future generations.)

To answer this question, ask the students first to estimate how much of the Earth's productive area U.S. residents use. (You might want to let them know that there are about 200 million people in the United States.) By multiplying 200 million by 23.6 acres, the students will find that Americans use about 6.8 billion acres. Hand out copies of the blank "Earth's Resources" sheet of pie charts. Explain that each Earth pie chart represents the productive area of land and water on Earth. There are five planet Earths represented on the sheet. Each wedge of the Earth chart represents four billion acres of the Earth's productive area. Have the students round the estimate for the United States to the nearest whole number and fill in the chart to show how much of the productive land and water the United States uses.

As they'll see, there's still open space on the chart, showing that there are land and water areas left for others to use to satisfy their consumption needs. Does this mean that the average American's footprint is sustainable? What if everyone consumed at the same level as Americans? Would there be enough space?

To find out, explain that there are over six billion people on the Earth. How much productive land and water area would be used if everyone's footprint were equivalent to 23.6 acres? (By multiplying 23.6 acres by 6 billion, the students will find that it would require about 142 billion acres of productive area.) Ask the students how many wedges of the pie chart this represents. (The 142 billion acres divided by 4 billion acres per wedge equals 35.5 wedges.)

FACTOID

A CORPORATE MAKEOVER: Through energy-efficient lighting, recycling, and other measures, L'Oréal Group succeeded in cutting its greenhouse gas emissions by 40 percent between 1990 and 2000, while increasing its production by 60 percent.
Ask the students to fill in the pie charts to show how much productive area it would take if everyone consumed as much as the average American. (Remind students that they have already filled in 1.5 wedges, which represent the 6.8 billion acres Americans use.) The students will need to fill in pie charts that represent more than four Earths.

Once the students have filled in the charts, ask them again whether they think this level of consumption is sustainable. (Most scientists think this level of consumption is not sustainable because there are not enough resources to allow all people to consume at this level.)

7. Analyze photos.
As it happens, not everyone on Earth has a footprint as large as the average American. People’s footprints vary widely. Was there a lot of variation in the sizes of each student’s footprint in the class? Do the students think there are people living in this country who have footprints that are larger or smaller than their own? What might account for those differences? (Answers will vary, but students might note there is a wide spectrum of consumption, from a homeless person who has little impact, to a multi-millionaire who might have a higher impact than their own.)

Have the students review the “Six Families” photos. Explain that the photos show six statistically average families in six different countries—Germany, Japan, Mali, Mexico, Thailand, and the United States. (If the students are unfamiliar with any of these countries, help them locate the countries on a map.) Each photo shows the entire family outside of their house along with all of their possessions. Be sure to explain that, while these families represent the average for their country, families within each country vary widely in levels of income, buying habits, and ecological footprint.

What differences do the students notice among the six families? How do the differences correspond to the differences in footprints? How would the students’ families compare to those pictured? Remind students that the average American’s footprint is 23.0 acres. The worldwide average footprint is 5.7 acres. Do the students think that people in some countries should be able to increase the size of their footprints? Is it fair for countries to have such wide differences in their resource use? Why or why not?

Conclude the activity by having students think about ways our country could reduce our footprint to a more sustainable level. You might divide the class into four groups and ask each group to brainstorm about ways to reduce our footprint in one of four areas: food, housing, transportation, and goods and services. Challenge the students to think not only about personal steps people can take (such as eating less meat or using public transportation more often), but also things that industry and government could do (such as producing less waste or setting higher standards for energy efficiency on home appliances).

As the groups present their ideas to each other, ask the students which ideas seem realistic or desirable? Which ones don’t? Which ideas do the students think will have the greater impact?
WRAPPING IT UP

Portfolio
Save the students' footprint calculations and pie charts for their portfolios.

Writing Idea
Have the students write a "pen pal" letter to a member of one of the families featured in the activity photographs. The students should describe the possessions that would be in their front yards if they owned everything out of their houses. Afterward, have them write a paragraph or two, describing any thoughts, feelings, or concerns that arose when they wrote this letter.

Assessment
On a sheet of paper, have each student draw the shape of a foot (make it fill most of the page). At the top of the sheet, have them identify the last "social" activity they did with a friend (go to a movie, go shopping, go to a party, attend a sports event, and so on). Have them write down all the ways in which they think the activity had an effect on the environment (for example, being driven to a friend's house, calling off paper plates, and drinking out of aluminum cans might be listed by a student who attended a party). Around the outside of the foot, have the students suggest ways to reduce their environmental impact without significantly compromising the activity or event.

Unsatisfactory—Fewer than three ways in which the activity was connected to the environment are named, and not all of those connections are tied to a suggestion for reducing their impact.

Satisfactory—At least four ways in which the activity affected the environment are named; each is tied to a related suggestion for reducing its impact.

Excellent—More than five ways in which the activity is connected to the environment are named, the student has used critical reflection in considering ways to reduce the impacts of each without reducing the enjoyment of the activity, and critical thinking is obvious in the description of the activity.

Extensions
- If you have studied the concept of carrying capacity in class, have the students compare the idea of an ecological footprint with that concept. In what ways are the two ideas similar? How do they differ? How can ecological footprints be used to assess the Earth's carrying capacity for humans?

- While the ecological footprint calculator is a helpful tool in picturing our impact on the planet, it's not perfect. Ask the students to brainstorm about some of the possible problems with this tool, and then follow up with research about how some people have tried to address those problems.

- To explore the subjectivity of the ecological footprint calculator, have students visit other ecological footprint Web sites and see how the calculations and components compare.

RESOURCES

The ecological footprint calculator is available online at www.earthscan.org/footprint/index.html.

Redefining Progress (RP) is a nonprofit organization that focuses on sustainability. RP's Web site contains information about ecological footprint calculations and how they work. www.redefiningprogress.org/programs/sustainability/index.html

Material World: A Global Family Portfolio by Peter Menzel provides photos of 30 statistically average families from 30 countries, showing all of their possessions outside of their homes. (Scribner, 1999.)

<table>
<thead>
<tr>
<th>Consumption Category</th>
<th>Fossil Fuel</th>
<th>Crop Land</th>
<th>Grazing Land</th>
<th>Forest</th>
<th>Built-up Area</th>
<th>Fishing Grounds</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>1.7</td>
<td>2.2</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.7</td>
<td>5.4</td>
</tr>
<tr>
<td>Housing</td>
<td>3.8</td>
<td>0.0</td>
<td>0.0</td>
<td>1.4</td>
<td>0.3</td>
<td>0.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Transportation</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.5</td>
<td>0.0</td>
<td>4.4</td>
</tr>
<tr>
<td>Goods</td>
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<td>0.4</td>
<td>0.1</td>
<td>1.2</td>
<td>0.1</td>
<td>0.0</td>
<td>5.8</td>
</tr>
<tr>
<td>Services</td>
<td>1.9</td>
<td>0.0</td>
<td>0.0</td>
<td>0.8</td>
<td>0.1</td>
<td>0.0</td>
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<tr>
<td>Total</td>
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<td>2.6</td>
<td>0.9</td>
<td>3.4</td>
<td>1.0</td>
<td>0.7</td>
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</tr>
</tbody>
</table>

Each Earth pie chart represents the productive area of planet Earth. Each wedge on a chart represents four billion acres of the Earth’s productive area. Five planet Earths are shown on this page.
The Pfitzner family, February 13, 1994
Cologne, Germany
Average footprint in Germany in 2000: 10.5 acres
The Ukita family, December 16, 1992
Tokyo, Japan
Average footprint in Japan in 2000: 9.7 acres
Six Families (Cont'd.)

7 Measuring Your Footprint

The Natomo family, March 27, 1993
Kouakourou, Mali
Average footprint in Mali in 2000: 2.9 acres
The Castilla Balderas family, August 28, 1993
Guadalajara, Mexico
Average footprint in Mexico in 2000: 6.4 acres
The Kuankaew family, May 31, 1993
Ban Muang Wa, Thailand
Average footprint in Thailand in 2000: 3.5 acres
The Skeen family, August 4, 1993
Pearland, Texas, USA
Average footprint in the United States in 2000: 23.6 acres
8 Saving Planet X

OVERVIEW
Explore the relationship between population growth and consumption in a simulation of global negotiations on an imaginary Planet X.

SUBJECTS
social studies

SKILLS
- gathering (reading comprehension, monitoring, summarizing, brainstorming)
- analyzing (comparing and contrasting, discussing, interpreting, drawing conclusions, defining problems, applying, hypothesizing, proposing solutions, problem-solving, decision-making, developing and implementing investigations and action plans, presenting, debating, explaining, citizenship, working in a group, debating, compromising, seeking consensus, evaluating a position)

FRAMEWORK LINKS
20, 28, 36, 39, 49, 60, 61, 63, 65, 66

VOCABULARY
affluent, consumption, equitable, infant mortality, fertility, natural resources, population, population growth, summit, sustainable

TIME
one to two sessions

MATERIALS
- copies of "Parochial over Paradise" and "Country Descriptions" cards
- pages 126-128: parts of real stock to make placards

CONNECTIONS
For further exploration of population issues, try "Food for Thought" in Biodiversity Basics.

If you traveled to Bangkok or Delhi, you'd see streets and buildings teeming with people, many of whom live in extreme poverty. These crowds, along with the high levels of pollution, might lead you to conclude that our global environmental and social problems are caused by overpopulation. How can we sustain Earth's environment with so many people using natural resources, and how can our limited natural resources provide for all those people?

Now picture a trip through the exclusive neighborhoods of Miami, Los Angeles, or Chicago. You'd see people driving enormous vehicles with no other passengers, living in huge air-conditioned houses, shopping in massive malls, and enjoying outdoor swimming pools, hot tubs, golf courses, and bright green lawns that consume vast quantities of water. Those sights might suggest that our environmental problems are caused by overconsumption. So how can we protect the environment and improve the quality of life for people around the world, given how many resources some of us use?

Population, Consumption. Which one is the greatest cause of biodiversity loss, resource depletion, inequitable distribution of food, and other forms of environmental and social degradation?
Most people agree that population growth is, in fact, a huge contributing factor when it comes to our environmental and social problems. Our world population took thousands of years to reach one billion in 1800. But just 200 years later, in 1999, it was already more than 6 billion. Current estimates suggest that the population will reach 9 billion by 2050. Even though fertility rates are dropping in many parts of the world, particularly in developed nations, population is still rising dramatically because of the large number of people under 25, who have a high reproductive capacity. Improvements in health care are also extending life expectancies in many nations. Wherever it occurs, a rising population translates into more demands placed upon resources for food, shelter, and other needs.

But that doesn't mean that people in developed countries such as the United States, where population growth has slowed, are not a large part of the problem. The environmental impacts of the average person in the developed world are far greater than those of the average person born in a developing nation such as India or Nigeria. That's because our consumption levels are so high and take an enormous toll on global resources and habitats. Many people believe that these high rates of consumption are even more damaging than population growth. After all, if everyone consumed as much as the wealthiest individuals (and most people do aspire to higher standards of living), we'd drain Earth's resources faster than they could be replenished. Some people argue that a major resource crisis will never occur—that human ingenuity and new technologies will always enable us to live as we wish with the resources available to us. But whether one holds such a view or not, it's clear that both population and consumption have significant impacts on our global environment. By examining these...

FACTOID

HOME SWEET HOME . . . AND HOME . . . AND HOME:
About one million new single-family homes are built per year in the United States.
Before You Begin

Make five copies of "Panicking over Panokite" (page 136) and one copy of the "Country Descriptions" (pages 137–139). Cut apart the "Country Descriptions." Prepare five placards for student teams to make into small signs identifying the "country" they come from.

What to Do

1. Organize the class for a simulation.
   Explain that the students are going to play a game about global resources. Divide the class into five teams, each of which will represent a different country on a fictional Planet X.

2. Hand out "Panicking over Panokite."
   Give all the teams copies of the handout, and ask for a volunteer to read the description of Planet X and the panokite crisis aloud. Make sure the students have clearly understood the information by reviewing the following questions: What is panokite? (According to this fictional account, panokite is a living substance critical to all societies.) Where does it come from? (From the roots of certain trees.) How is it used? (Panokite is used for food, to generate light and heat, to treat many illnesses, and to power small flying machines.) Why is there a "panic over panokite?" (The substance is quickly disappearing. Also, harvesting panokite threatens many forests and rare species.)

3. Hand out country descriptions.
   Give each team a different "Country Description" and have the teams read the descriptions. Then ask the team members to discuss the following questions. (You might want to write the questions on the board.)
   - What challenges does your country face?

4. Have the teams prepare for the summit.
   Now tell the group that they'll be coming together as different nations to discuss the panokite crisis, just as representatives from different countries come together in real life to solve international crises. To prepare for the summit, each team should think through how they would propose solving the crisis. The questions in the "Panicking over Panokite" handout can help guide their process.
   - In what ways is your country contributing to the panokite crisis? In what ways is your country being hurt by the crisis?
   - Which nation do you think is most responsible for the panokite crisis? Why?

5. Discuss summit etiquette.
   Prior to convening the summit, have the group
6. Convene the summit.
Have the students gather to discuss the panikite crisis. This summit is simply a meeting of the five nations of Planet X, and it can be structured in any number of ways. You'll probably want to have each team introduce itself with its placard prominently displayed. You'll also want to give each team a chance to share its views of the panikite crisis and its recommendations before opening up the floor for discussion. If you'd like some more detailed ideas for structuring the event, see the "Structuring Your Planetary Summit" box below. But feel free to organize the summit however you think will best match the interests and level of your group. The goal is for representatives from the different nations to come to an agreement about how best to solve the panikite crisis.

7. Finish the summit.
If your students seem to have reached an agreement, have them draw up their plan for solving the panikite crisis.

**Structuring Your Planetary Summit**
Here's one way you might consider structuring your summit to keep the students focused and engaged:

1. Set up students' chairs or desks in a circle so that everyone can see everyone else. Have the members from each nation sit together with their placard displayed in front of them. Use an object such as an empty paper towel roll or a ruler to represent a microphone, and tell the students that only the person holding the microphone can speak at any given time.

2. Explain that during the summit you will serve as the moderator to ensure that all participants have a fair amount of time to be heard. Then, as the moderator, welcome the assembled nations and invite a member from each nation to introduce itself, presenting the basic information on the placard.

3. Now remind the groups why they've come together (to solve the panikite crisis) and invite a representative from each nation to present their nation's idea. You may wish to have a student record each team's recommendation on the board.

4. Next, open the floor for discussion. Remind the students that if they are not holding the microphone, they should not be speaking, and be sure to pass the microphone around so that all groups are heard fairly. To add structure to the discussion, you may wish to give each team a chance to discuss the ideas on the board among themselves and then take turns presenting their arguments for and against the ideas to the rest of the summit attendees. For example, you might ask:

   • Has anything been proposed that seems unfair? Why?
   • Are there any agreements among members of the summit? Conversely, are there any stark disagreements? Can the students foresee any ways to reach consensus on this problem?
   • What kinds of processes could they pursue to reach a global accord? (Students might discuss forming alliances, voting, and so on.)

5. Wrap up the summit by inviting the attendees to vote on the recommendation or recommendations of their choice.
crisis. If they haven’t reached an agreement, that’s OK, too. Have the students close the summit after about 30 minutes (or whenever you think is appropriate) and return to their seats.

Now ask the students to discuss the summit. What observations do they have about the summit and the negotiation process? What issues were raised? Were the students able to reach any kind of agreement? Why or why not? If not, and if this were a real summit, what do they think would happen next? What kinds of tactics (additional summits, economic sanctions, trade wars, boycotts, and so on) do they think nations might use to achieve their goals?

8. Discuss Planet X’s relationship to challenges here on Earth.

Ask the students if they think there are any parallels between the planetary crisis on Planet X and events here on Planet Earth. Are there any parallels between the fictional nations and those on Earth? Explain to the students that, in fact, each of the fictional countries was loosely based on a real nation. Canax has roughly the population and energy consumption rates of China. Allevox has the population and energy consumption rates of the United States. Nurix, Swoopex, and hinix parallel Nigeria, Sweden, and India, respectively. Similarly, nations on Earth have convened summits to discuss environmental crises including global climate change and the depletion of international fisheries stocks. At these summits, arguments similar to those in the Planet X simulation have emerged.

9. Discuss population and consumption.

Now have the students think more directly about the situation here on Earth. What roles do they think overpopulation and overconsumption play in causing our environmental and social problems? Is one threat more serious than the other? Why or why not? Which nations need to change to ensure that their citizens don’t use up too many resources or create too much pollution? Is it fair for some nations to consume disproportionate amounts of resources just because their residents have more money and have come to expect that lifestyle? Is it fair to ask people in those countries to change their behaviors? Similarly, is it fair to ask other nations to control their population growth? What other ethical and political considerations do these questions demand?

Again, be sure students understand that, when you’re discussing consumption rates of a nation, the numbers represent an average. Every nation has wealthy, high-level consumers as well as poorer, low-level consumers. How do your students view this disparity in the United States? Do they think we should help lower-income residents become more affluent and thus able to consume more? Do they think wealthy residents should voluntarily consume less? What might be some ways for governments to ensure less disparity while reducing consumption overall? (You might spark discussion by mentioning the possible roles of taxes, government incentives, subsidies, rationing, and so on.)

As the discussion winds down, write the equation I = PAT on the board (see the “Calculating Impact” box for more on this equation). How does this equation account for population and consumption? (It considers both factors to be equally important influences on a group’s environmental impact.) What might the effects of the T variable be? (Environmentally-detrimental technologies can increase the environmental impacts of consumption, while environmentally-beneficial technologies can help to alleviate some of these impacts.)
WRAPPING IT UP

Portfolio
Have the students record their team’s best solution to the panokite crisis on a piece of paper.

Writing Idea
Have the students write a science fiction story about what happens to Planet X in the years following your summit. What happens to panokite? What happens to each of the five nations? Or, have them write a science fiction story about what happens to planet Earth if our oil supplies run out.

Assessment
On the left side of a piece of paper, have the students write the word "population" and on the right side the word "consumption." Underneath the two, based on the summit and what they gathered from the discussions, each student should list concepts that tie the two categories to the environment. At least three concepts per category should be listed. The example below may help.

<table>
<thead>
<tr>
<th>POPULATION</th>
<th>CONSUMPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>more people driving vehicles</td>
<td>people driving bigger vehicles, which require more fuel, means more pollution released.</td>
</tr>
<tr>
<td>means more pollution released.</td>
<td>means more pollution released.</td>
</tr>
</tbody>
</table>

Unsatisfactory—There are two or fewer appropriate concepts presented per category. Statements are not logical or do not directly connect population or consumption to the environment.

Satisfactory—At least three appropriate concepts are listed per category and logical statements are presented that connect the issues of population and consumption to the environment.

Excellent—Three or more appropriate concepts are presented. Statements directly tie population and consumption to the environment. The source of the ideas is clearly tied to critical thinking from class discussions and class sources.

Extensions
* Have your students use the data from their "Country Descriptions" to create math problems related to population and consumption.

* Have your students research real-life examples of international summits in which environmental issues were addressed. Were the summits successful? Why or why not?

RESOURCES
The U.S. Census Bureau maintains the World POPClock, which estimates the world population on a monthly basis: www.census.gov/cgi-bin/pc/ploclock.exe

The World Resources Institute analyzes long-term demographic, economic, social, environmental and security trends that are likely to shape the future. Visit the Web site for the publication World21: World at Midcentury at www.wri.org/world21.

Seeking the World 2005, Special Focus: The Consumer Society by the Worldwatch Institute provides a fact-filled overview of our consumer patterns and their impact on our environment (Worldwatch Institute, 2004).

The Population Reference Bureau works worldwide to inform people of the social, economic, political, and environmental impacts associated with population. Their Web site provides extensive population and demographic statistics for countries around the world and also offers learning tools for students and educators: www.prb.org
Planet X is a world filled with incredible beauty. It boasts lavender seas, huge canyons blanketed with soft green moss, and crystal-clear mountains that glow soft yellow at night. Animals on the planet are highly diverse and fascinating, ranging from tiny mammals called whigwhigs that communicate with high-pitched songs, to large insect-like sea creatures called falloors that colony-flying leaves and ride them like rafts.

Human societies on Planet X are rich and varied, too. There are only five nations, each with distinctive cultures and economies. But all the nations share a common need for one thing: a special living substance called panokite.

Panokite, found only on the exteriors of certain tree roots, is a powerful substance. It generates light and heat, cures many illnesses, provides a vitamin-rich food, and powers small flying machines that the wealthiest of residents on Planet X use to get from place to place. Although there are other substances people can use for food and medicine, nothing else provides such high-quality light, heat, and power.

Unfortunately, panokite is quickly disappearing. At present rates, experts estimate it will be gone in 75 years. Even now, harvesting panokite threatens many of the forests where it grows, which in turn threatens whigwhigs and other creatures.

A crisis is looming. With that in mind, the heads of each of the five nations on Planet X decide to convene to develop a plan. They hope that the plan will ensure the fair, sustained use of panokite long into the future.

Questions to Consider Before and During the Summit

- Do you think people should continue using panokite at all? Why or why not?
- Do you think people should change the amount of panokite they use? Why or why not?
- Should governments control panokite distribution, or should distribution be left to businesses and the "free market"?
- Do you think that current supplies of panokite should be equitably distributed among all nations? If so, what's the fairest way to ensure that this happens? What's the easiest way? What is the way most likely to be agreed to by all countries? Are these the same or different?
- What do you see as the long-term solution to the panokite crisis? (An urgent search for natural alternatives? New technologies for more efficient collection and use of panokite? Genetic engineering of other plants to produce it? Research to find a way to make it in a laboratory?) How do you think the nations of Planet X should go about pursuing long-term solutions?
- Do you think long-term solutions can be achieved without 75 years? If not, what could be done to extend the current supplies of panokite? (Create regulations on how panokite can be used? Impose a heavy tax on non-essential uses of panokite? Create a lottery system?) Which nations should change their behaviors, and how? (For example, should they draw up conservation plans or plans for reducing population growth?) Could they be trusted to do so voluntarily? Should those plans be made mandatory? If so, how?
Country name: Canax
Population: 1.2 billion
Population density: 337 people per square mile
Average panokite consumption: 9 bars per person per year

While Canax currently has the largest population on Planet X, your government is working hard to control population growth. And even though you have a large, growing, and increasingly affluent population, most of your citizens still can't afford to use much panokite. You think that the more affluent, high-consumption countries—especially Allevox—are to blame for the current crisis. And Nurrax and Hinx are also part of the problem because they aren't controlling their population growth. Despite the looming crisis, you think that your citizens have the right to at least 20 bars of panokite per person per year, which would still be substantially less than each person in Allevox and Swoopox consumes.

Country name: Allevox
Population: 295 million
Population density: 73 people per square mile
Average panokite consumption: 80 bars per person per year

Allevox's population is quite high and growing. Most of the growth comes from people who are immigrating from the other four nations on Planet X and who want to enjoy the same standard of living your citizens do. Allevox is a very comfortable place to live, especially for the affluent. Of the citizens, 95 percent own personal flight devices, which enable them to travel quickly and efficiently and, in turn, allow them to work at better jobs and enjoy more recreation. You're proud of how technologically advanced your nation is, too, and you believe that most resource shortages can be solved through technology. Still, no one can ignore that your wealth and progress have a cost: Your citizens use an average of 80 bars of panokite a year—almost 9 times more than citizens of Nurrax and 16 times more than citizens of Hinx. The increasing scarcity of panokite is causing its price to rise rapidly. You would like to see less-fortunate nations become more affluent—and be able to afford more panokite—but you are reluctant to change your own consumption habits.
Country name: Nurrix
Population: 133 million
Population density:
319 people per square mile
Average panokite consumption:
9 bars per person per year

Your population is large, and it's continuing to grow at an extremely fast rate. At present, little has been done to control population growth, although death rates are increasing because of malnutrition and the spread of diseases. On average, your citizens can afford to consume only a small amount of panokite, which is contributing to their health problems. In fact, the people of Allevox consume almost 9 times more than you do. As the panokite crisis worsens and the price increases, you want your citizens to be able to afford to buy at least a minimal amount of panokite. You also want help in making your economy stronger so that your people can buy more panokite in the future. You think that affluent nations should find ways of cutting back on their panokite use and of sharing panokite with those who can't afford to buy it.

Country name: Swoopox
Population: 9 million
Population density:
51 people per square mile
Average panokite consumption:
59 bars per person per year

Swoopox is a relatively small nation with an extremely low population growth rate. Although your citizens use, on average, substantially less panokite than those of Allevox, your consumption is much higher per person than that of Canax, Nurrix, or Elexia. Still, at your country's current level of population growth and consumption, the Swoopox lifestyle is fairly sustainable. What's more, your society is quite technologically advanced, especially when it comes to thinking of creative solutions to environmental problems. You like to point out that your citizens have a high literacy rate and low infant mortality rate—better on both counts than those of Allevox and proof, in your view, that it is possible to achieve a high standard of living while using resources sustainably.
Country name: Isinix
Population: 1 billion
Population density: 789 people per square mile
Average panokite consumption: 5 bars per person per year

Isinix is the second largest nation on Planet X. Because its population is growing quickly, it will soon surpass even Canax. What's more, because Isinix is smaller in land area than Canax, there are already more than twice as many people living here per square mile than in Canax, and 10 times more people than in Allevox. Few of your citizens have personal flying vehicles, and many of them live in simple, modest structures compared to the enormous, panokite-consuming buildings common in Allevox. Because of your lack of affluence, your per-person and total panokite consumption is much lower than that of Allevox. For this reason, you feel certain that Allevox is the country to blame for the current panokite crisis, and you become very defensive if people tell you that your population growth is the problem.
Consumer Choices and the Natural World

The activities in this section investigate how consumer choices affect the environment and explore steps people are taking to reduce their impacts. For background information, see pages 36–45.
"In nature, there is no waste; one organism's waste is another's food.

For our industrial process, so dependent on petrochemical, man-made raw materials, this means technical 'food' reincarnated by recycling into the product's next life cycle."

—Ray Anderson, Chairman, Interface, Inc.
For many consumers, knowing that the products they use won’t harm the environment is a high priority. Concerned about water quality, biodiversity, human health, and other issues, they may seek out products that claim to be nontoxic, organic, environmentally safe, or eco-smart. But what do those labels really mean?

According to the Federal Trade Commission and the Environmental Protection Agency, the labels can mean a lot or not much at all. For example, manufacturers must now meet a set of strict federal requirements to label their food “organic.” But phrases such as “natural” and “environmentally safe” are not regulated and have no real meaning. Manufacturers use them to appeal to environmentally- and health-conscious consumers, but those labels don’t indicate that the manufacturers have followed any specific standards. In general, labels from independent, third-party accrediting organizations are considered to be most reliable because those organizations have no vested interests in particular products. (For more information on labeling, see “Sorting Out Green Claims” on pages 152-153.)

In this activity, your students will learn more about green claims. They’ll explore ways of assessing the validity of manufacturers’ claims and learn about Web sites designed to steer consumers toward the most environmentally friendly products. In the process, they’ll gain skills—and an overall awareness—that will empower them to become more discriminating consumers.
Before You Begin

Make one copy for each student of the "Seeing Green," "Sorting Out Green Claims," and "Shopping List" handouts (pages 148-154). If students are going to read "Seeing Green" in class, you can make a copy for each student or ask them to share.

What to Do

1. Hand out the story.
   Give each student a copy of "Seeing Green." If time permits, have students read the story in class, either on their own or out loud as a group. However, the story is long and you may prefer to assign it for homework, telling the students to read the story and be prepared to discuss it in class the following day.

2. Discuss the story.
   Ask the students to reflect on the story. What assignment were the students in the story given by their headmaster? (To find the most environmentally-friendly versions of five products.) How did they go about pursuing this assignment? (They went to the store and read labels. The girls were advised by Ms. Millingham, who had conducted previous research on green products and, therefore, was able to provide her team with helpful information. The boys were advised by three-year-old Chippy, who just asked questions.) Who won the game? Why? (The boys won because Chippy's questions led them to scrutinize and analyze the labels. The boys beat the girls, who didn't think things through as much as they should have, but instead relied on the expertise of Ms. Millingham. When it came to deciding which cider to buy, Ms. Millingham didn't have enough information and the girls didn't show that they'd put as much thought into their choice as they might have.)

3. Discuss green claims.
   Tell the students that advertisements and labels that manufacturers use to assert the environmental friendliness of their products are called "green claims." Have the students ever noticed green claims on the things they buy? What are some examples? (Answers will vary.) In the story, the students determined that some of the green labels weren't as valid as they seemed at first glance. Does the students' discovery sound realistic? Have the students in your group ever wondered about the validity of manufacturers' claims? Did the story make them think about those claims in a new way?

You might explain that, in fact, green claims can be meaningful or not meaningful at all. For consumers interested in making sound environmental purchases, that inconsistency can be confusing and frustrating, which is why it helps to be well informed. However, since consumers can't know about every product on the market, it also helps to learn (as the students in the story did) how to ask thoughtful, critical questions.

FACTOID

BUYERS AWARE: About 30 percent of U.S. households do some kind of environmentally or socially responsible purchasing.
4. Hand out the worksheets and give an assignment.
Tell the students that the “Sorting Out Green Claims” handout provides information about a variety of terms and phrases associated with green claims. The handout also lists several Web sites that help consumers understand what labels do and do not mean. Included on the list are a few independent groups that certify certain kinds of products—such as fish and wood—that have been “sustainably harvested.” Can any of the students describe what “sustainably harvested” means in this context? (The fish have been caught at a rate that does not exceed the fish population’s capacity to replace itself, and the trees have been harvested at a rate that does not exceed the forest’s ability to regenerate.)

The students should now “go shopping” for the items on the “Shopping List” handout, either by visiting local stores or searching online. For each item, they should find a product that makes a green claim. Then—using their critical thinking skills, the information provided by the “Sorting Out Green Claims” handout, and suggested Web sites—the students should evaluate the strengths and weaknesses of the claim. Make sure they understand that they don’t need to buy the product; they simply need to record

Shopping List Notes

Writing Paper: Students should look carefully at how recycled paper is described by manufacturers, including how much of the paper is recycled and what type of recycled waste it contains. Pre-consumer waste is waste leftover during papermaking, while post-consumer waste is the waste that has been collected from recycling. The higher the post-consumer waste content, the more trees and energy saved.

The students should also evaluate whether the paper is bleached, which can cause chemical pollution. They may notice that many notepads with animals or other environmental motifs, while giving the impression of being environmentally friendly, are made of non-recycled pulp (which is made from new, or “virgin,” wood fibers—not from recycled waste).

Canned Tuna: Students may find “dolphin-safe” labels on tuna, a designation that has changed over recent years. According to recent U.S. law, labeling a product as “dolphin-safe” means that no dolphins were observed to be killed or injured while fishing for the tuna. The top 11 other countries that fish for tuna are also following these strict measures to prevent killing dolphins. This move has reduced the average number of dolphins killed per year by fishing for tuna from 133,000 in 1986 to less than 2,000 in 1998. Although regulations vary depending on where the tuna are caught, and it is hard to ensure that all observation reports are accurate, most experts agree that the dolphin-safe label helps protect dolphins.

Household Cleaners: Students may notice that many household cleaners make eco-claims, such as “natural” and “environmentally safe,” yet those claims may lack any true meaning. One clue as to whether the claims are accurate would be to take note of the number of health warnings that accompany many household cleaners—a sign that the ingredients may not be benign even if the packaging has a nature-oriented design or makes environmental claims.
key information about it on their "Shopping List" handout. (See the "Shopping List Notes" boxes for information about claims associated with the shopping list products.)

Note: If the students are unable to find a product that makes a green claim, they should select the product that they think is the most environmentally friendly and explain the reason for their selection.

5. Collect the results.
On a designated day, have the students turn in their shopping lists. What did they find at the store? Were there many products that made green claims? How many of those claims seemed valid? What were some of the problems with the green claims that the students identified? (See the "Shopping List Notes" boxes.)

Ask the students why it might be helpful for consumers to better scrutinize product labels. Do they think that all manufacturers' claims should be regulated (for example, in the same way that the organic foods designation is)? Why or why not?

Finally, ask the students what they will take away from this activity. Do they think they will be more informed consumers in the future?

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**Shopping List Notes (Cont'd.)**

Frozen Dinner: Students might realize that freezing foods—and keeping them frozen during transport and storage—is an energy-intensive process, even if the foods are organic. Also, the packaging required by frozen (and other prepared) single servings can create excessive waste despite the convenience they can provide.

Coffee: Students may be able to find organic coffee, which is grown without the use of synthetic pesticides and fertilizers. They may also find coffee that is labeled as being shade-grown or sustainable, which indicates that the coffee was grown among rain forest trees. Most conventional coffee is grown without shade, which means that trees may be cut down to create growing space for the coffee plants. A similar designation is bird-friendly coffee, which uses shade management to enhance bird habitat, including the maintenance of tree canopies and the diversity of tree and other plant species.

Cereal: Students might note that labels such as "all-natural" and "healthy" don't necessarily indicate that the grains and other ingredients used in the cereal were grown in an environmentally friendly manner, though "organic" designations may. In addition to considering the grains from which the cereals were made, students might also scrutinize the packaging to consider the benefits of buying cereal in bulk rather than in individual boxes.

Shampoo: Students may find shampoos that claim to be "nontoxic," "hypoallergenic," and "all-natural." Unfortunately, none of these labels are legally regulated so they provide little indication of how environmentally friendly the product may (or may not) be. Recently, rules have been made about "organic" labels on body care products like shampoo, but the criteria are still rather limited. As with many other products, the design of the packaging may emphasize benefits to nature and health to promote environmentally friendly claims.
future? How? If the students seem frustrated by the lack of certainty with labels, remind them that, by familiarizing themselves with those labels that are reliable and those that are not, and keeping current with the latest trends, they will find it increasingly easy to make smart consumer choices. They can also help influence future labeling efforts and encourage industry to provide more information about the environmental impact of products. This can be done by writing to producers and demanding higher label standards, as well as by asking retailers for more information about products.

WRAPPING IT UP

Portfolio
Save the students’ ‘Shopping Lists’ for their portfolios.

Writing Idea
Challenge the students to write a sequel to “Seeing Green” in which Mr. Fitzwater has challenged the girls of Willoughby Hall and the boys of Sult Hall to come up with the best plan for an environmentally friendly end-of-year school party. What happens? What kinds of green claims does each team make about its party? Are they all valid?

Assessment
Using the students’ ‘Shopping Lists,’ have them identify one claim that is reliable and one claim that they do not think is reliable. For each claim, they should explain how they know or could learn what the claim means.

Umsatisfactory—At least one of the two claims is missing. A weakness in knowing how to determine validity of claims is displayed.

Satisfactory—Two claims are identified and the explanations show an awareness of how to obtain additional information.

Excellent—Two or more claims are identified. The explanations show careful thought about the verification of claims and reveal an understanding of how to find additional information.

Extensions
* As the students may have discovered, many household cleaning products fail the “environmental claims test.” Have the students research homemade and nontoxic formulas for making window cleaner, tile cleaner, silver polish, and other common cleaning products, and test out the different formulas. Do they work as well as their manufactured counterparts? Have the students create a class “Green Cleaning” recipe book using the best formulas they found and distribute copies to their families and friends.

* Investigate new efforts to make certain products more environmentally friendly by researching one of the following terms: shade-grown, dolphin-safe, phosphate-free, FSC-certified, and MSC-certified. Which organizations have been involved in developing and
regulating those designations? What ecological benefits are associated with the efforts of those organizations? What role did the public play, if any? What products carry the label or make the claim?

- Labels aren’t used just to make environmental claims. Have the students investigate other sorts of labels, such as those related to fair trade and cruelty-free production. What do these labels signify? How reliable are they? What sources did the students use to get their information?

RESOURCES


General information on eco-labels can be found at www.eco-labels.org, a division of Consumers Union. The Web site allows you to search for information by label, product, or certifier.

Stern magazine’s “The Hidden Life” column investigates the environmental and social impacts of everyday products. Visit www.thestern.com/news to find back issues of the magazine.

World Wildlife Fund’s Web site contains information about toxic chemicals in the home as well as ways to reduce dependence on toxins, including recipes for nontoxic household cleaners. www.worldw ildlife.org/hsccx

Products with a label from Green Seal, an independent certifier, are generally recognized by environmental experts as credible. The Web site provides consumers with product recommendations and information about the certification process. www.greens eal.org

The Global Ecolabelling Network (GEN) improves, publicizes, and develops the eco-labeling of products and services to ensure the validity of green claims. GEN also works with organizations to create products and services that meet low-impact environmental standards. www.gen.org
"All right, teams," Mr. Fitzwaller said to the ninth graders assembled around him. "Prepare to receive instructions for your next assignment."

"I've had a bad feeling about this all day," Justin Lee whispered to his best friend, Paul Lipinski.

"You have a bad feeling every time," Paul reminded him.

"And haven't I always been right?" Justin asked. Paul nodded reluctantly.

For the boys of Sulk Hall, there was ample reason to dread Mr. Fitzwaller's Saturday afternoon assignments. All year, Mr. Fitzwaller, the principal of the Flight School, had run a series of contests pitting the ninth grade boys of Sulk Hall against the ninth grade girls of Willoughby Hall. The contests were so unusual that Justin held a private theory that Mr. Fitzwaller got his ideas from watching old episodes of "Survivor." In the fall, there was the great pumpkin toss, where students had to contrive a catapult capable of hurling a 45-pound pumpkin as far as possible across the soccer field. The girls won that one, but only because Frances Kushnik was the daughter of a physicist who, Justin believed, must have called for some expert advice. In the winter, the students had to keep a snowball intact for an entire night in their dorms. The girls won that one, too. But maybe the girls' dorms had freezers, Justin reasoned. Fortunately the boys hadn't lost every event. They'd eaten all the dried edible caterpillars that Mr. Fitzwaller brought back from his trip to Africa. And they'd also won the Halloween scavenger hunt, thanks to Hugo Fuddenee, who happened to keep a very large collection of rodent bones in his bottom dresser drawer. But having lost the last eight events in a row, the boys now worried that Willoughby would clinch the annual title before Sulk ever really got off the ground.

"This week's assigniment," Mr. Fitzwaller said to the group, "is tied to Earth Day, which, as I know you're all aware, is tomorrow."

"If he's going to make me eat granola, I'm out of here," muttered Hugo, who had willingly eaten 16 dried caterpillars.

"Two vans are parked at the school gate," Mr. Fitzwaller said. "They will take you to the Birmingshire superstore in town, where you will need to purchase five products: spaghetti sauce, laundry detergent, paper towels, strawberries, and apple cider."

"Shopping?" Justin said with surprise. "Our challenge is to go shopping?"

"You guys are so going to lose," Elena Chavez snorted behind him.

"But there's a catch. I want all your products to be environmentally friendly. That means products that, in their making, transport, packaging, and disposal, do as little harm to the environment as possible," said Mr. Fitzwaller. "To assist you on your quest for the greenest products, each of you will have an expert advisor along for the ride. Girls, you pick first."

Mr. Fitzwaller held out a hat with two pieces of paper folded up inside. Sheri Sayar, president of the student council, boldly stepped forward and selected one of them. "Our advisor is ... Ms. Millingham," she said with a smile.

The boys groaned. Ms. Millingham was 72 years old, and widely considered the smartest person on campus. She had been Mr. Fitzwaller's teacher when he was a student at the school.

Paul stepped forward to retrieve the second slip of paper. He hoped their advisor would be Ms. Apple, the new biology instructor. "Our advisor is ... he began, "... Chipper?" He looked up at Mr. Fitzwaller with confusion. "Chipper?" There was only one Chipper on campus—Mr. Fitzwaller's three-year-old son. "Is this a joke?"

"I never joke," Mr. Fitzwaller said. "Students, the contest has begun. Get to your vans!"

"We are so going to lose," Justin said under his breath.

The Birmingshire superstore was a marvel of consumer abundance. There were 101 varieties of cereal, 23 kinds of mouthwash, and entire shelves devoted to nail clippers, lunchboxes, and maps. Under ordinary circumstances, Justin and Paul would have enjoyed an excursion to the store as a
break from the monotony of life at the Flight School. But now the product-laden shelves were overwhelming—and a chore. How were they ever going to find the five most environmentally friendly versions of anything?

Justin noticed Ms. Millingham herding the girls toward an aisle labeled "Italian" and realized that they could learn a lot by saying:

"Follow them!" he said to his teammates.

"We'll get our spaghetti sauce first!"

But before they could get away, they were stopped by Mr. Fitzwaller, who was standing near the door with Chippy by his side. "You forget your advisor," he said.

"Oh, right," Paul said.

"C'mon, Chippy," said Justin, with feigned enthusiasm.

"Why?" Chippy asked, clutching his old baby blanket in his hands. It was then that Justin remembered that Chippy spent most of his time asking questions, and very little time accepting the answers.

"You're our advisor," Paul explained.

"What's that?" Chippy asked.

"We're not exactly sure," said Hugo.

"Why not?" Chippy asked, putting the corner of his blanket in his mouth.

Paul and Justin looked at each other with exasperation. This was going to take all day.

"Mitch," Justin said to Mitch Williams, the first ninth grader to pass the six-foot mark. "Carry him."

Mitch scooped up Chippy, blanket and all, and the team raced off. When they reached the Italian food aisle, the girls were huddled in a circle around Ms. Millingham.

"So, according to everything I've read and studied, this would be your best bet," Ms. Millingham said in her confident voice.

Justin and Paul slowed to see which jar of spaghetti sauce Ms. Millingham was recommending, but Elena caught them. "Cheaters!" she said, clashing the huddle so they couldn't see a thing.

"Use your own advisor!" Sheri said with a snirk. The boys shrugged and moved farther down the aisle. Moments later, the girls and their spaghetti sauce were gone.

"OK, Chippy, what'll it be?" Paul asked, hoping for a miracle.

"What?" asked Chippy, looking up at them with confusion.


Chippy reached out and picked the first jar of spaghetti sauce his chubby hands could reach. Paul took it and read the label: Mrs. Toscano's All-New Barbecue Flavor Bacon-Bit 'n' Tomato Spaghetti Sauce.

"Yum," said Hugo.

"There's no way this is the most environmentally friendly sauce," Paul said. "It has an ingredient list a mile long, and it's full of weird chemicals."

Justin closed his eyes against the headache that was forming. He'd been hoping Chippy was same kind of specially trained shopper, sort of like a police dog that could sniff out eco-friendly products. But, so far, that didn't seem to be the case.

He opened his eyes. "We have to do this ourselves," he told the other guys. He put Chippy's spaghetti sauce back on the shelf and quickly scanned the other jars. One had a picture of a big fresh tomato. Another had a sun and a picture of bees.

"Here," he said, skimming the labels. "This one says 'all-natural.' He handed the jar to Paul for inspection.

"OK," Paul said.

"Sounds good," Mitch and Hugo said.

"What's that?" Chippy asked, pointing at the jar with his drool-covered blanket.

"All-natural spaghetti sauce," Justin said.

"What's that?" Chippy asked.

"All-natural," said Justin.

"What's that?" asked Chippy.

"I...er...I don't know exactly," Justin said.

"What is all-natural anyway?"

The other boys shrugged their shoulders.

"It sounds pretty good," Mitch said.

"But does it mean anything?" Paul asked, turning the label over in his hands. The ingredient list is


pretty much like that bacon bit brand.”
“What about this one?” Mitch asked. “Suzy’s. Organic Tomato Sauce.”
“What’s that?” asked Chippy.
“Organic tomato sauce,” said Mitch.
“What’s that?” asked Chippy.
Mitch scanned the label. “Contains only ingredients that meet the USDA standards for organic produce.”
“What’s that?” asked Chippy.
“The U.S. Department of Agriculture,” said a boy named Frank.
“What’s that?” asked Chippy.
“A federal agency,” said Frank.
“I want ice cream,” said Chippy, wrapping his blanket around Mitch’s leg and tugging hard.
“What do you say, guys?” Mitch asked, holding up the organic spaghetti sauce while trying to hop free from Chippy’s blanket.
“Let’s take it,” Justin said decisively.
The boys found their way to the cleaning products aisle, which Ms. Millington and the girls seemed to have already visited and left. Right away, they keyed in on the laundry detergents with natural-sounding names and slogans. “How about Sun-Burst?” Hugo suggested. “It says right here it’s environmentally safe.”
“What’s that?” asked Chippy.
“I don’t know,” said Hugo.
“Does it explain on the label?” Paul asked.
“Not really,” said Hugo.
“Now how about this one? Nature-Care. It has a picture of a happy fish on it,” Justin said.
“Why?” Chippy asked, whipping his blanket against a stack of laundry cartons until they began swaying precariously from side to side.
“So you’ll believe it makes the water clean,” Hugo said. “But it doesn’t say that, does it?”
“He’s a pain in the rear end,” Paul whispered to Justin, pointing at Chippy. “But he asks questions that make us think.”
After much discussion, the boys settled on a gallon jug of concentrated, chlorine-free, phosphate-free laundry detergent. When Chippy asked why, Hugo explained that concentrated detergent requires less packaging, and both chlorine and phosphates can be bad for water quality. He’d learned that in chemistry. Chippy didn’t seem to understand a word, but he walked over to a nearby bulk bin of peppermint candies and started scooping them into his folded blanket.
“Let’s go,” said Mitch, picking Chippy up and tucking him under his arm like an oversized football. The boys moved on to the paper aisle.
The rest of the shopping spree was a blur. Words like “100-percent post-consumer waste,” “biodegradable,” “free-range,” “sustainably harvested,” and “eco-smart” swirled in their brains along with pictures of rain forest animals and grinning dolphins. They realized they really didn’t know what it all meant. But using their best judgment, they bought unbleached, recycled paper towels and a small canon of organic strawberries.
The last item on their list was apple cider. In the juice aisle, the boys found all sorts of apple cider, but it was really hard to decide which would be the best brand. They narrowed it down to three options. The first was frozen organic apple cider made from apples in a faraway state.
The second was fresh organic cider in a glass jar made from apples grown in New Zealand. And the third was cider in a plastic jug made from apples grown in a nearby state.
“I think we should rule out the frozen one,” said Mitch. “It takes a lot of energy to freeze stuff. You even have to transport it in refrigerated trucks.”
“Yeah, but think of all the energy it takes to get New Zealand apples to the United States,” Justin said. “At least the frozen stuff was made in this country.”
“Then let’s go with this one,” said Hugo, pointing to the cider in a plastic jug. “It’s not frozen. And it’s a farm that’s pretty close to here.”
“But it’s not organic,” Paul said. “And I know farmers use a lot of serious chemicals on apples
if they're not grown organically." The boys were silent for the next minute, trying to weigh the various choices.

"If only we'd had Ms. Millingham along," said Justin. "She's probably read a report about all this."

"Chippy, do you have any brilliant ideas?" Paul asked.

"I want juice," Chippy said, licking his lips. "That's a big help," said Paul. "Looks like we're on our own here, guys."

After much discussion, the boys finally settled on the Super Apple organic cider in a jar made from New Zealand apples. It was just a guess, but at this point that's all they could do. Grabbing a bottle off the shelf, they headed to the cashier and then met up with the rest of the class in the vans.

Once back on campus, the teams gathered around a table, and each team placed its items on the table for Mr. Fitzwaller to evaluate. Remarkably, the girls—using Ms. Millingham's knowledge—had chosen the same spaghetti sauce, paper towels, laundry detergent, and strawberries that the boys had chosen—responding to all of Chippy's questions. The only difference in their shopping selections was the apple cider. The girls had chosen Juice Galore—the frozen organic cider made in a faraway state.

"Darn!" said Mitch. "I knew we should have gone with the frozen kind."

"Well, well, well," Mr. Fitzwaller said. "Let's take a look. Yes, you've both done an excellent job of choosing environmentally friendly products. I approve of your first four choices completely. Minimal packaging, no toxic products—very wise selections all around. But isn't this interesting? I see you've chosen different brands of apple cider. Boys, I'd like to know why you chose this product."

"Well," said Paul, "it was kind of confusing. We thought fresh and local would be better energy-wise. And we liked the idea of buying organic and avoiding pesticides . . . ."

"But none of the ciders had all of those things," said Mitch. "That's why we were confused."

"So we went with Super Apple," said Justin. Hugo thought it probably took less energy to transport the apples on a big ship from New Zealand than to freeze the frozen stuff. And it is organic."

"Interesting," said Mr. Fitzwaller. "And girls, why did you choose the Juice Galore brand?"

"Because Ms. Millingham said to," said Sheri. "She, um, she said she read an article once that said Juice Galore was a really good company," added Frances.

"I see," said Mr. Fitzwaller. "Well, students, it's an interesting situation."

"I don't like the sound of that," said Paul. "Which brand is best? Super Apple?" he asked hopefully.

"No," said Mr. Fitzwaller. "Hooray!" shouted the girls, giving each other exuberant high-fives.

"Not so fast," said Mr. Fitzwaller. "Juice Galore isn't the best either."

"It isn't?" asked Elena. The girls quickly quieted down.

"You see, students, both of these are very good choices," said Mr. Fitzwaller. "But I'm not sure even an expert could add up all the relative costs and benefits and say which one is best. And information changes all the time. So it's very complicated. Sometimes you just can't know for sure what's the most environmentally sound purchase."

"So what do you do?" asked Mitch.

"You think things through," said Mr. Fitzwaller, "asking good questions and then coming up with the best decision you can. For that reason, I'm declaring Sulk Hall the winners of this week's contest."

"Hooray!" shouted the boys.

"As your prize, you can join Ms. Millingham in the recreation room for an evening of snacks and games."

"What about us?" asked Sheri and Elena.

"You get a party too," said Mr. Fitzwaller. "I've invited eight of Chippy's little friends over for a play date. And you're going to be the chaperones!"
The following terms are commonly used to make green claims. Read below to find out what they mean and what they do or don’t say about the product.

Recycled: "Recycled" means that some part of the product (or packaging) is made from recovered or reused materials. According to government rules, if a product isn’t completely recycled, it must indicate the percent of recycled material used. Materials reused as a normal part of the manufacturing process are described as "pre-consumer waste." Materials that consumers used and have recycled are known as "post-consumer waste" (PCW). Look for the highest percentage of PCW to ensure you’re getting recycled products that are helping the environment the most.

Recyclables: Products that say "recyclable" or "please recycle" have been proven by the manufacturer to be recyclable. But that doesn’t necessarily mean that your community recycles them. Also the universal recycling symbol—three chasing arrows—can indicate either that a product is recyclable or that it’s made from recycled products, but not necessarily both. Check with local officials to find out what’s recyclable in your area.

Less Waste: If a product claims to produce "20 percent less waste," that doesn’t tell you much because there is nothing to compare it to. If it says, "20 percent less waste than our previous packaging," that provides you with more information to base a purchasing decision on—but remember that less-wasteful alternatives may still exist.

"Eco-Friendly," "Eco-Smart," "Environmentally Safe," "Environmentally Friendly," "All-Natural," "Green:" These and similar terms may sound good, but because manufacturers are not required to use specific processes to be able to make those claims, the claims do not necessarily indicate that the product was made in a way that protected the environment. Because of the lack of regulation, terms like these are relatively meaningless and you should be wary of them. (Note that there are some rules for fresh meat that carries the "natural" label—it cannot contain any artificial flavoring, color ingredients, chemical preservatives, or artificial or synthetic ingredients, and can be only "minimally processed.")

Organic: With new rules recently taking effect, any foods labeled "organic" must meet strict regulations set by the U.S. Department of Agriculture (USDA). Some other states and organizations have added even more criteria to those set by USDA to make sure there isn’t contamination from some of the non-organic ingredients. Generally speaking, most synthetic and petroleum-based materials (such as many
pesticides) are prohibited for use in organic products, but USDA labels have several tiers with specific ingredient requirements (100-Percent Organic, Organic, and Made With Organic Ingredients). USDA has also extended organic labels to other products such as pet foods, fabrics, cosmetics, and body care products, but these don't have the same set of strict rules that food products have.

Nontoxic: Manufacturers generally must have good reason to claim that their product is "nontoxic"; that is, that it won't cause great harm to people or the environment. But some experts believe that the nontoxic label is not well regulated and, therefore, consider it to be too vague to help consumers.

For more information on these topics, visit the following Web sites:

  The FTC has a brochure called "Sorting Out Green Advertising Claims."

- Green Seal: www.greenseal.org
  Products with a label from the independent certifier Green Seal are generally recognized by experts as credible.

- Consumers Union Guide to Environmental Labels: www.eco-labels.org
  An independent organization that tests consumer products to provide unbiased advice, Consumers Union maintains this online guide with information on different labels and how meaningful they are.

  USDA oversees national standards for "organic" labeling.

- Marine Stewardship Council (MSC): www.msc.org
  The MSC label indicates sustainably harvested fish.

- Forest Stewardship Council (FSC): www.fscus.org
  The FSC label indicates sustainably harvested wood and wood products.

  RA certifies bananas, coffee, cocoa, and citrus fruits grown sustainably in rain forest areas.
In each of the following categories, find one product that makes a green claim. Try to evaluate whether the claim is valid, based on the information provided on the “Sorting Out Green Claims” handout as well as the listed Web sites. If you can't find a product that makes a green claim, choose one that you think seems to be the best environmental choice, and explain your choice under the heading “Your Thoughts.”

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<th>Product</th>
<th>Brand Name</th>
<th>Green Claim (If applicable)</th>
<th>Your Thoughts</th>
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“Young people are . . . skeptical of hype and suspicious of ‘the corporate machine.’ They want information. They read the labels on packages. But this generation was raised with computers and knows how to access information—and they will do their research.”

—Peter Lewis, journalist
10 Aisle Hopping

OVERVIEW
Read a fictional dialogue between two friends deciding what breakfast cereal to buy and evaluate some of the things that are important to people when they shop. Use a cost-benefit analysis to evaluate alternative choices in foods. Then play a simulation game to find out how people's purchasing decisions change as they learn more about products.

SUBJECTS
social studies, language arts

SKILLS
gathering (listening, recording, brainstorming), organizing (noting, listing, charting), analyzing (comparing and contrasting, calculating, discussing), interpreting (summarizing, identifying cause and effect), applying (decision making), evaluating (evaluating criteria, testing, assessing)

FRAMEWORK LINKS
30.2, 20.2, 20.4, 32.6, 42.7

VOCABULARY
cost-benefit analysis, economic decision, opportunity cost, unit cost

TIME
one to two sessions

MATERIALS
copies of "A Tale of Two Cereals" (pages 146-148), two grocery products of your choice (see the box "Choosing and Discussing Your Products" (pages 150-152) for more information)

CONNECTIONS
Try "Investigating Green Options" (pages 148-154) after conducting "Aisle Hopping" with your students to further explore the analytical thinking required of smart shoppers. "Dollars and Sense" in Biodiversity Basics offers more insight into the connections among consumers, economics, and biodiversity.

Many of us face the same daunting challenge when we walk down a grocery store aisle. Even when we just need a box of cereal or a jar of sauce, we may stand in front of a wall of cereal boxes or sauce jars, eyeing labels, reading nutrition information, and checking prices. And it can be a challenge to find information that will help us choose one product over the dozens of others that seem to be almost the same.

We all want to get the most for our money, but that doesn't necessarily mean choosing the least expensive option. Many other factors also affect our decisions, including advertisements, packaging, quality, and nutrition. Those considerations, and a host of others, all come into play as we balance a product's price against additional factors in making a purchasing decision.

Another factor people may weigh is the environmental impact of a product. "Green" products can be more or less expensive than their less-environmentally friendly counterparts. Even when they cost more, many people are willing to pay higher prices for products that have environmental benefits. While it's not the right choice for every shopper every time, many people opt for environmental benefits when possible.

In this activity, your students will start to uncover some of the motivations for buying products that go beyond price. They'll read a fictional dialogue between two friends that will introduce the students to some of the important factors in economic decision-making. And they'll weigh for themselves some of the costs and benefits of traditional versus more environmentally friendly products. In the end, your students will develop a greater appreciation for what's important to them when they shop.
Before You Begin

Choose and purchase two grocery products to use in a simulation game. The two products should be roughly equivalent, with one product offering significant environmental benefits. See the discussion guide “Choosing and Discussing Your Products” (pages 158-159) for more on what type of products to choose. Prepare enough small samples of the products for each student to try each one, but be sure to keep the products’ packaging intact so that the students can see and evaluate the two products.

Make copies of “A Tale of Two Cereals” (page 146) for each student, have students share copies, or copy onto an overhead transparency.

What to Do

1. List shopping considerations.
Ask the students to think back to the last time they were in a store shopping for something. As they made a decision about what to buy, what kinds of things did they think about? Have the students brainstorm about all of the different factors they considered when shopping for food, such as price, quality, appearance, or flavor. Record each factor as the students call them out.
Once they’ve developed a comprehensive list of factors to consider, ask each student to write down the factors he or she uses to make shopping decisions. Ask the students to prioritize their lists, ranking each of the factors in order of importance to them when they shop. Once students have finished developing their personalized lists, they should put those lists out of sight. Explain that, during the rest of the activity, they’ll be learning more about how we weigh a variety of factors when making shopping decisions.

2. Discuss factors in economic decisions.
Hand out one copy of “A Tale of Two Cereals” to each student (or ask students to share copies), and explain that this story includes a short dialogue between two friends who run into each other in the cereal aisle of their grocery store. Ask different students to read each part aloud for the class.

After hearing the story, ask the students to summarize the economic decision the two characters face in the dialogue. (In the story, the two characters are deciding between buying more expensive, name-brand cereals and less expensive, store-brand cereals.)

If Jackie buys the more expensive cereal, what would she have to give up? (She wouldn’t have enough money to buy the CD she wants.) Explain that economists call this the opportunity cost. The opportunity cost is what a person gives up by choosing to spend money in a particular way or on a particular item. Every economic decision involves an opportunity cost. Every dollar we spend on one product is a dollar we don’t have to spend on something else. As in Jackie’s case, those costs are sometimes significant. In other cases, the things we forgo are not as important. In Simon’s case, for example, there is nothing else he really wants.

Ask the students what kinds of things about cereal are important to Simon. (Simon is focused on the product’s taste and its packaging. Because a top skateboarder appears on the box, Simon suggests that eating the cereal could possibly make him a better skateboarder. Those factors are so important to Simon that he is willing to pay more for them.)
Choosing and Discussing Your Products

This activity requires you to find two products to use in the simulation game. Both products should be food items. However, one product should be fairly conventional while the other should offer environmental benefits. Because a wide variety of products will work for this simulation, we’ve left it up to you to decide which products to buy, based on what’s available and affordable in your area. The following offers some tips on what you may want to buy and how to discuss the environmental costs and benefits with students.

What to Buy
Choose two products that are roughly equivalent and that would be fairly easy for students to sample. Conventional and organic varieties of similar products will most likely be the easiest to find and compare. The following types of products are usually available in conventional and organic varieties:

* breakfast cereal (try to find two similar types—for example, both might be flakes, puffs, or rings.)
* pasta sauce
* cookies
* bread
* jellies or jams
* fruits or vegetables

Most large grocery stores now carry a variety of organic products, so these products should not be hard to find. Most health food stores also carry organic products. If you can’t find conventional and organic products to compare, look for food products that offer other environmental benefits. Examples include a product with little or no packaging (compared to a similar product with more packaging), or produce that is grown locally (compared to produce that has been shipped from another state or country).

Discussing the Environmental Pros and Cons
It’s important to emphasize that, although some products are definitely better for the environment than others, it’s not always possible to know exactly how something was produced and what the environmental effects might have been during growing, harvesting, manufacturing, and transporting. Many experts say that the best thing consumers can do is to find out as much as they can about the product, look for labels that provide more information about how it was produced, and learn to recognize certain labels that certify that it was produced in a more environmentally friendly way. (For example, seafood marked with an MSC label indicates that the seafood was certified by the Marine Stewardship Council and harvested sustainably according to a specific set of environmental and social criteria.)

Conventional and Organic Farming: This information is provided to help you discuss some of the pros and cons of organic and conventionally grown produce. Although organic is generally considered more environmentally friendly than conventional agriculture, many experts believe that we will need to use a variety of approaches in the future to ensure that our farming practices protect the environment, are socially responsible, are economically viable for farmers and workers, and are efficient enough that we can grow food at affordable prices to sufficiently feed a growing population. Many think the answer will be an approach that emphasizes sustainability, is built on ongoing research, and combines the best of what we know from current methods, including organic farming techniques, natural pest control, watershed protection, targeted chemical applications when appropriate, fewer nonrenewable energy inputs, and habitat protection. The goal is to help farmers and ranchers adopt practices that are economically viable, environmentally sound, and socially responsible. See the Resources on page 104 to find out more about a variety of agricultural approaches.

Conventionally produced fruits, vegetables, and grains are generally grown using synthetic pesticides and fertilizers. These chemicals help
Choosing and Discussing Your Products (Cont’d.)

increase yields because they limit damage caused by pests and can increase the nutrients in the soil during the growing season. The higher yields translate into lower prices for consumers. The chemicals, however, can enter waterways, where they can cause water pollution and harm wildlife. Some people are also concerned about the effects of chemical pesticides on people, contending that many of the chemicals have not been fully tested to determine their potential effects on human health and the environment. Conventional farming can also contribute to soil degradation, soil runoff, loss of biodiversity (as new lands are converted for farming), and other environmental problems, and often requires huge inputs of energy from non-renewable sources (such as petroleum). It’s important to point out that there is great variation among farms and farming practices—and that many conventional farmers and ranchers are trying to incorporate more environmentally friendly practices into what they do.

Unlike conventional farming, organic produce is grown without using synthetic pesticides or fertilizers. Instead, more natural techniques and substances are used to control pests, protect soil fertility, and ensure long-term soil health. Organic farmers are also required to maintain a buffer zone between organic farms and neighboring conventional farms to protect their produce from chemical contamination, and they are not allowed to use genetically modified organisms. By not using synthetic chemicals, organic farms have taken a giant step forward in reducing our dependence on those chemicals, which many believe cause problems for people and wildlife. However, more research is needed to know how organic farming compares with conventional farming in terms of yields, biodiversity conservation, and overall environmental impact. For example, organic farms often use natural fertilizers (composted chicken and cow manure) that, when improperly used, can cause runoff and water contamination just as synthetic fertilizers can. At the large scale, organic farms can contribute to biodiversity loss just as conventional farms can, through the conversion of new lands to agriculture. In addition, some organic farming methods are more labor-intensive and are generally not subsidized (like some other crops produced in the United States), causing prices to be higher than conventionally farmed produce.

More and Less Packaging: Products that have a lot of packaging are often more attractive to consumers, as the packaging allows more room for product details, pictures, and other information consumers want. In addition, many consumers think that the extra packaging has protected their product from damage. The packaging, however, requires energy and resources to produce, makes the product heavier during shipment (so it requires more energy to transport the product), and leads to more waste when the packaging is disposed of. Products with less packaging require fewer resources to produce and transport and result in less waste. Unpackaged, or minimally packaged, products can save energy and save space in landfills.

Local and Long-Distance Produce: Produce that is grown at a distance from its end market requires much more energy to transport than does produce that is grown locally. Locally grown produce travels only a fraction of the miles, so it helps save energy. And less fuel burned means that less carbon dioxide—a heat-trapping gas linked to global climate change—enters the atmosphere.
3. Introduce cost-benefit analysis.
Explain to students that, whether or not we realize it, most of our decisions about what to buy involve some sort of cost-benefit analysis. What benefits will we get from the product? What are our opportunity costs? What are some of the other costs of choosing the product, such as environmental or social costs?

Tell students that, when comparing the monetary costs of two products, it is often more revealing to compare the products’ costs per unit weight (the unit costs) than their overall prices. For example, each cookie from an 8 oz. box that costs $3.00 is actually more expensive than each cookie from a 16 oz. box that costs $4.00, even though the overall price of the first box is lower. In general, larger-sized packages tend to be cheaper per unit weight. They also tend to use less packaging overall, so their environmental impact is smaller.

Have students review the dialogue between Simon and Jackie. What would the students say are the benefits of the name-brand cereal? They might taste better, be packaged better, and be associated with celebrities. What are the costs of those cereals? They are more expensive. For Jackie, the higher price represents an opportunity cost—she would have to forgo buying the CD she wants. Can your students identify some of the costs of the less-expensive store brand? These cereals might not taste quite as good as the name brand, they’re not as nicely packaged, and they don’t have celebrities advertising them. What are the benefits of buying store-brand cereals? They are much less expensive than name-brand cereals, so the opportunity cost of purchasing them is smaller. Also, according to many people, the taste is not very different from—and is sometimes better than—the taste of the name-brand cereal. Record your students’ thoughts about the costs and benefits on the board so that students can see them displayed together.

Ask the students how people decide what to buy when there are costs and benefits to every choice. Explain that economic decisions, such as the one in the cereal example, often involve values. Shoppers must decide which of the costs and benefits are most significant to them, and then must make their decisions based on their own interests and values. Sometimes, as in Jackie’s case, price is the most important factor. Other times, different factors are more important, as in Simon’s case.

4. Create a “shopping aisle.”
Explain that you’ve selected two products, and the class members will now have the chance to make some food shopping decisions of their own. Explain that they’ll have the chance to run back and forth across an imaginary shopping aisle as they decide which product to buy.

If you will be using an inside space, move the desks to the back of the room. Explain that the two walls on the sides of the room represent the two sides of the aisle. Ask the students to form a line in the center of the room, or aisle, to start the simulation. They’ll be running from one side of the room to the other, so be sure to remove any obstructions in the middle of the room.

If you will be conducting the simulation in an outdoor area, use cones, rope, flags, or other markers to delineate the two sides of the “aisle.” Again, ask the students to form a line in the center of the aisle to start the simulation.

Note: You may need to remind the students that, although they’re running, they should remain orderly.

FACTOID

CONSUMER CHOICES: In 2002, the average consumer in the United States spent $830 on entertainment, $700 on apparel and related services, and $300 on education.
There’s no prize for being the first to reach the other side of the aisle, so there’s no need to push or race. If you prefer, you may have the students walk instead of run.

You can also do a sit-down version of this activity. Have the students take out a piece of paper and draw two columns on it, one with the words “Product One” at the top, and one with the words “Product Two” at the top. Then have them record their impressions of each product’s looks, price, environmental impacts, and taste, in turn. They can simply put a check in the column of the product that is superior for each category, or they can write descriptive words for each category.

5. Evaluate product looks.
The first piece of information on which the students will base their purchasing decision is how the products look. With the product you’re calling “Product One,” walk down the right-hand side of the line of students and give them a brief look at the product’s packaging. Once they’ve all seen the product, place it at the head of the right side. Next, walk down the left-hand side of the line of students, allowing them to see “Product Two.” Once each student has seen the product, place it at the head of the left side. Tell the students to consider their two options. Then, when you give the signal, they should run or walk to the side with the product they wish to buy.

After the students have arrived at their chosen side of the aisle, ask them why they’ve chosen that particular product. What about the way it looked made them want it more than the other?

Next, tell the students that you’ll be revealing the price of each product. Be sure to point out the differences between both the unit prices and the actual prices of each product. Based on these new pieces of information and at your signal, the students can either choose to stay where they are, or they can run or walk across the aisle to choose the other product. After the students have made their selections, ask them why they’ve chosen the products that they have. Have they all chosen the less-expensive option? If not, what are some of their reasons for paying more?

7. Evaluate environmental impacts.
Next, tell the students that the two products have different impacts on the environment. Using the discussion guide provided (pages 158–159), explain the pros and cons of each product’s environmental impact. After answering any questions the students might have, on your signal, ask the students to run or walk to the product they’d choose, given this new information.

After the students have made their selections, ask a few students to explain their choice. Which students changed their minds because of the environmental information? Why? Which students didn’t, and why?

8. Taste products.
Finally, if possible, allow the students to taste each of the products. As they taste each product, review with them the pieces of information they’ve learned so far: They’ve seen how each product looks in its packaging; they know how much each product costs; they’ve gathered some information about each product’s environmental impact; and now they’ve sampled each one. Ask the students to consider all of those factors and make a final decision about which of the two products they would prefer to buy. On your signal, have them run or walk to the preferred product.

Note: Depending on the products you’ve chosen, it may make sense to introduce other information, and rounds, into the simulation. For example, if there is a nutritional difference between the two products, you might have students make a decision based on that information. You can add as many rounds to the game as you need to cover all the product information that you think is important, but the students’ interest may wane if too many rounds are played.
8. Reflect on product choices.
After the students have made their final choices, have them return to their seats. Ask the students to reflect back on the two products and consider what they think are the costs and benefits of each. Have each student create a small chart that displays the costs and benefits of each product, and then ask the students to write down which product they chose and why. How did they weigh the different costs and benefits? Did any other factors that were not considered in the game influence their decisions, such as advertising for one or the other product they had seen previously? In the end, which factors were most important to them? Once they've completed the task, ask the students to share some of their responses.

9. Reflect on product choices.
If students seem frustrated, remind them that people are always learning more about the products they use. Consumers often change their minds about what's best to buy based on their knowledge as they weigh the currently available information against the many other factors that are important. There is not one right answer about what's best to buy, and we can always learn more about the costs and benefits of all of our options. If you'll be conducting other activities from this module, explain that they'll be learning more about how to evaluate and gather information on products in upcoming activities.

10. Discuss future decisions.
Ask the students to take out their original prioritized list of factors that they cited as being important to them. How closely does their original list match their decision-making process in the simulation? Did the simulation highlight additional factors that they hadn't considered at the start of the activity? Had they considered environmental impacts? Did their original priorities seem similar to their priorities in the simulation? Can they explain any changes in their thinking?

Finally, ask the students to reflect on how environmental considerations affected their decisions. How many students think they'll consider environmental impacts when they shop for products in the future? Explain that one challenge in considering environmental impacts is that a lot of information may be required to make a well-informed decision. Even though the information provided in this simulation may have seemed limited, it was probably more than they would usually receive. What do students think about the limited amount of information available? Do they...
WRAPPING IT UP

Portfolio
The students' cost/benefit charts (if they made them) and lists of shopping priorities can be saved for their portfolios.

Writing Idea
Ask the students to imagine that, the next time they go grocery shopping with an adult, they decide to convince that person to switch from a favorite brand of some item to a more environmentally friendly choice (organic, recycled, nontoxic, and so on). What would the students say? How would the other person respond? Have them write a short dialogue describing this scene.

Assessment
Have the students make a "T" chart with the left side of the page labeled "Pro" and the right side of the page labeled "Con." At the very top of the page, have each student identify a product they have purchased recently (something different from what was discussed in class). Under the "Pro" column, have them identify all the benefits of the product they purchased compared to similar products they could have purchased. On the "Con" side, have them list all the costs compared to similar products they could have purchased. Then have them circle the key reasons the purchase was made. At the bottom, in a single sentence, have the students answer the question: If you were to make this purchase again, would you make the same choice based on this analysis, and why?

Unsatisfactory—Elements of the assignment are incomplete. The list is not reflective of careful thought or consideration. The statement is not supported by the items circled on the list.

Satisfactory—The list includes such issues as cost, appearance, pressure to conform, advertising, personal values, wants, environmental concerns, and so on. The statement on future purchasing relates to the items that are circled.

Excellent—The list is thorough and well considered. The statement demonstrates critical thinking about the purchase.
WRAPPING IT UP (Cont'd.)

Extensions
- Have the students think of a product of their choice and investigate the costs and benefits of that product, focusing especially on environmental costs and benefits. They might consider non-food items such as clothes and cars. Would they recommend buying the product? Why or why not?
- Ask the students how brand conscious they are when it comes to buying food items. Find out some of the products they favor, and then organize a blind taste test to determine whether they really can tell the difference between their favored product and a generic or less-expensive brand. Test as many tasters as possible, and then have the students graph the results. Follow up with a discussion about the influence of advertising and peer pressure on our buying decisions.

RESOURCES
The U.S. Department of Agriculture provides information on organic food production. www.usda.gov/organic

Consumer Reports magazine and Web site provides information to help consumers compare different products. www.consumerreports.org

Sustainable Agriculture Research and Education is a program of the U.S. Department of Agriculture's Cooperative State Research, Education, and Extension Service. Its Web site contains information and resources for educators and consumers about sustainable agriculture. www.sare.org

Explore what sustainable agriculture means, the issues it encompasses, and why it's important in reducing our impact on the environment. Also, investigate eco-labels and claims and explore how to shop sustainably at this Global Resource Action Center for the Environment (GRACE) Web site. www.sustainabletable.org

The online "Eat Well Guide" helps consumers locate organic products and sustainably raised meats, eggs, and dairy in their local area. The guide also contains information about different production methods and labels that are oriented toward sustainability. www.eatwellguide.org
A Tale of Two Cereals

In the cereal aisle of a grocery store.

**Jackie**: Hey, Simon—what are you doing here?

**Simon**: What do you think?

**Jackie**: Sorry, but you’re the last person I’d expect to see in a grocery store. Are you figuring out how to jump over the cereal displays on your skateboard?

**Simon**: Very funny. No, my mom says that now that I know how to drive I have to do useful stuff, like shop for groceries. But at least I can get the cereal I want.

**Jackie**: So what kind are you getting?

**Simon**: Probably Cookie Os.

**Jackie**: Gross. Not me—I’m thinking of trying this new store-brand stuff: Berry Spots.

**Simon**: Berry Spots? That sounds like a skin disease! You should at least get the real stuff—Berries Galore.

**Jackie**: Nah, those cost too much. My mom only gave me $5.00.

**Simon**: But they’re $4.99. What’s the problem?

**Jackie**: Well, she said I could keep the change. So if I buy Berry Spots for half the price, I’ll have $2.50 left over. And with the $11 I already have, that’ll give me all I need to buy the new Boyz Will Be Boyz CD.

**Simon**: I get to keep the change, too, but who cares? I’m not really saving for anything. Besides, you won’t catch me buying any cheap-o store brands.

**Jackie**: Why not? It’s probably the exact same stuff.

**Simon**: I doubt it. Look—the box is totally ugly.

**Jackie**: Who cares what the box looks like? It’s the stuff inside that counts. Oh, wait, is that Daryl “The Thrasher” Anderson on the back of your Cookie Os?

**Simon**: What? Well . . . yeah. So what?

**Jackie**: Ha! You’re buying those only because that’s what your skateboard hero likes. You’re so gullible!

**Simon**: I’m not gullible. But if there’s even a remote chance that eating Cookie Os will help me float a massive switch ollie like The Thrasher, then they’re worth every penny.
OVERVIEW
Art out narratives that describe the life cycle of a conventionally produced cotton T-shirt, then create a presentation about an alternatively produced T-shirt. Brainstorm about some of the environmental effects of the two products' life cycles. Consider the pros and cons of different production methods, and explore the factors that influence how things are produced.

SUBJECTS
science, social studies, language arts

SKILLS
gathering (observing, listening), analyzing (comparing and contrasting, discussing), interpreting (summarizing, drawing conclusions), applying (predicting), presenting (demonstrating, acting)

FRAMEWORK LINKS
11, 21, 39, 50, 53, 56, 57, 62, 65, 68, 69, 71, 72

VOCABULARY
consumer, conventional agriculture, fertilizer, fungicide, herbicide, industrialization, life cycle analysis, organic, pesticide, socially responsible, synthetic

TIME
one to two sessions, or longer if additional research is assigned.

MATERIALS
one copy each of "The Life Cycle of Cotton" narrative and "An Alternative Cotton T-Shirt Life Cycle" chart (pages 1.13-1.16)

CONNECTIONS
Before conducting this activity with your students, try "Buy or Divest" (pages 56-73) to get them thinking about the hidden connections between everyday products and the environment. For more about the environmental effects of cotton farming, try "The Many Sides of Cotton" in Biodiversity Basics.
Before You Begin

Make a copy of "The Life Cycle of Cotton" narrative (pages 173-174). Once you fill in the blanks with the students' input, you'll be passing the narrative over to the narrator (or, if you use more than one narrator, to each one in turn). Therefore, you might want to circle in advance any terms you think the students might be unfamiliar with and review those terms with the group before the skits begin. Also make at least one copy of "An Alternative Cotton T-Shirt Life Cycle" (pages 175-176). Cut the boxes apart so that you have one box for each team of students. If you prefer that each team member have his or her own copy of the text box, divide the total class size by four to figure out how many copies you'll need.

What to Do

1. Introduce the assignment.
Begin by telling the students that they're going to be taking part in an improvisational skit designed to illustrate the life cycle of a cotton T-shirt. Does anyone know what a life cycle is? Explain that, just as the life cycle of a living organism includes stages from birth to death, the life cycle of a product includes all of the stages involved in that product's "existence"—from the extraction or cultivation of raw materials (such as crude oil, cotton plants, trees, and so on), to the making of the product, to the purchase and disposal of that product by consumers. Life cycle analyses can help consumers better understand the complete environmental and social impacts of the products they buy.

Tell the students that this particular activity will combine elements of Mad Libs with improvisational comedy. For this reason, you'll need to start by polling the audience for a number of words to plug into a life cycle narrative.

Using the narrative on pages 173-174, ask the students to provide you with the various parts of speech and other types of words requested. Use your best judgment about which words to select. It will be more enjoyable for everyone involved if the words used to fill in the blanks are silly, surprising, and fun to act out. But you may decide to avoid certain terms that might lead to distracting or inappropriate behavior. For example, in the first sentence, the words "grumpy," "clueless," "humorous," "old," or "handsome" would all be appropriate and engaging adjectives to use.

2. Organize the skit.
Now prepare the students to act out the skit. Select one student for each role listed on the handout, including a single narrator or a set of narrators. Explain that the students doing the acting will have no advance preparation for their roles. They'll simply act out the information as the narrator reads it. But they should do their best to represent the actions and descriptions of the narrative.

FACTOID

QUALITY OUT OF CONTROL: Since the 1970s, several key aspects of the social health of the United States—as measured by Fordham University's Institute for Innovation in Social Policy—have been on the decline.
Tell the whole group that, although the skit is designed to be fun, the information about how a certain product gets made is accurate. Tell them that they should be fully prepared to discuss the details of the production process after watching the skit.

You may want to review any terms in the narrative that may be unfamiliar to your group. (See "Before You Begin.")

3. Perform the skit.
Have the narrator and first actor come to the front of the room. As the narrator reads, the actor will perform the actions described. Run through each section of the skit in turn, changing narrators if you prefer. You may wish to pause between each section to review the information presented.

4. Discuss the skit.
Ask the students to think back to the skit and name the five life-cycle stages of a cotton T-shirt: cotton growing, conversion of cotton into yarn and then into cloth at a textile mill, production and selling of T-shirts to a wholesaler, purchase of T-shirts by a clothing retailer, and use and disposal of T-shirt by a consumer.

What are some of the potential environmental problems associated with each of these stages? (Students will probably be able to make general comments relating to the following environmental issues. Augment the students' answers with the information provided.)

Cotton growing: Growing cotton conventionally requires the use of synthetic pesticides, including fungicides and herbicides, that can affect the health of people and other living things. Synthetic fertilizers added to the soil can wash into waterways and cause an overgrowth of algae (called an algal bloom), which ultimately results in diminished oxygen supplies for fish and other aquatic species. Conventional growing also uses a great deal of water, which can deplete water supplies.

Production of cotton yarn and fabric: Using softening agents, bleaches, and dyes on raw cotton can lead to water pollution that affects many living things. Heavy water use can deplete local water supplies.

Production and selling of T-shirts:
Shipping cotton fabric overseas and shipping finished T-shirts back to the United States uses energy. Conditions in overseas garment factories can be hazardous and stressful and therefore harmful to people who work there. Efforts to increase sales by promoting new fashion trends increases the consumption of resources.

Buying, wearing, and disposing of T-shirts:
Consumers may buy more products than they need because they want to keep up with fashion trends, feel confident in how they look, impress others with how many shirts they can afford, and so on. It's worth considering, too, how consumers wash their T-shirts and what effects those washings may have. After consumers are done with T-shirts they may throw them away, so the shirts could end up in local landfills.

5. Assign student-created presentations.
Divide the class into four teams, and give each team a different set of information about alternative ways of growing and making cotton T-shirts. Then have the students think up a way to present the information creatively to the rest of the class. The groups might make posters illustrating the key information, create a PowerPoint presentation, or act out the information. They might even try writing an improv skit, leaving blank spaces in sentences
Cotton, Subsidies, and Global Trade

This activity focuses on the environmental impacts of growing cotton and compares conventional and organic farming practices. However, it does not address issues related to government subsidies and global trade. Like most grain crops in the United States, cotton production is subsidized, which means farmers get to receive government payments for growing cotton. (Many other industries, such as fishing and energy production, are also subsidized.)

Cotton subsidies to farmers create a number of environmental and trade problems. For example, subsidies in the United States encourage overproduction, thereby reducing the price of cotton worldwide and distorting world markets. (When U.S. cotton floods the market and lowers prices, the cotton grown in many other countries can’t compete. Governments in poorer countries, often in the developing world, can’t afford to pay their farmers similar subsidies to make cotton production profitable.) Subsidies can also encourage practices that are not efficient or environmentally sustainable. For example, without extra support in the form of subsidies, some crops are too expensive to produce—especially in climates and soils that aren’t conducive to a particular crop. (Cotton production, for example, requires a lot of water, energy, and pesticides and can harm soil productivity.) In addition, subsidies help cover increased production costs, which can encourage farmers to grow more, converting natural wildlife habitat into highly commercial cropland. These government payments can also allow inefficient farmers to take business from more efficient unsubsidized farmers, with the net result being that global production is less efficient and that capital is misdirected into inefficient industries at the expense of more productive ones.

If subsidies align with government policies and promote environmentally sustainable and socially responsible efforts, they can help the economy and the environment. For example, some environmental groups are promoting “green subsidies” that would pay farmers to take land out of production to create buffer zones and restore habitat. However, subsidies, along with tariffs and quotas, can also distort free market prices and create unfair trade advantages and harmful environmental impacts.

If you are working with advanced students, you might want to explore the environmental and social impacts of subsidies from a variety of viewpoints by searching for news and opinion pieces online.
that other students are then asked to complete. (You
may want to point out that they should be careful
that the blank places, when filled in, do not signifi-
cantly change the meaning of the sentence, since the
primary purpose of the skill is to inform the class
about alternative production methods.)

After the students have had 10 to 30 minutes to pre-
pare, have them share the presentations with the rest
of the class, starting with the cotton grower and mov-
ing in order through to the cotton T-shirt consumer.

5. Discuss alternative production methods.

When all four teams have finished their presenta-
tions, ask the students to compare the information. What
changes in the life cycle of a cotton T-shirt were
presented? (Growing cotton without synthetic
fertilizers; a cleaner, more water-efficient textile mill;
more socially responsible manufacturing; reduced use
and reusing/recycling of the cotton T-shirt; and so on.) How might
these choices have
reduced the social or
environmental impacts
of the product? (Fewer
synthetic chemicals
and less water used in
growing means less
impact on the natural
environment and
human communities;
an improved textile mill
reduces environmental
impact; an alternative
manufacturing environment might mean healthier,
happier workers; and a factory located closer to the
intermediary and end purchasers [stores and
consumers] may mean less use of energy and less
pollution during transportation; reusing and recycling
tcotton T-shirts reduces waste and means less
consumption overall of resources and less pollution
from cotton growing; and so on.)

What are some reasons that growers, manufacturers,
retailers, and consumers might not choose the most
environmentally or socially responsible production
method? (It's often more expensive [see box on
subsidies on page 168]. Producers need to know that
there will be a market for their products and that
consumers will be willing to pay the price required to
make manufacturing profitable. Consumers need to
have environmentally and socially friendly options
available, to be informed about their benefits, and to
find them as appealing as other products.) Remind
the students that the two approaches to T-shirt making
discussed here represent two ends of the
spectrum. In reality, there are many intermediate
options for production that have varying positive and
negative impacts on the environment and
people. For example, in some cases, conventional
farmers are trying to use more environmentally or
socially responsible growing practices. Conversely,
organic farms can cause pollution if their use of
fertilizers is excessive or poorly timed, even though
those fertilizers are "natural."

Ask the students why they think life cycle
analysis might be a useful tool for consumers.
(It allows them to make more informed decisions
about the things they buy.) How much
do your students currently know about
how products—such as shoes, notebook
paper, pencils, CD players, and cell
phones—are made? (Answers will vary.)
How might students become better
informed about the life cycles of those
products? (See the third extension, on page
171.) How do the students think their
choices as consumers can impact the way
things are manufactured? (Answers will vary. In
general, we can think of our purchasing decisions as
"voting" with our dollars. The greater demand there
is for responsibly made products, the more frequently
those products will be produced and become more
readily available in the marketplace.)
WRAPPING IT UP

Portfolio
If students investigated other product life cycles (Step 6), have them include those reports in their portfolios.

Writing Idea
Life cycle analysis is a lot like a biography: It traces a product’s life history, whereas a biography traces a person’s life history. Have the students write a biography (or autobiography) of one of the products whose life history they analyzed. They should describe the product’s origins, development, “career,” and end, assessing the positive and negative effects it has had in the world.

Assessment
If you haven’t already had the students investigate other product life cycles, have each of them select a product that they use daily and research it. Then have each of them draw a picture or diagram of the life cycle of that product, labelling the effects on the environment at the various stages and identifying ways of reducing the effects at different points of the life cycle.

Unsatisfactory—The life cycle is incomplete or abbreviated. There may be effects named at different stages, but each effect is the same or not distinctly different from others. The student cannot identify more than one or two suggestions for reducing effects along the life cycle.

Satisfactory—The student is able to identify four or five different stages. Two or three different effects are named from at least two different stages of the product’s life. Two to three suggestions are made for ways to reduce effects.

Excellent—The student is able to identify five or more stages. Four or more effects are identified that reflect different perspectives. Four or more suggestions for reducing effects demonstrate critical thinking.

Extensions
• If the students are interested in learning more about organic cotton clothing, have them research where it’s available in your community (or on the Internet). What can the retailers of clothes made from organic materials tell the students about the life cycle of those clothes? Do they know any details about how the clothes were manufactured? How well are the clothes selling? Do the retailers have any plans to expand their product lines?

• If the students are interested in learning more about organic agriculture, they can try planting an organic garden. They can prepare the soil, plant seeds or transplant plants, and maintain the plants without synthetic pesticides or fertilizers. The students should research common organic gardening techniques, such as using compost instead of synthetic fertilizers. The students might also want to compare plant growth in an organic garden with growth in a garden where...
WRAPPING IT UP (Cont’d.)

synthetic fertilizers are used. Can they achieve better yields using those fertilizers? Have the students evaluate the pros and cons of both methods.

- Have the students research the hidden life cycles of some other everyday products such as CDs, pencils, or running shoes and create posters, videos, or skits to inform other students or their communities about what they have learned. Good Stuff? A Behind-the-Scenes Guide to the Things We Buy, Sienna magazine’s “Hidden Life” column, and Stuff: The Secret Lives of Everyday Things are all good places to start (see Resources, below).

RESOURCES

Visit www.ilybegdifferent.org, a joint Web site from World Wildlife Fund and the Center for a New American Dream, for animated life cycles of light bulbs, shoes, hamburgers, and showers that highlight environmental connections.

"Eternal Winter: Lessons of the Aral Sea Disaster" by Tom Bissell addresses the effects of cotton farming on central Asia's Aral Sea—what has been described as "the largest man-made ecological catastrophe in history." (Harper's Magazine. April 2002.)


Sienna magazine’s “Hidden Life” column investigates the environmental and social impacts of everyday products. Visit www.siennamag.org/hidden to find back issues of the magazine.


www.northwestwatch.org/factories/publications/stuff.asp

The Life Cycle of Cotton

Roles
Narrator (one to five narrators will be needed, depending on your preference)
Cotton Farmer
Textile Mill Owner
T-Shirt Wholesaler (person who buys or imports T-shirts to sell to stores)
T-Shirt Retailer
Consumer

Narrative One
[Note to narrator: Be sure to change the "he" or "she" to fit the person playing a particular role.]

When you buy a cotton T-shirt, do you ever think about where it comes from?

Here's your typical _________ (adjective) COTTON FARMER. She begins the growing process by supplementing natural nutrients in the soil with human-made fertilizers. She _________ (adverb) applies chemicals called herbicides to kill _________ (adjective) weeds, and puts some fungus-killing chemicals on the cotton seeds so the seeds won't rot. Then she plants the cotton seeds. Little by little, the plants grow. Soon it rains, and many of the herbicides applied to the field dissolve and are carried by runoff into nearby streams. New weeds begin to crowd the young cotton plants and the farmer, moving as fast as a _________ (animal name), applies more herbicides. She then adds more fertilizers and lots of water to help the plants grow. Then she adds more water. And more water. But watch out! Now _________ (adjective) pests are threatening the crops. Faster than a speeding _________ (noun), the farmer adds chemical pesticides to the now-mature plants. The pesticides not only get rid of pests, they also cause the plants to drop their leaves so it's easier to harvest the raw cotton, or cotton boils. Once the harvesting is done, the cotton season is over. After delivering the cotton to the textile mill, the _________ (adjective) farmer can kick back and watch _________ (television program) for the winter months.

Here's your typical _________ (adjective) TEXTILE MILL OWNER. He's just received a whole bunch of cotton and he has a big job to do. See him flex his _________ (adjective) muscles in preparation for the work ahead! First, to make yarn, he needs to clean and process the cotton fibers, which is a process that requires a lot of water. And more water. Good thing the textile mill owner has strong _________ (part of body)! He also adds lots of chemicals, including bleach, to make the yarn whiter and softer. When the yarn is ready, the textile mill machines weave it into fabric. Meanwhile, the wastewater from the whole process, which may contain some bleaches and other chemicals, can end up...
The Life Cycle of Cotton (Cont'd.)

In the same lakes and rivers where wildlife lives and the textile mill owner likes to ___________ (outdoor activity).

Here's a very ___________ (adjective) T-SHIRT WHOLESALER. She signs a contract with an overseas factory owner, whose workers then cut the cotton fabric, sew it into T-shirts, and decorate the shirts with pictures of ___________ (plural nouns) and sayings such as "__________" (common phrase)

The wholesaler wants her shirts made at the lowest possible cost, but often the factories making the cheapest shirts pay their workers very low wages, and the factories can be stressful and hazardous to work in. Also, using factories overseas means the T-shirt wholesaler has to ship the cotton fabric across ___________ (adjective) oceans. Then, once the T-shirts are made, they have to be shipped back to the United States. All of that shipping and transporting uses a lot of energy.

Meet a typical _______ (adjective) T-SHIRT RETAILER. She buys _________, _______ (number) of her favorite T-shirts from the T-shirt wholesaler and has them shipped to her store from the wholesaler's warehouse. She can convince customers that the latest fashion trend is wearing cotton T-shirts to _________ (formal events) or that every person needs at least _______ (high number) T-shirts to get into college. That way, she makes lots of money and can plan her future retirement in ___________ (faraway location).

Now meet a typical _______ (adjective) teenage CONSUMER. He heads into a clothing store to buy a new T-shirt with the money he's just earned by _________ (activity). He notices _________ (adjective) shirts, but the shirt he wants most is _________ (adjective). When he tries it on, the consumer thinks he looks really _________ (adjective)—even better than _________ (movie star). Plus the T-shirt is cheap. So, what's not to like? He buys the T-shirt and wears it the very next day to _________ (place). It's his favorite shirt for _________ (low number) weeks. Then he starts to think it looks too _________ (adjective) on him, so, one day, he throws it into the trash. The next day he heads back to the clothing store to find a new T-shirt. This time he searches for one that will make him look like the most _________ (adjective) kid at school!
Cotton Farmers

Organic growers start by fertilizing their soil with compost (nutrient-rich material made from organic waste such as dead leaves, grass cuttings, vegetable scraps, and cow and chicken poop). They plant seeds that have not been treated with fungus-killing chemicals. When weeds come up, the farmers cut the weeds down or dig them up. Organic cotton requires less water because soil with plenty of organic matter holds water for a longer time. As pests appear, farmers walk the fields and release insect predators such as praying mantises, lady beetles, and lacewings in key areas. When the plants mature, they're allowed to die naturally. Then the cotton farmer harvests the cotton. Overall, these methods are more labor-intensive than conventional cotton and may require more money and more land, but they also use no synthetic chemicals and far less water. Growers depend on textile manufacturers who are willing to pay more money for organically grown cotton.

Cotton Textile Manufacturers

Textile mills considered to be "clean" are designed to have the least environmental impact possible. These mills use far less water than other mills because they've changed the way fabrics are produced. The mills have eliminated the need for water during some steps in the production process, and they reuse water wherever possible. In addition, the mills use only nontoxic chemicals to produce their fabrics. Finally, the wastewater that leaves the factory is very clean, so the mills emit little pollution. The owners of the mills, however, can't make as many different kinds of fabrics as other mill owners because of the limited number of chemicals they use. Their production techniques may be cheaper in some ways because they require fewer chemicals, but they're more expensive in others because of the extra effort involved in keeping the process so clean.
T-Shirt Wholesalers and Retailers

Some companies are committed to buying and selling organic cotton T-shirts. They locate fabric manufacturers that use only organically grown cotton. The producers may opt to create fabrics with fewer bright colors, or use less bleach for whitening—both of which help avoid the necessity of using harmful chemicals. Many of these companies have made a commitment to working with factories with more environmentally and socially responsible practices, either by situating their factories in the United States where labor and environmental regulations are often more stringent, or by making inspections of their overseas factories. If the factories are located closer to growers and retailers, less energy is used to transport cotton fabric and finished cotton T-shirts back and forth. Overall, efforts to use environmentally and socially friendly growing and manufacturing processes tend to cost more. And these higher costs are then passed on to the consumer in the form of higher prices. For that reason, clothing companies that use organic cotton often advertise its benefits to consumers to encourage people to pay the extra expense.

T-Shirt Consumers

Some consumers are willing to work harder to find cotton T-shirts that are made with organic cotton. Depending on the types of dyes used, they may not find as many bright colors available, and they often are limited to fewer styles. What’s more, the T-shirts may cost more. But if consumers are inspired to buy fewer T-shirts because the organic ones are more costly, then they are reducing their impact on the environment in two ways (less impact per T-shirt and less consumption overall). No matter how it’s produced, once a T-shirt is worn out or no longer fits or appeals, a savvy consumer might pass the shirt on to a friend or sibling, donate it to charity, or reuse it as a cleaning rag or for similar purposes. This reuse helps cut down on consumption—which means fewer T-shirts have to be made in the long run.
"In addition to good science and good regulation, we need a system that harnesses the power of the consumer."

—Charles, HRH The Prince of Wales
Trash to Treasure

Overview
Play the role of a trash expert sorting trash as you learn about waste and ways to reduce it.

Subjects
Science, social studies, mathematics

Skills
Organizing (sorting), analyzing (comparing and contrasting, calculating, discussing, interpreting [drawing conclusions, identifying cause and effect]), applying (deciding making, proposing solutions), citizenship (working in a group, compromising, seeking consensus)

Framework Links
1.8, 8.0, 8.9, 7.2

Vocabulary
Compost, fertilizer, hazardous waste, incinerate, landfill, municipal, recycling, recyclable, solid waste

Time
One to two sessions

Materials
Six stations, each containing four sorting signs labeled: Recycle, Reuse, Compost, and Trash, a set of the "Assorted Solutions" cards (pages 182-187), and a copy of "Trash Paths" (page 188), copies of "What's in Our Trash?" (page 189) and "Sorting Solutions" (page 190)

Connections
"Measuring Your Footprint" (pages 179-180) helps students compare the amount of trash they produce as well as the amount of resources they use with the amount produced by other people.

Trash. Most of us don't give it much thought, but almost every product we buy or use results in some form of trash—a wrapper, a box, a lid, a battery, or an entirely spent product. And all that trash has to go somewhere. Whether it's recycled, composted, sent to a landfill or incinerator, or reused, the trash we create has a life beyond our disposal of it.

Over the last 30 years, the amount of trash we generate has been steadily increasing. In fact, Americans have become the world leader in trash generation, which is an important indication of our level of consumption. It suggests that we're using more and more energy and resources, which affects the environment in many ways—including the destruction of wildlife habitat, pollution, and climate change. It also means we're disposing of more and more "stuff," which ends up in landfills (where it can contaminate groundwater) or incinerators (where it can contribute to air pollution). On average, each of us adds about 4.5 pounds of household trash to the waste stream every day.

This activity will help introduce your students to the topic of trash. They'll sort different types of trash, develop and discuss definitions of waste, and consider ways to reduce their waste production while, at the same time, reducing the amount of resources they consume.
Before You Begin

Prepare the six sorting stations containing four sorting signs labeled Recycle, Reuse, Compost, and Trash; one copy of the “Assorted Sortables” cards (pages 182-187), cut apart; and one copy of “Trash Paths” (page 188). In addition, make enough copies of “What’s in Our Trash?” (page 189) for each student and make six copies of the “Sorting Solutions” (page 190), or copy both onto overhead transparencies.

To help lead your class discussion about trash, try to find out about the solid waste facilities in your community. In particular, you might research where your trash goes (does it go to a landfill or incinerator? Where is the facility? How does the trash get there?) and what options for recycling exist in your community. You may need to adjust the sorting answers accordingly.

What to Do

1. Organize the class into teams for the initial sorting exercise.
Divide the class into six evenly sized teams. Then tell the students that for today’s exercise they will be sorting out all the stuff at one of six stations set up around the room. Tell them that these items, illustrated on cards, will look a lot like ordinary trash. But it doesn’t all have to be thrown away. If they sort through the trash, the students should find that they can divert some of it to other uses and throw away considerably less as a result. Those other uses are named on the signs at their stations and described on the “Trash Paths” handout, which they’ll find at each station.

Once the students are in their stations, tell them that their challenge is to sort each of the illustrated items into one of the four categories. Point out that many of the items can be placed in more than one category, but that the students should be trying to put as few of the items into the trash as possible. They should write their answers on a piece of scrap paper. Then tell the teams they have five minutes to complete the first sorting.

2. Organize the teams for group collaborations.
After five minutes, tell the teams to stop sorting and pair up with one another team. Give these new teams about five minutes to share their answers with each other and make any changes they can agree on.

3. Invite the teams to collaborate as a class.
While the students are conferencing, write the category names at the top of four columns on the board. Then ask a member from one of the three combined teams to come up to the board and list their team’s answers for each category. When they have finished, ask representatives from each of the two other teams to circle any items with which their team disagrees. Then give the students about five minutes to work together as a class to determine their final answer.

4. Define trash.
Have all the students rejoin their original teams and tell them they will find out how well they did with their sorting exercise before the end of class. But first,

FACTOID

POP DROP: Americans throw away 1.7 million plastic soda bottles every hour of every day.

Smart Consumer: Exploring Consumer Issues and the Environment 119
ask each team to come up with a definition of "trash," a phrase that would explain what all the stuff they put into their "trash" category has in common.

Have a member from each team write the team's definition on the board or read it out loud. Then see if the class as a whole can agree on a single shared definition of trash. When they've come up with one, write the following definition on the board: "Trash is stuff we think doesn't have any more purpose or value. Trash can also be stuff we haven't figured out a way to make valuable."

5. Discuss waste and consumer choices.
Start a class discussion on waste by asking each student to make a different observation about the quote on the board. They may comment on the meaning of the quote or the difference between the quote and the class's definition of trash, but no two comments should be the same. After each student has spoken, you may want to use the following questions to guide the discussion further:

* How does the quote on the board compare with the definition of trash you developed? Does the quote give you any new perspectives on the topic of waste? (Answers will vary.)
* Do you know what happens to all the stuff you put in your trash can? (Unless you have a service that separates the recyclable materials, the trash goes to your local solid waste facility, where it is either buried in a landfill or burned. Share with the students what you know about your local solid waste facility and how it processes trash for your community.)
* Did the sorting exercise make you think differently about waste? Explain. (Answers will vary.)
* What are some of the connections between consumer choices and waste? (The more stuff we use, the more waste is generated—it's in the resource extraction and manufacturing processes, in packaging, and at the end of the product's life.)

6. Share the expert's sorting.
Now give each team a copy of the trash experts' "Sorting Solutions" or display it on the overhead projector. Ask each team to calculate whether or not the class's sorting matched the experts' sorted list by at least 75 percent.

7. Explore trash patterns.
Hand out copies of "What's in Our Trash?" or display the pie chart using an overhead projector. Tell the students that the graph shows the composition of the 229 million tons of trash Americans threw away in the year 2001 (before any items were removed for recycling). Which slices of the pie are the largest? (Paper is the largest category, followed by yard waste, food scraps, and plastics.)

Tell the students that this graph doesn't show where this trash originated, but fully 30 percent of Americans' household waste comes from packaging materials, such as cardboard, plastic wrap, and foamed polystyrene (Styrofoam). How could the amount of packaging waste be reduced? (By buying items such as cereals, grains, and nuts in bulk; by buying items such as detergents in concentrated form; by buying things directly from a store [not by mail] or, better yet, buying them second-hand; by requesting not to have a bag or box for purchases; and so on.)

Remind the students that, although Americans generate an average of 4.5 pounds of household trash every day, much of that trash can actually be recycled, reused, or composted. Not very much needs to go to landfills. Which of the categories of waste represented on the pie chart could potentially be diverted from a landfill? Where could they go? (Some paper, plastics, glass, and metals could be recycled; some yard waste and food scraps could be composted; some leather and textiles could be reused; and so on.) Why might it be helpful to divert as much stuff as possible out of trash bins and send it on a different trash path? (Reducing, recycling, and composting can all help reduce the space and resources required to manage landfills, reduce our use of raw materials, reduce our consumption of water and energy, cut down on pollution, and so on. All of these efforts help improve the quality of the environment for people and wildlife.)
WRAPPING IT UP

Portfolio
Save the students' sorting lists and definitions of waste for their portfolios.

Writing Idea
How much do younger kids know about trash and where it goes? Have the students write and illustrate a fun and informative comic strip aimed at third-graders about a superhero named Super Sortman who tackles overflowing trash bins. Remind them that their comic strip should give readers a sense of the four different pathways trash can take.

Assessment
On the board, write the names of five trash items that were not considered in the activity and have the students place each item in one of the four categories from the activity (recyclable, reusable, compostable, trash), bearing in mind what they have learned about your community's solid waste management policies. Make sure that at least four of the items you choose can be recycled, composted, or reused.

Unsatisfactory—Three or more of the items are placed in the "trash" category when they could have been recycled, reused, or composted.

Satisfactory—Three or more of the items are correctly placed in the "recyclable," "reusable," or "compostable" categories. One idea for reusing an item is given.

Excellent—All of the items that can be recycled, reused, or composted are placed in the correct categories, and the item that can only be disposed of in the trash is the sole item placed there. Ideas for reusing items are clearly described and feasible.

Extensions
- Challenge your students to reduce their collective waste production by 50 percent within a certain time period. To achieve this, they will need to carry out an extensive inventory of their current waste production. Have them compare the volume, weight, and type of products and materials discarded during different days of the week, among age groups, and so on. Ask them, "How can you prove that we are actually producing less waste rather than just disposing of it elsewhere?"

- Have the students audit their building's waste stream. What kind of trash does the building's community generate? How much is recycled? What kinds of things are recycled? Is there a composting site on the building's grounds? Are items reused? Do staff look for ways to reduce waste when purchasing items for the students and other staff? After analyzing the current trends, have the students propose a plan to reduce solid waste and to increase recycling, reusing, composting, and green-purchasing practices, as appropriate.

- Find out more about the paths of trash in your community. Have the students research the different options for solid waste where you live. If possible, take a trip to a local landfill, incinerator, recycling center, or other solid waste facility.

RESOURCES
The U.S. Environmental Protection Agency's (EPA) Municipal Solid Waste Web site contains information on a wide range of hazardous materials and their disposal, as well as relevant legislation. www.epa.gov/sowww/kton-hw/municipal/index.html

The EPA also provides an online "Consumer's Handbook for Reducing Solid Waste." www.epa.gov/sowww/kton-hw/reduce/handbook.htm

The Pennsylvania Department of Environmental Protection's "Guide to Home Composting" provides step-by-step instructions on how to set up a composting bin at home or school. www.dep.state.pa.us/dep/depgov/environmental/recycle/Compost/GuideHome.htm

Project Learning Tree has developed the Exploring Environmental Issues: Municipal Solid Waste module for secondary students as part of its Exploring Environmental Issues program. For more information on how to obtain the guide, visit www.plt.org/curriculum/solidwaste.html.
Assorted Sortables

- AA batteries (alkaline)
- aluminum soda can
- automobile battery
- banana skins
- dead leaves
- burned-out light bulb
carrot and potato peelings

cellophane wrapping from CD (#4 plastic)

cereal box

Christmas tree

dead insect

dead plant (not diseased)
faded and patched blue jeans

glass bottle

grass clippings

juice box

lamp with broken shade

milk carton
newspaper
old book
paper grocery bag
pencil shavings
plastic (#2) milk jug
plastic (#5) yogurt container
Assorted Sortables (Cont’d.)

- tennis racquet with broken strings
- toilet paper tube
- toothpaste tube
- worn sweater
- skates
- soil
Assorted Sortables (Cont'd.)

uneaten vegetables

used automobile oil

Trash to Treasure
Recycling
Recycling describes the process of turning a product into a form that can be used again.

Most products that are recyclable have a symbol on them that indicates that they can be recycled. The most commonly used recycling symbol looks like this:

Even if a product displays this symbol, it may not be possible to recycle it in all communities, since the appropriate facilities are needed.

Composting
Composting is the process of turning organic wastes—those wastes that come from living organisms—into soil.

In a compost pile, these wastes break down into soil-like material with the help of bacteria and other organisms. Rich in nutrients, compost can be spread around yards and gardens as natural fertilizer.

Reusing
Reusing an item refers to finding a new use for something you have (or someone else has) already used.

Reusing can help keep items out of landfills (if only temporarily), but it also means that you won’t have to spend energy recycling the product for another use or using resources to produce a new item.

Household Hazardous Waste
Household hazardous waste is trash that contains dangerous chemicals that must be handled and disposed of carefully. These items should not be put into the trash with other items (although for the purpose of this exercise, you can place these items in the trash “bin”).

Check with your community’s solid waste management department about locations for dropping off hazardous waste or for information about collection days and locations.
Total U.S. Municipal Solid Waste Generated in 2001—229 Million Tons (before recycling)

- Paper: 37.4%
- Yard trimmings: 12.0%
- Food scraps: 11.2%
- Plastics: 10.7%
- Metals: 7.9%
- Rubber, leather, and textiles: 6.7%
- Glass: 5.5%
- Wood: 3.5%
- Other: 3.2%

## Sorting Solutions

### Recycle
- AA batteries (alkaline)
- Aluminum soda can
- Automobile battery
- Blue jeans
- Cereal box
- Cellophane wrapping from CD (#4 plastic)
- Glass bottle
- Lamp with broken shade
- Newspaper
- Old book
- Paper grocery bag
- Plastic yogurt container (#5)
- Skates
- Tennis racquet with broken strings
- Worn sweater

### Reuse
- Blue jeans
- Glass bottle
- Lamp with broken shade
- Newspaper
- Old book
- Paper grocery bag
- Plastic yogurt container (#5)
- Skates
- Tennis racquet with broken strings
- Worn sweater

### Compost
- Banana skins
- Carrot and potato peelings
- Christmas tree
- Dead insect
- Dead leaves
- Dead (not diseased) plant
- Grass clippings
- Soil
- Uneaten vegetables

### Trash
- Burned-out light bulb
- Cellophane wrapping from CD (#4 plastic)
- Cereal box
- Juice box
- Pencil shavings
- Toothpaste tube
- Toilet paper tube

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### Sorting Out Your Community

Some of the items that you sorted can be correctly placed in more than one category. Their placement will vary depending on the facilities and regulations in your community. For instance, in about 30 percent of communities in the United States, all plastics numbered one through seven can be recycled. In other places, only certain numbers of plastics can be recycled. Similarly, cardboard can be recycled only if it is corrugated in some places, while in other places it is possible to recycle cereal boxes and other types of cardboard in addition to corrugated cardboard. What can and can't you recycle in your community? How could you find out? Why can some things be recycled when others can't?
“Always design a thing by considering it in its next larger context—a chair in a room, a room in a house, a house in an environment, an environment in a city plan.”

—Elie Saarinen, architect
Car Quest

OVERVIEW
Assess the environmental impacts of a fleet of cars and then research and prepare a report about greener transportation choices.

SUBJECTS
science, social studies, mathematics

SKILLS
gathering (collecting, researching, recording); organizing (charting, analyzing, comparing and contrasting, calculating, discussing, interpreting [generalizing, inferring, drawing conclusions]); applying (hypothesizing), evaluating (reasoning), presenting (writing, illustrating, reporting); citizenship (working in a group)

FRAMEWORK LINKS
13, 29, 50, 52, 63, 68, 72

VOCABULARY
airborne pollutant, climate change, emissions, fuel-efficient, greenhouse gas, heat-trapping gas, trade-off

TIME
Four sessions and time for Web research

MATERIALS
copies of the "Whole Fleet Environmental Impact Summary" chart (page 199); copies of "Web Quest Group Tasks" pages 202-203, computers with Internet access

CONNECTIONS
For more on the impacts of climate change, try "Coral Bleaching: A Drama in Four Acts" in Oceans of Life.

According to many scientists who study the effects of consumer actions on the environment, no purchase we make has a bigger effect than our choice of car. After all, our choices about which car we drive can mean the difference of thousands of pounds of carbon dioxide released into the atmosphere, a significant amount of airborne pollutants, and the amount of strain we place on nonrenewable resources.

Unfortunately, there are no cars available today that are perfectly clean. Although we might be able to walk, bike, or use public transportation to get around, most of us rely on cars for at least some of our transportation needs. And many people simply enjoy driving. Regardless of whether they're old enough to drive, most of your students are probably thinking about the kinds of cars they'd like to have—weighing different factors such as speed, looks, cost, comfort, and safety. But how many of your students also weigh environmental factors when they think about their dream cars? How many are even aware of the effects that different kinds of cars can have on the environment?

In this activity, your students will determine the environmental effects of cars—real cars in a parking lot, a fleet consisting of all of their dream cars, or a fleet of your choosing. They'll compute how many tons of heat-trapping gases are produced each year, how much it costs to fuel the cars, and so on. Then they'll research and prepare reports on "greener" transportation alternatives.
Before You Begin

Familiarize yourself with the Web sites recommended for student research (see Step 4 and the "Web Quest Group Task" cards on pages 200-201). Decide what fleet of cars you'd like students to evaluate—the cars parked outside in the parking lot, a fleet of the students' own dream cars, or a fleet of your own creation (see "Choosing the Fleet" below). Make enough copies of the "Vehicle Fleet Environmental Impact Summary" chart (page 195) for each pair of students and create a large version that can be filled in by the entire class (see Step 5 under "What to Do"). Make one copy of the "Web Quest Group Tasks" cards (pages 200-201) and cut out each of the cards so that you can distribute one task topic to each of four student groups.

Choosing the Fleet

This activity is written to evaluate the fleet of cars in your school or institution's parking lot. But you should feel free to adapt it so that students evaluate their dream car fleet or a fleet you've made up. If you have students evaluate their dream car fleet, you may not see as much variety in the cars they evaluate, and it will be less of a hands-on experience, but they may be more interested in their research. If the students evaluate a fleet you've come up with, they'll have less of a hands-on experience, but you'll be able to be very clear and specific about years, models, and so on—considerations that may not be obvious when students look at cars firsthand.

What to Do

1. Discuss "dream cars."
Ask the students if they've ever thought about what kind of car they'd most like to own. What cars do they have in mind? Has anyone considered a lifestyle without a car? What factors have influenced their choices? Has anybody considered environmental factors when selecting a dream car? Why or why not?

(If students don't have any ideas, you might give them a few minutes to browse some major carmakers' Web sites. Also, if any students in your group hope never to own a car, suggest that they might someday need to rent a car for a special trip or other purpose. Those students can also browse the Web briefly for ideas about the kind of car they'd want in the short term.)

Explain to the students that this activity will enable them to learn more about the environmental effects of the cars that people drive.

2. Organize the group for a fleet survey.
Tell the students that they'll be going outside and taking an inventory of the cars parked in the lot. Divide the students into teams of two, and give each team a copy of the "Vehicle Fleet Environmental Impact Summary." Explain that you'll be assigning each team a different section of the lot, and they'll record the make (for example, Honda), model (for example, Accord), type (sedan, SUV, small pick-up, sports car, and so on), and, if possible, year of the vehicles in their section. In other words, they'll be filling in only the first three columns of their chart for now, keeping a tally in column one of the total number of vehicles of each type they find (see "Sample Vehicle Fleet Environmental Impact Summary" on page 135). Later they'll be researching the information for the final columns.
Note: If the students can't tell the year of a vehicle by looking at it, they should either make an estimate or get the current year.

Before you head outside, review some basic parking lot safety tips. Tell the students to be attentive to the movement of cars in and out of spaces and to assume that drivers probably don't see them unless the drivers indicate otherwise. Explain that most drivers won't expect to find students walking in and around the cars. You may want to assign two students the task of warning people going out to their cars and the parking area that there are students carrying out research in the lot.

3. Begin the fleet survey.
Head outside and gather your group around as you assign their study areas. Divide the parking lot into as many equal areas as needed so that each team of two students is responsible for surveying approximately the same number of cars. Then have students fill in the first three columns of their chart.

4. Investigate the fleet's environmental effects.
Once back in the classroom, have the students use the Internet to investigate the environmental effects of the vehicles in their parking lot and complete the data in the remaining columns of their chart. Tell the students that as they visit the Web sites that have this data, they may need more information about the vehicles in their area than they actually know. Tell them that if they don't know whether the car they saw was an automatic or manual transmission, they should use data for an automatic; if they don't know what type of engine it had, they should use the smallest size (usually V-4 or V-6).

Environmental information (particularly regarding mileage, annual fuel costs, and greenhouse gas emissions) for most cars can be found at the Department of Energy's Web site on fuel economy (www.fueleconomy.gov). Greenhouse gases emitted are listed in tons per year, assuming that the average car is driven 15,000 miles per year. If your students are not familiar with the term "greenhouse gas," use the information in the "Change Is in the Air" box on page 35 to lead a short discussion. You might explain to them that, while the Department of Energy Web site uses the term "greenhouse gas," they may also see them referred to as "heat-trapping gas" in other publications.) Airborne pollutants are listed with a rating system and may have several scores, so students should determine an approximate average.

Safety information is available from the National Highway Traffic Safety Administration's "Buying a Safer Car" Web site (www.nhtsa.dot.gov/NCAP). This information assigns stars in various categories, so students should determine an approximate average for their vehicles.

5. Interpret the fleet data.
After each team has completed its "Vehicle Fleet Environmental Impact Summary," have the teams pool their data onto a single large chart. Invite the first team to enter its data, using tally marks instead of numerals in Column 1. Then, as other teams add their data, they can simply add another tally mark beside any vehicle that they also researched. Once all the data have been recorded, have the students determine the total number of cars and overall averages for each column. Ask the students to review the chart and share any observations or interpretations they have made. If the students don't

FACTOID

ON THE ROAD AGAIN: An average of 10,000 miles of new roads are built each year in the United States.
address them on their own, you might ask the following questions:

- Which cars have the highest and lowest safety ratings?
- Are the more fuel-efficient cars any more or less safe than the cars with less fuel efficiency?
- How important do you think the car’s safety rating is in weighing the pros and cons of different car choices? Would different individuals be likely to value safety differently? [Encourage the students to think about different user groups such as parents, people who use their car for long commutes, and so on.]
- Which types of vehicles have the greatest environmental effects?
- What are some of the trade-offs a buyer has to weigh when deciding which car to buy (for example, fuel cost, safety, and emissions)?
- Does this kind of research help consumers make more informed decisions? Do the students think that in the future they’ll do this much research to find out about a car they intend to buy? Other products?
- Did this research affect anyone’s thoughts about their dream cars? How? Encourage the students to calculate the environmental impacts of their dream cars. Do they seem like good or bad choices from an environmental standpoint?

The students might note that few consumers have the time to thoroughly research each purchase they make. But by knowing where to look for information and gathering as much data as possible, consumers can make better and more informed decisions. For products as expensive and with as large an environmental effect as a car, it’s important to gather as much information as possible before making a decision.

You may also want to have students run through some calculations to compare the environmental effects of different fleets. For example, have the students calculate the total annual amount of
greenhouse gas emissions and consumption of nonrenewable fuel for the entire parking lot fleet, assuming each parking lot vehicle drove 15,000 miles per year. Does this number seem high? Is it hard to visualize? Now have them make the same calculation assuming an entire fleet of very fuel-efficient cars, and again for an entire fleet of their dream cars. How do the numbers compare? Do the students start to see how the collective effects of our car choices can really add up?

6. Conduct Web quests.
Now that the students have sharpened their skills as car shoppers, tell them that they'll have a chance to investigate some of the options they might have for purchasing "cleaner" cars when they're ready to hit the dealers' lots. And, if the students are given hand-me-down cars and don't get the chance to shop for one, they'll learn about some ways that they can improve that car's fuel efficiency. Finally, for those students who are more interested in other modes of transportation, they'll get the chance to investigate what other ways of getting around are available in your community.

Divide the students into four groups and have each group conduct a Web quest to answer a different question. (You can either let the students divide themselves according to the topics that most interest them, or you can randomly assign students to groups.) Each group will focus on one of the following topics:

Hybrid Cars: What are hybrid cars? How do they work? Why are they so fuel efficient? Are they available for purchase in your community?

Alternative Fuels: What are "alternative" fuels? What materials are used as alternative fuels?

Increasing Fuel Efficiency: How can people increase the fuel efficiency of the cars they already own? How much savings (in tons of greenhouse gases emitted as well as in dollars) could one person get from making these changes?

Non-Car Transportation: What are some of the non-car transportation options in your community? Do they use less fuel per person than cars?

Give each group the appropriate sheet from the "Web Quest Group Tasks" pages. Students can either write answers to their guiding questions, create a poster that contains both written answers to their questions and visual aids such as pictures and diagrams, or prepare a PowerPoint presentation that summarizes their results. If some of the groups choose to develop a PowerPoint, the presentation should include four or five slides that address the guiding questions. No matter which format the groups choose, they should all cite the Web sites or other resources that they consulted.

7. Discuss findings.
After each group has presented its findings, discuss the pros and cons of that particular approach to reducing greenhouse gas and other pollutant emissions. How effective is it? How expensive is it? How feasible is it? Does it seem like a reasonable option for most people?

In conclusion, ask students to recall their dream car. Has this activity changed their priorities with regard to cars and other transportation options? Do they think they'll consider a car's environmental impact if they go car shopping? Will they think about making other choices to get around? If so, in what kinds of situations will they choose other options? Will some students try not to own a car in the future? Why or why not?
WRAPPING IT UP

Portfolio
The students’ “Vehicle Fleet Environmental Impact Summaries” and Web quest reports can be saved in their portfolios.

Writing Idea
In many parts of the country, people concerned about highway safety and the health of the planet use strong words to condemn the drivers of traditional sport utility vehicles (SUVs) and other big cars that have low fuel-efficiency. In turn, many SUV owners use strong words about the freedom to choose the kind of car they want. Have the students research and write a brief essay stating their own opinions about this controversial topic. With which side do they sympathize? How do they think we should balance out individual and public considerations when it comes to the cars we drive?

Assessment
Remind the students that, at the start of the lesson, they had to think of their dream car. Have them write down that type of car. Below this, have them answer the following questions: (1) Would you still want this type of car? Why or why not? (2) What are the environmental benefits or problems with your dream car? (3) What might be a different car that would give you the same benefits of your dream car but would be a better choice environmentally? How do you know?

Unsatisfactory—One or more elements from the assignment are missing. The student fails to incorporate evidence from the class activities to support his or her position. Arguments are not presented logically or rationally.

Satisfactory—The student is able to logically present why he or she would or would not want the same vehicle now. Using information from class, benefits or problems with the student’s dream car are identified. A rational alternative is presented and supported with solid argumentation.

Excellent—The student presents convincing arguments why he or she would or would not want the same vehicle. Benefits or problems are backed up with data and sources that were identified and used in the class. The student’s rationale reveals critical reflection.

Extensions
• Develop and carry out a plan to help educate the drivers of the parking lot vehicles about reducing the environmental effects of their cars.

• Research the availability of “green” cars (including hybrids) at car dealerships in your community. How many green cars have been purchased since the cars have become available? When, if at all, do dealers expect to have those cars available in the future if they don’t have them now?

• While most forms of public transportation are more efficient than having each passenger drive a car, many buses and other public transportation vehicles are responsible for
WRAPPING IT UP (Cont'd.)

large amounts of pollution and fuel use. But more environmentally friendly mass transportation alternatives are available, and growing numbers of cities are beginning to turn to "clean" buses, light rail, and other greener options in public transportation. Challenge students to compare the environmental effects of the use of school buses to carpooling in personal vehicles. Also have students research the next generation of public transportation options.

- Research how the construction of roads threatens biodiversity in different parts of the world.

RESOURCES

The Department of Energy provides information on gas mileage, greenhouse gas emissions, air pollution ratings, and safety information for new and used cars and trucks. www.fueleconomy.gov

The National Highway Traffic Safety Administration's "Buying a Safe Car" supplies consumers with safety information, including frontal and side crash test results, to aid them in their vehicle purchase decisions. www.nhtsa.dot.gov/NCAP

Consumer Reports provides expert advice and information that guides consumers to the best new and used vehicles on the market. www.consumerreports.org

The Environmental Defense Fund's "Tailpipe Tally" is a simple interactive tool that calculates fuel consumption, fuel cost, and vehicle emissions for any vehicle built from 1978 to the present. www.environmentaldefense.org/tool.jsp?cmp=cfm#tool=tailpipe

The National 4-H Council's Going Places: Making Choices is a curriculum produced for high school students focusing on the history of transportation, natural resources, land use and energy use, climate change, and community action. www.4hgpnc.com

The Public Transportation Partnership for Tomorrow provides information on who uses public transportation, who provides it, and what the benefits of public transportation are. It also reports on various transportation issues and links to local public transportation information by state. www.publictransportation.org

The American Public Transportation Association provides statistics and online documents about energy consumption, environmental benefits, history, and various other public transportation-related issues. www.apta.com
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**Hybrid Cars**

What's all the hype about hybrids? It's your job to find out. Search the Web to answer the following questions:

- What is a hybrid car?
- How does it work?
- Why are hybrids more fuel-efficient than conventional cars?
- What are some types of hybrid cars that are available today? What are some that are still in the planning stages? Are any hybrid models available for purchase in your community?

Here are some tips that might help you on your quest:

- "How Stuff Works" provides an overview of hybrid cars: [www.howstuffworks.com/hybrid-car.htm](http://www.howstuffworks.com/hybrid-car.htm)
- The U.S. government is also getting on board with hybrids. The Office of Transportation Technologies has a Web site on hybrids (also called hybrid electric vehicles, or HEVs): [www.ott.doe.gov/hev](http://www.ott.doe.gov/hev)
- Honda (www.hondacars.com) and Toyota (www.toyota.com) are the two major automakers that currently have hybrid cars for sale in the United States. In addition, Ford (www.ford.com), General Motors (www.gm.com), and others are developing hybrids, some of which are hitting markets now or in the near future.

**Alternative Fuels**

You may listen to alternative music, but do you use alternative fuels? What are they, anyway? Your group is going to find out by taking on a Web quest to answer these questions:

- What are alternative fuels?
- What are some materials being used in alternative fuels?
- What are the benefits of alternative fuels?
- What are some of the barriers to using alternative fuels?

Here are some tips that might help you on your quest:

- The government is taking a lot of interest in alternative fuels, and has a Web site focused on this new technology: [www.eere.energy.gov/cleanfuels/alternative-fuels](http://www.eere.energy.gov/cleanfuels/alternative-fuels)
- The Environmental Protection Agency (the government division that helps create and enforce environmental regulations) has collected information about alternative fuels: [www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm](http://www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm)
- The Rocky Mountain Institute studies energy issues and educates the public about the best ways to conserve energy. Their Web site includes information about alternative fuels: [www.rmi.org/hotpages/pid577.php](http://www.rmi.org/hotpages/pid577.php)
Improving Fuel Efficiency

There are a lot of advanced technologies available that are making new cars more fuel-efficient. But what if you can't afford a new car? Can you teach an old dog new tricks? Go on a Web quest to answer these questions:

What things can people do to increase the fuel efficiency of the cars they already own?

Would it be expensive to make the changes? How much savings (in greenhouse gas emissions and in dollars) could one person get from making those changes?

Here are some things that might help you on your quest:

- The U.S. government provides information about how to improve a car's fuel efficiency. 
- More tips on improving fuel efficiency can be found at [www.whatprice.co.uk/tips/fuel-efficiency.html](http://www.whatprice.co.uk/tips/fuel-efficiency.html).

Alternatives to Cars

So, what if you'd rather just say "no thanks" to cars? Or what if you live in a place where it's easier not to drive? In this Web quest, you'll find out more about other ways of getting around and how to use those other transportation options in your community. Look online for answers to these questions:

Besides cars, what are some other ways of getting around where you live?

Which of those alternatives require no gasoline? Which require less gasoline per person than a car? Do any of your alternatives require more gasoline per person?

What are the pros and cons of using other modes of transportation in your community?

Here are some tips that might help you on your quest:

- City governments around the Monterey Bay, California, area provide information for local residents about alternatives to using cars. [www.ambag.org/sharing.html](http://www.ambag.org/sharing.html)
- The city of Victoria in British Columbia, Canada, has information on how it is working to limit the use of cars in the city with a program called Transportation Demand Management, or TDM. [www.utpi.org/tdm](http://www.utpi.org/tdm)
- Drivers.com provides information on drivers and driving, as well as information for people who want to get out from behind the wheel. [www.drivers.com/topic/54](http://www.drivers.com/topic/54)
- Visit your city, town, or region's official Web site, a local chamber of commerce Web site, or other town sites for information about transportation options in your community.
14 Polar Bears and Petroleum

OVERVIEW
Create posters for a session exploring the connections between energy consumption and biodiversity.

SUBJECTS
Science, social studies, art

SKILLS
Gathered (reading comprehension), researching, analyzing, identifying components and relationships among components, comparing and contrasting, discussing, interpreting (inferring, drawing conclusions, defining problems, identifying causes and effects), applying (solving problems, problem-solving), evaluating, communicating, presenting (illustrating, reporting, explaining, clarifying), citizenship (working in a group)

FRAMEWORK LINKS
3, 8, 12, 13, 23, 24, 25, 31, 35, 48, 52, 55, 69, 83, 85, 68, 69, 71, 72

VOCABULARY
Acid rain, biodiversity, climate change, energy-efficient, fish ladder, fossil fuels, habitat, heat-trapping gas, nonrenewable energy, pollution, power plant, radioactive, renewable energy, reservoir, trade-off, turbine, subsea

TIME
Two sessions, plus time to create posters

MATERIALS
Copies of "Energy Fact Sheets," "Wildlife Cover," "Bright Ideas," and "Ten Tips for Saving Energy" (pages 206-221); posters and poster-printing materials, such as glue, colored pencils and markers

CONNECTIONS
If your students are interested in climate change after carrying out this activity, try "Corea in Four Acts" on Oceans of Life, which explains the impact of climate change on coral reefs. If they are interested in other connections between human activities and wildlife, try "The Case of the Florida Panther" in Biodiversity Basics.

When we turn on our lights or drive our car, we're experiencing one of the great benefits of modern society: the availability of relatively cheap forms of energy. That energy comes from oil, natural gas, coal, hydropower, nuclear energy, solar, wind, and other sources. But how are those forms of energy obtained and what are their strengths and weaknesses?

In this activity, your students will go beyond the light switch and the gas pump as they learn more about the different forms of energy we use. They'll learn where these resources come from, how they're extracted or harnessed, and how they're transported.

In addition to investigating some of the pros and cons of common energy sources, students will focus on the ties between energy use and biodiversity. Just about every form of energy use has an effect on Earth's living things, although how much of an effect can vary widely. For example, hydroelectric dams can make it difficult for salmon to swim upstream to their spawning sites. And burning fossil fuels such as coal and oil adds carbon dioxide to the air, which contributes to global climate change, a growing threat to polar bears, harp seals, and other species around the world. By exploring these sorts of connections, your students will get a sense for how the consumer choices we make in our homes and communities can affect the health of living things throughout the world.

Students will also investigate the many ways we can lessen the effects of energy use through energy conservation, better technologies, and thoughtful land use planning. In the end, your students will come away from this activity as more informed consumers, better able to evaluate the effect of the decisions they make each day about using energy.
Before You Begin

Make copies of the "Energy Fact Sheets" (pages 208-214). Copy the "Wildlife Cards" (pages 215-224) and cut the cards apart. Each group of two to three students will need to have one wildlife card and the "Energy Fact Sheet" that features the same source of energy. Make enough copies of the "Bright Ideas" and "Ten Tips for Saving Energy" handouts (pages 225-227) so that each team of two to three students has at least one copy of each.

What to Do

1. Discuss energy use.
   Ask the students to name some of the things they do that require energy that their own bodies can't provide. (Students may mention lighting, home heating and cooling, driving, appliance use, and so on.) Do they know the source of the energy they use for those activities? The students will undoubtedly know that oil is the source of energy for their cars and many other forms of transportation. What kind of energy do they use for cooking? For home heating? For electricity? (It's possible that students won't know where their electric company gets its energy. If that is the case, have the students find out through research.)
   
   Ask the students if they can explain how the choices we make affect energy use. (How much driving or cooking we do, how warm or cool we keep our homes, and how many electrical appliances we run affect the amount of energy we use. The things we buy also contribute to energy consumption. Manufacturers need energy to transport raw materials and make them into clothes, CDs, and other products. Energy is also used to transport goods to our stores, to heat and cool the stores, and so on.)
   
   Ask the students if they know of any environmental problems associated with energy use. After they have shared some ideas, tell them that this activity will give them an opportunity to learn more about the connections between energy use and the health of biodiversity throughout the world. You might want to review the definition of biodiversity, which is the diversity of life on Earth, including genes, species, and ecosystems.

2. Organize your group for the activity.
   Divide your group into teams of two or three students. Give each team one of the wildlife cards, along with a copy of the relevant energy fact sheet. Also give each team a copy of the "Bright Ideas" and "Ten Tips for Saving Energy" handouts. Then tell the students to read through the information and discuss the following in their teams:
   
   - What are the advantages of the energy source featured on the fact sheet?
   - What are its disadvantages?
   - What is the problem described on the wildlife card? Does that change your thoughts about the energy source? Why?
   - What do you think should be done about the problem described on the wildlife card? Do you have
any ideas for minimizing the harm associated with this energy source? If so, explain your ideas to the group. (Tell the students to consult the "Bright Ideas" handout for innovations in energy and conservation. Depending on the time allotted for this work, they may also want to conduct a Web search to learn more about the latest energy-related developments.)

Some of the information on the wildlife cards may need to be updated. Encourage your students to do a Web search to gather any new information on the issues or problems that their group will be asked to discuss and present. Have them highlight this updated information and explain why this change came about (technological development, change of government policies, and so on). Remind students that this sort of exercise is always valuable when they want to verify the accuracy of information sources.

3. DESCRIBE THE POSTER SESSION ASSIGNMENT.
Tell the group that each team is responsible for communicating the major ideas of its discussion with a large, illustrated poster. That poster should highlight the connections between the energy source and the plant or animal featured and communicate the group’s ideas for minimizing the problem. Encourage the students to illustrate their information with diagrams, photos, and so on. Tell the students that their completed posters will be displayed around the room.

You can have students complete their posters in class or, if you prefer, they can give them time to collect additional information and visual material as homework. For example, students may want to print photos off the Web or make copies of maps to better illustrate their posters.

4. HOLD A POSTER SESSION.
On a designated day, have the students display their posters around the room in a poster session. You may want the class to move together from one poster to the next, encouraging discussion and allowing teams to answer any questions about their posters. Or you may choose to have the students circulate informally.

Afterward, gather the students together for a brief discussion about what they learned. If you decide to pursue Step 8, you may prefer to save much or all of this discussion for the town council meeting. In either case, the following questions may help guide your discussion:

What did the assignment reveal about the connections between energy use and biodiversity? (Almost every form of energy has an effect on biodiversity.) Give some examples of the ways that energy use can affect wildlife around the world. (Answers will vary.) Do all energy sources affect wildlife in the same way or on the same scale? (No. For example, students should recognize that problems such as global climate change and air pollution caused by fossil fuel use have a far greater effect than localized problems such as bird mortality from wind power.)

FACTOID:
EXECUTIVE POWERS: In 1993, President Clinton issued an executive order requiring federal agencies to buy energy-efficient computer equipment. That order is largely responsible for the fact that today 95 percent of monitors, 80 percent of computers, and 99 percent of printers sold on this continent meet efficiency standards set by the U.S. government’s Energy Star program.
What ideas did your group have for minimizing the problems associated with energy use? (Students may have recommended improvements in technology for extracting and transporting energy, decreased reliance on harmful forms of energy, more energy conservation by consumers, legislation to protect areas of high biodiversity from energy development, and so on.)

Define the terms nonrenewable and renewable energy. (Nonrenewable energy is derived from resources that are available in limited amounts, such as coal, oil, and natural gas. These resources either will never be replenished, or will be replenished much more slowly than the rate at which we use them. Renewable energy comes from the sun, wind, trees, and other sources that are not in limited supply or can be replenished in our lifetime.)

How does energy from these two types of sources differ? (Nonrenewable energy sources cause many more environmental problems in their extraction and use. Renewable energy sources are cleaner but cannot currently meet all of our energy needs.)

Describe some of the trade-offs that occur with different forms of energy use. (Answers will vary.) Why do you think that nonrenewable forms of energy continue to provide most of our energy needs? (Their extraction, transportation, and use are heavily subsidized by governments, they're still plentiful, and, currently, they're seen as more reliable.)

What kinds of risks are associated with the different energy sources? (Oil tankers and pipelines can spill oil; hydropower dams can cause a decline in populations of migratory fish and other species; wind powered turbines can be detrimental to migratory birds; human health can be adversely affected by the emissions from power plants.)

fueled by coal, oil, and natural gas; and so on.) How do you think governments, corporations, and individuals should evaluate risk? For example, do you think it's worth pursuing nuclear energy because it creates virtually no emissions? Or do you think the potential harm caused by terrorism, a meltdown, or by nuclear waste storage problems is great enough to outweigh the benefits? (Answers will vary.)

For more on evaluating risk, see Exploring Environmental Issues: Focus on Risk listed in the Resources section on page 207.

Did this activity change the way you feel about your own energy consumption? Will you do anything differently now that you have this new information? How do you think most people end up making their energy decisions? (Answers will vary.)

5. Organize the class for a town council meeting. (Optional)
As an alternative way to wrap up this activity, have the students gather together as members of a town council to make an energy plan for their community. Ask for a volunteer to moderate the discussion.
If your group is large, you may want to designate some of the students as council members and others as members of the general public who have come to this meeting to express their views. Only the town council members will vote on the final plan, but they should be responsive to the views of their voting citizenry.

Tell the students that their job is to discuss and then select the form or forms of energy their town will rely on to meet their needs for the next 25 years. Have them use the information they obtained in their poster sessions to discuss the pros and cons of various energy resources. You might tell them that, if they opt for more expensive energy forms, they will have to make cuts to parts of the town budget, such as teacher salaries, after-school sports, the police department, and aid to the elderly. Encourage the students to think realistically about the short- and long-term trade-offs of their energy selection. Before the session ends, have the council members cast their votes for the energy source or sources of their choice.

WRAPPING IT UP

Portfolio
If feasible, the students' posters can be part of their portfolios.

Writing Idea
Based on what the students learned in the poster sessions, which form of energy do they think has the most promise for Earth's future? Have them write an op-ed for a local newspaper explaining their views. Or, have the students research other stories about connections between energy sources and wildlife species, and write new energy cards describing these connections.

Assessment
Have each student name several ways in which they use energy. For each, students should identify the source of the energy, whether it's renewable or nonrenewable, and ways that their energy consumption affects biodiversity.

Unsatisfactory—Three or fewer ways in which the student uses energy are named. Sources for each are not correctly identified. The student does not present different ways energy consumption affects biodiversity (i.e., fails to draw on class discussions).

Satisfactory—At least four ways in which the student uses energy are listed. Sources for each use are identified as well as whether those sources are renewable or nonrenewable. Multiple ways consumption of energy affects biodiversity are identified (related to class discussions).

Excellent—Five or more ways in which the student uses energy are named. Sources for each are identified. Different effects on biodiversity are identified for each energy source.
WRAPPING IT UP (Cont’d.)

Extensions

- Consider sharing the posters with a larger audience, such as other classes or with the students’ parents. You might even organize an “Energy Forum” event for parents, with poster viewing followed by a discussion of energy issues in your community.

- Although this activity focuses primarily on connections between energy use and wildlife, it’s also important to recognize that energy development and consumption affect human communities all over the world. Have your students investigate some of the effects of energy consumption on human health, economies, cultures, and so on.

- Help your students conduct an energy audit of your school. They should find out where energy is consumed and how it might be saved. Based on their findings, they might work with the school’s administration to implement energy-conservation strategies. (See the Resources section below for more on energy audits.)

- Consider a field trip to a place that will allow students to see some of the consequences of energy consumption. For example, you might take them to a gas station, a power plant, an oil refinery, a coal mine, or even just a bridge above a highway where they can experience firsthand the noise, smells, and other downsides of fossil-fuel burning cars and trucks. Or, if there is a wind farm or solar-powered building near you, consider arranging a tour for your students.

- Invite a panel of experts to speak to your students about different energy sources.

RESOURCES

Exploring Environmental Issues: Focus on Energy is an educator’s guide to teaching about risk assessment using activities that help students develop decision-making and problem-solving skills. (Project Learning Tree, 1996) www.plt.org

Pace University, along with a variety of nonprofit organizations, has developed a Web site that assesses the relative pros and cons of different sources of energy. www.powerscoreboard.org

The Home Energy Saver, located online at http://homeenergysaver.lbl.gov can help consumers save energy around the home. The site contains a variety of information tailored to different regions of the United States.


The University of Colorado provides energy audit worksheets that can be downloaded from their Web site at www.colorado.edu/conservation/downloads/energyAudit.pdf.

The U.S. Department of Energy provides free CD’s that explain how to conduct an energy audit. Write to: The U.S. Dept. of Energy; Office of Energy Efficiency and Renewable Energy; Office of Building Technology; State and Community Programs; Attn: Mail Code EE-42; 1000 Independence Avenue, S.W.; Washington, DC 20585-0021.
Energy Fact Sheet #1: Oil (or Petroleum)

What is it?
Crude oil is a gaseous mixture of hydrogen and carbon, along with smaller quantities of sulfur, oxygen, and nitrogen. Like other fossil fuels, it comes from the remains of organisms (mainly tiny floating ocean creatures called diatoms) that lived millions of years ago. Crude oil is found in deposits deep under the ground and the sea floor.

Where is it?
The biggest oil reserves in the world are in Saudi Arabia, Iraq, the United Arab Emirates, Kuwait, Iran, Venezuela, Russia, Libya, Mexico, Nigeria, China, and the United States.

How is it extracted?
Oil wells pump the oil out of underground rock, where it fills pores and cracks in the rock much as water fills a sponge.

How is it transported?
Most crude oil is transported by pipeline or oil tanker to oil refineries. One of the largest oil pipelines in the world runs from northern Alaska to the southern Alaskan port of Valdez. From there, the oil is shipped by oil tanker to other locations. More than 200,000 miles of pipeline crisscross the United States.

How is it turned into usable energy?
At the oil refineries, crude oil is heated and converted into such materials as heating oil, diesel fuel, and gasoline. Heating oil is burned in furnaces to heat homes, schools, and other buildings. Cars and trucks burn gasoline and diesel fuel in their engines. Some power plants burn oil to boil water. The steam that is produced spins a turbine to create electricity.

What are its disadvantages?
Oil is not available everywhere. The United States is dependent on oil imported from other parts of the world, yet many reserves are found in politically unstable areas. There are many environmental problems associated with oil's extraction, transport, and use (see below). There are also health problems associated with the pollution produced by the burning of oil in power plants and vehicle engines, including respiratory illnesses and cancer.

What are its environmental impacts?
Extraction can cause habitat disruption and pollution. Transport by ships can cause water pollution (for example, if an oil tanker has an accident it can spill millions of gallons of oil), which can harm wildlife and ecosystems. And pipelines can interrupt animal migrations as well as pollute the local environment if they leak. The burning of oil releases air pollutants such as sulfur and nitrogen oxides, which can form acid rain, as well as volatile organic compounds, which may harm plants and contribute to smog. Perhaps most significantly at the global scale, burning oil also releases carbon dioxide, one of the heat-trapping gases that contributes considerably to global climate change.
Energy Fact Sheet #2: Natural Gas

What is it?
Natural gas is a combination of methane and smaller amounts of propane, butane, and other heavier gaseous compounds. The gas originated from the remains of organisms (mainly tiny floating ocean creatures called diatoms) that lived millions of years ago. Natural gas is generally trapped underground, above deposits of crude oil.

Where is it?
The largest reserves of natural gas are in Russia, Iran, Qatar, Saudi Arabia, the United Arab Emirates, the United States, Algeria, Venezuela, and Indonesia.

How is it extracted?
When a natural gas reserve is tapped, propane and butane are first liquefied and removed from the gaseous mixture. Then the remaining gas is cleaned of any impurities and pumped into pressurized pipelines.

How is it transported?
The pipelines distribute natural gas over land to storage areas and gas companies, which then transport it via smaller pipes and trucks to homes and businesses.

How is it turned into usable energy?
Natural gas is burned to produce heat for homes and industries. In power plants, that heat can be used to boil water, producing steam that turns a turbine to produce electricity.

What are its advantages?
Natural gas burns hotter and cleaner than other fossil fuels, it is relatively easy to transport by pipeline, and it is quite versatile. It is also relatively inexpensive, but the price we pay for natural gas (when paying our electricity bill, for example, if our electricity comes from natural gas) may not reflect its true costs. For instance, to help keep prices low for consumers in the United States, natural gas extraction companies and natural gas-fired power companies often receive tax breaks from the government. Also, the negative impacts of the use of natural gas (see below) are not factored into the price we pay. If consumers were to pay to clean up the damage caused by natural gas extraction, prevent global climate change (caused in part by the burning of natural gas), and reverse or prevent damages to health caused by the burning of natural gas, for example, the price of natural gas would be considerably higher.

What are its disadvantages?
Natural gas supplies are limited, and it is difficult and dangerous to transport by tanker. There are many environmental problems associated with the extraction, transportation, and use of natural gas (see below). There are also health problems associated with the pollution produced by the burning of natural gas. These include respiratory illnesses and cancer.

What are its environmental impacts?
Natural gas extraction can disrupt wildlife habitat and threaten native species. When burned, natural gas produces several pollutants, including sulfur and nitrogen dioxide (which contribute to acid rain) and volatile organic compounds, which contribute to smog and may harm plants. Perhaps most significantly at the global scale, the carbon dioxide released when natural gas is burned is a heat-trapping gas that contributes to global climate change.
Energy Fact Sheet #3: Coal

What is it?
Coal is a solid composed mostly of carbon along with varying amounts of water, nitrogen, and sulfur. It is derived from decaying plant remains that have been compressed over millions of years.

Where is it?
The United States, Russia, and China have most of the world's coal. In the United States, coal is found in the Appalachian Basin, the Illinois Basin, the Gulf Coast, the Rocky Mountains, the Northern Great Plains, and the Colorado Plateau.

How is it extracted?
Several different processes are used to extract coal. In strip mining, the top layers of vegetation, rock, and soil are removed to uncover the layers of coal below. In pit mining, miners use heavy machinery to dig into underground coal deposits, leaving empty "rooms" with pillars of coal to support the ground above. In mountaintop removal, the entire top of a mountain is removed to expose the coal layer below.

How is it transported?
Coal is transported via trucks and trains to coal-burning power plants.

How is it turned into usable energy?
Coal is burned to heat water, which produces steam that turns turbines, producing electricity.

What are its advantages?
Coal has historically been widely available in the United States and is easy to transport. It is also relatively inexpensive, but the price we pay for coal (when paying our electricity bill, for instance) may not reflect its true costs. For example, to help keep prices low for consumers in the United States, the coal industry often receives tax breaks from the government. Also, the negative impacts of the use of coal (see below) are not factored into the price we pay for it. If consumers were to pay to restore land affected by coal-mining, to prevent global climate change (caused in part by the burning of coal), and to reverse or prevent damages to health resulting from coal mining and the burning of coal, for example, the price of electricity from coal-fired power stations would be considerably higher.

What are its disadvantages?
The environmental impacts of coal mining are severe (see below). In addition, working in coal mines is a dangerous business. Coal miners can be killed by explosions, cave-ins, and black lung disease—an ailment caused by breathing in coal dust over many years. The health effects of coal aren't restricted to those who mine it: Pollutants released by the burning of coal are linked to several serious health problems, including respiratory illnesses and cancer.

What are its environmental impacts?
All forms of coal mining cause significant environmental damage. Millions of acres of mines have affected the landscape in many parts of the world, and despite government regulations, the companies that are responsible often undertake only minimal restoration efforts. Pit mines often result in land that is unstable and therefore unusable. Mountaintop removal creates permanent scars on the landscape and can dramatically reduce water quality. Coal plants provide about half the electricity in the United States, but they create more than three-quarters of the power industry's sulfur dioxide and nitrogen dioxide emissions, the main contributors to acid rain. In addition, coal plants are the leading source of mercury pollution in the United States. Perhaps most significantly at the global scale, coal plants produce more than three-quarters of the power industry's carbon dioxide emissions. Carbon dioxide is a heat-trapping gas that is contributing to global climate change.
Energy Fact Sheet #4: Hydropower

What is it?
Hydropower is another name for water power—power generated by water that falls with great force.

Where is it?
Hydropower is possible wherever there is a reliable supply of flowing water. Norway, Switzerland, Austria, Ghana, Mozambique, Egypt, and Canada derive most of their electricity from hydropower. Brazil, China, and the United States also use significant amounts of hydropower. China is now at work on what will be the largest dam in the world, which will supply the same amount of energy as 25 large coal-fired power plants.

How is it extracted?
Like wind and solar power, hydropower is captured rather than extracted—it harnesses the force of flowing water.

How is it turned into usable energy?
Hydropower is created by building dams across large rivers. Stored water is then released at controlled rates. As the water falls, it causes turbines to rotate. Those turbines turn a generator, which produces electricity.

What are its advantages?
Hydropower is a clean, renewable, and widely available source of energy. Operating costs are low. Reservoirs created behind dams can be used for fishing and other forms of recreation.

What are its disadvantages?
Initial construction costs are high, and there are a finite number of sites suitable for hydropower projects. In addition, dams can dramatically alter landscapes and aquatic habitats (see below). They can also put communities downstream at risk of catastrophic flooding should the dam burst or be breached.

What are its environmental impacts?
Hydropower dams can be large or small. Dams of any size can increase soil erosion and water pollution, disrupt natural river flows, and restrict fish movement up and down rivers. Very large dams also dramatically alter the landscape by backing up water and creating large reservoirs. Those reservoirs flood surrounding land, which may contain towns, villages, and wildlife habitat. Some environmental impacts of dams can be reduced—either by altering designs (for example, building fish ladders past dams for migratory species) or by operating them differently (for example, controlling water flow to mimic natural cycles and ensure that water is available when wildlife needs it). In general, small dams do less environmental harm than large dams.
Energy Fact Sheet #5: Solar

What is it?
Solar energy is energy from the sun.

Where is it?
People take advantage of solar energy throughout the world. In the United States, solar radiation is most consistently available in the southern and western states.

How is it extracted?
Solar energy is all around us—like hydropower and wind energy, it is harnessed rather than extracted.

How is it turned into usable energy?
Solar energy can be converted into heat or electrical energy. Both passive and active solar systems use the sun's heat energy; photovoltaic cells convert the sun's light energy into electrical energy.

Passive solar systems are structures designed to receive the ideal amount of sunlight. For instance, a house may be designed to receive maximum levels of sunlight to keep the house warm in cool areas or minimum levels of sunlight to keep the house cool in hot areas. Active solar systems collect solar energy and store it as heat in large insulated tanks of water or rock. Fans then distribute the heat as needed.

What are its advantages?
Passive and active solar systems provide a clean way to warm buildings on sunny days. Passive systems can even be used to cool buildings on hot days. Photovoltaic cells are quiet, clean, easy to install, and easy to maintain. The source of the energy for all solar systems—the sun—is free.

What are its disadvantages?
In passive and active solar systems, energy is not available at night, so supplemental energy may be required. In addition, costs to create active systems are high. Photovoltaic cells are expensive, use some materials that could become scarce, and produce some pollution (in the form of heavy metals) in the manufacturing process, although this has been largely controlled through recycling practices. In areas where solar energy is limited (such as areas in the far North and far South during winter), electricity needs may not be met.

What are its environmental impacts?
Solar energy has no significant environmental impacts aside from the pollution associated with manufacturing photovoltaic cells.
Energy Fact Sheet #6: Wind

What is it?
Wind energy is obtained by capturing the force of the wind.

Where is it?
Wind energy is used widely in California, Colorado, Germany, Denmark, Spain, and many other parts of the world. It is a potential energy source in places that are routinely windy.

How is it extracted?
As with solar energy and hydropower, wind energy is harnessed rather than extracted. Turbines with large, propeller-like blades are placed on high towers. The force of the wind against the blades turns a shaft that is connected to a generator.

How is it turned into usable energy?
As the generator turns, electricity is produced.

What are its advantages?
Wind is a renewable source of energy that is widely available and produces no air or water pollution, other than that produced during the manufacture and shipping of the turbine and other parts. Wind farms can be located on land used for other purposes (such as ranching or farming), or can be set up offshore along coasts.

What are its disadvantages?
Some people feel that wind farms are not aesthetically pleasing and worry that they will harm property values nearby. In the past they were very noisy, but new technology has helped reduce the noise.

What are its environmental impacts?
The rotating blades of wind turbines can kill birds and bats, although design changes have reduced these problems significantly. Wind farms built in forested areas may require cutting trees for roads and space for the towers. The greatest environmental problem associated with wind farms now is aesthetic; they are often sited on hillsides or just offshore in the ocean, which some people claim spoils beautiful views.
Energy Fact Sheet #7: Nuclear

What is it?
Nuclear energy is released when atoms of plutonium and uranium are split.

Where is it?
Uranium is found in the Congo River Basin, northwest Canada, Colorado, and Utah. Plutonium is a manufactured substance produced in association with uranium. Nuclear reactors are concentrated in the United States, France, Japan, Russia, and the United Kingdom.

How is it extracted?
Uranium is extracted from mines. When it comes out of the mine, the ore is chemically treated and transported to mills, where it is incorporated into protective metal tubes called fuel rods. The fuel rods are then transported to reactors.

How is it transported?
Trucks carry chemically treated uranium between the mine and mill, as well as carrying the fuel rods containing the treated uranium between the mill and reactor. Trucks and trains also carry the used, radioactive fuel rods and other nuclear waste to storage facilities.

How is it turned into usable energy?
When the nuclear fuel rods are brought together inside a reactor, something called critical mass is achieved. At that point, the atoms of uranium and plutonium begin to split and release huge amounts of energy. This energy is converted to heat, which is used to heat water and produce steam, which spins a turbine connected to a generator that produces electricity.

What are its advantages?
Many supporters believe that nuclear energy is safer and cleaner than other forms of energy. Producing nuclear energy releases no carbon dioxide, sulfur dioxide, nitrogen oxide, or particulate matter.

What are its disadvantages?
Nuclear energy has proven to be extremely expensive. Accidents or sabotage could result in the release of deadly radiation. Nuclear waste is difficult to dispose of safely, and it can remain radioactive for thousands or even tens of thousands of years. Mining uranium can be hazardous to workers who inhale radioactive radon gas, which is released during the extraction of uranium.

What are its environmental impacts?
Nuclear reactors produce substantial radioactive waste, which has been temporarily stored at sites across the United States for years. A recent decision to create a permanent hazardous waste storage facility at Yucca Mountain in Nevada has raised concerns about associated environmental problems, such as the effects of leaks on water quality and the possibility of terrorist attacks.
During the cold winter months, polar bears in Hudson Bay, Canada, hunt for ringed seals, bearded seals, and other prey on the sea ice that forms across the bay. When summer comes and the sea ice melts, the polar bears move to land. On land, hunting is much more difficult, so the bears need to start the summer with good fat reserves to help them through these leaner months.

Rising temperatures in the Hudson Bay region are causing problems for polar bears. Average temperatures have risen by about 9 degrees Fahrenheit over the last 100 years—part of the global climate change that many scientists agree is caused, at least in part, by burning oil and other fossil fuels, which releases carbon dioxide into the air. Warmer temperatures are making the sea melt earlier each spring and freeze later each fall. As a result, polar bears have a shorter season on the sea ice and are starting their summers with fewer fat reserves. By the end of the summer, many of them are dangerously thin. Low weights can translate into lower fertility rates, less milk production by mother bears (leading to the death of their cubs), and even the death of adult bears.

Oil use also has some direct effects on polar bears. For example, oil spills can result in polar bears ingesting oil (if they groom their fur after it has been contaminated by oil), something that has killed several bears in Canada, and oil exploration can disrupt mother and cub denning sites. But scientists agree that the most serious long-term threat to the world's 22,000 polar bears—and many other species—is human-induced climate change caused by burning oil and other fossil fuels.
If you've ever spent time in an area where common loons live, you've probably heard their loud, wailing calls echoing across the water. Loons are large swimming birds that spend their summers in the cool wooded lakes of the northern United States and Canada. If you're out on a boat, you may see them swimming in the water and diving after prey. Both males and females are black and white, with a white band around the neck. Early in the summer, a loon pair will build a nest and the female will lay one or two eggs in it. If successful, the chicks will hatch about a month later. Although the chicks can swim right away, they will periodically ride on top of one of their parents' backs to rest, get warm, or avoid predators.

Coal-burning power plants are affecting the health of common loons in several ways. First, mercury emissions from the plants are contaminating the waters of the Great Lakes and Northeast where many loons live. Mercury is ingested by small aquatic organisms, and passed up through the food chain to the fish that loons eat. High mercury levels can result in the loons producing fewer offspring. High doses can even cause adult loons to die. In the 1970s, people started to notice shrinking numbers of common loons in parts of the Northeast. Researchers discovered high levels of mercury in the birds' blood and feathers. Also, acid rain caused by nitrogen oxide and sulfur dioxide emissions from coal-burning power plants can reduce fish stocks in some lakes, which can lead to starvation among loon chicks.
Golden Eagles, Bats, and Wind Power

In the early stages of wind-farm use, there was concern about the effects of wind farms on birds—particularly golden eagles, one of the nation's largest and most powerful birds. Birds perching on the blades of wind turbines can be killed when the wind starts up and the blades begin to rotate. But since a California wind farm was blamed for the death of several golden eagles in the early 1990s, wind turbine design has been improved and wind farms are more carefully situated to avoid areas important for the nesting and migration of golden eagles and other birds. Experts estimate that, if wind provided all of the energy needed in the United States, an estimated 4.4 million birds (of various species) would be killed each year. By contrast, communications towers currently kill up to 50 million birds, motorized vehicles kill 60 to 80 million, buildings kill up to 980 million, and house cats kill hundreds of millions of birds in the United States every year.

Dead bats have been found at some wind energy facilities, so biologists are now looking into how wind turbines affect bats and what can be done to avoid bat casualties. Finding ways to avoid or minimize harming bats is important because almost all of the bats in the United States eat insects and can play a role in controlling populations of mosquitoes and other insect pests. In fact, a single bat of some species can eat up to 1,000 mosquitoes and other insects in an hour!
Five species of salmon swim in the waters along the U.S. Pacific Coast. These salmon are a critical food source for people, grizzly bears, and many other species in the Pacific Northwest. They are also an important part of the cultural traditions of many indigenous people who live in this region.

Salmon are anadromous fish. That means they spend part of their lives in both freshwater and saltwater habitats. Born in freshwater streams, they migrate to the ocean, where they spend most of their life. Then, when the salmon are ready to reproduce, they return to freshwater streams. Although they have dispersed thousands of miles across the ocean, the salmon will converge again on the same stream where they began their lives.

Throughout the Pacific Northwest, the rivers that make great salmon habitat are often desirable sites for hydroelectric dams. These dams can prevent adult salmon from swimming upstream to spawn. They can also block juvenile salmon trying to swim downstream to the open ocean. In some places, people have built special passageways called fish ladders to allow salmon to pass around dams. But the salmon can become disoriented, stressed, or injured as they try to make it up the ladders. Juvenile salmon can also be killed by swimming into the dams’ turbines instead of passing down the ladders. Because of dams and other problems affecting their stream habitat, many wild salmon populations are endangered or have already become extinct in areas where they were once abundant.
Even if you live in places where Jefferson salamanders are found, chances are good that you've never seen one. These slender, five- to seven-inch-long salamanders are dark with blue specks. They live in moist woodlands in the eastern United States and southeastern Canada. But they spend most of their time burrowed underground and are active at night. Your best chance of seeing one is during their spring migration to ponds, where breeding takes place.

Biologists have determined that Jefferson salamanders are extremely sensitive to acid rain, which is caused in part by emissions of nitrogen oxide and sulfur dioxide from coal-burning power plants. Studies have found that the salamanders can't breed in acidic waters, so water bodies that have been greatly affected by acid rain no longer support Jefferson salamander populations.

These salamanders are also highly sensitive to changes in climate, so experts believe that dwindling salamander populations may be an early indicator of global climate change (which is also caused, at least in part, by the burning of fossil fuels such as coal).
Clouded Leopards and Hydropower

Clouded leopards are medium-sized cats with large, dark spots covering silver gray or tawny fur. Nimble climbers, they have been seen climbing upside down on horizontal branches and even hanging from branches by their hind feet! Clouded leopards are rare and elusive residents of several Asian nations. Scientists have observed very few of the leopards in the wild, but their pelts and meat sometimes show up in markets and on restaurant menus catering to wealthy clients.

In China, the opening of the Three Gorges Dam on the Yangtze River may threaten some of the country’s remaining clouded leopards. The dam, when complete, will be the largest hydropower facility in the world. It will flood about 396 square miles of land—an area almost six times as large as Washington, D.C. Included in those areas are isolated forest fragments in the southern part of the country where clouded leopards now live. Experts believe that the flooding of clouded leopard habitat may threaten those cats’ survival in China.

But other people point out that, overall, the Three Gorges Dam will protect China’s environment by reducing its dependence on other energy sources. The energy produced by the dam is expected to be the equivalent of 18 nuclear power plants, providing more than 10 percent of China’s energy needs.
Seabirds and Oil

When the oil tanker Prestige sank off the north-west coast of Spain in 2002, millions of gallons of oil leaked out and began washing ashore. Popular tourist beaches were blanketed with gory oil. Thousands of fishers were out of work as authorities closed fisheries. And more than 15,000 seabirds died in the first month after the spill from swallowing oil or having it coat their feathers.

Months later, oil-soaked birds, including gannets, shags, cormorants, razorbills, and Atlantic puffins, were still turning up on Spanish beaches. Rescuers worked to clean and rehabilitate the birds, but they were able to save only a tiny percentage of them. Those that did survive were at risk of long-term reproductive damage.

Billions of gallons of oil are carried each day by tankers and pipelines around the world, usually without any problems. But when oil spills occur, the effects on wildlife and fisheries can be devastating. Seabirds, shellfish, marine mammals, and many other creatures have died in the aftermath of oil spills around the world. And fishers, tourist operators, and other people who depend on those resources for their livelihoods suffer great financial losses, too. One way oil spills can be avoided is through the use of double-hulled oil tankers. These ships have two layers of metal protecting the oil they carry, so that if the outer layer is punctured, the oil will not spill. Many people are working to make double-hulled oil tankers and other improved technologies a regular part of doing business to reduce the risk of oil disasters.
When most of us think about Amazonian rain forests, we picture toucans, monkeys, and spotted cats. But for many people, the Amazonian rain forest is a treasure trove not just of biodiversity, but also of natural gas. For years, gas companies and the Peruvian government have been interested in developing the Peruvian Amazon’s natural gas reserves, which are estimated to hold about 13 trillion cubic feet of natural gas, as well as large reserves of oil.

Developing a natural-gas project in Peru would provide the nation and its industries with energy and a much-needed economic boost. But many people believe it would threaten the livelihoods of several indigenous tribes and expose them to deadly diseases. Opponents also point out that this development would alter rain forest habitat close to protected areas such as Manu National Park. The threatened areas are among the most biologically rich in the world, home to more than 850 species of birds and such rare species as giant otters, giant armadillos, and jaguars. As plans move forward to construct buildings, roads, and pipelines, many people continue to speak out against this large-scale energy project.
Desert Wildlife and Nuclear Energy

For years, U.S. nuclear facilities have been piling up spent fuel rods and other nuclear waste, waiting to move the waste to a permanent storage site. But who wants a nuclear storage facility in their backyards? Not surprisingly, a heated debate has raged over where and how to build a permanent storage facility. The U.S. Congress has been investigating just one possible site for this nuclear waste: Yucca Mountain, about an hour from Las Vegas, Nevada. More than a decade of thorough tests by scientists and engineers has resulted in a mixed report about the safety of the Yucca Mountain storage site. Many people in industry and the government support the project because they believe there are no convincing reasons why the facility shouldn't be safe. But a number of significant risks surround the project, making other people (including most Nevada residents) opposed to the waste facility.

One of the biggest concerns about this project is that it's hard to keep nuclear waste completely contained: Even specialized metal drums can corrode and leak, contaminating groundwater supplies, harming desert wildlife, and affecting local human populations. This could happen within just a few decades, and yet the wastes will have to be contained for many thousands of years. In addition, Yucca Mountain has experienced several small earthquakes in the last few decades. On top of that, experts say that carrying nuclear waste by truck and train from all across the country to this site is a disaster waiting to happen. Accidents, or even terrorist attacks, could lead to catastrophic contamination of any community on the travel route of these vehicles. Among the many opponents to the Yucca Mountain facility are residents of nearby Indian reservations who have experienced high rates of cancer after exposure several decades ago to radioactive contamination via water and game animals.
Western Lands and Solar Energy

The Great Plains. The Great Basin. The southwest deserts. If you've ever visited or seen pictures of these regions, you may know some of their common features: wide open spaces, relatively sparse populations, and lots of sun. These areas are also prime wildlife habitat. Together they provide the right environmental conditions for American bison, desert pronghorns, black-footed ferrets, coyotes, prairie dogs, and many other species.

Now picture this: these same regions with thousands of solar panels lined up end to end, harnessing energy for people across the planet. According to at least one expert, we could power our country entirely with solar power, but it wouldn't be as simple as adding panels to every family's rooftop. To make up for the lower solar potential of cooler, more northerly areas of the United States (such as the Northeast, which also happens to be densely populated), we'd need to set up miles of solar collectors in the sunniest (and least inhabited) parts of the country. An obvious choice would be the regions mentioned above.

The idea of powering our entire country with solar energy is a futuristic vision—some might even call it science fiction. But what would the consequences be of adding these panels across what are now wide, empty spaces? Would the cooler, shaded areas beneath these panels cause new plant species to take root? Would existing wildlife lose the vegetation they rely on? Would the panels interfere with animal migrations? Would servicing these panels disrupt wildlife during mating and birthing seasons? Some people argue that the panels might actually enhance wildlife habitat in these areas. Others believe that global climate change from fossil fuel use will have a more damaging effect on wildlife than solar panels would.

Still, there's much we don't know about how expensive solar energy development might affect these valuable natural regions.
Efficiency Adds Up!

Many experts have long argued that the best way to avoid some of the problems with energy use is to use less energy to begin with. But how can that be achieved on a large scale? Some people argue that, for significant reductions in energy use to be realized, governments will have to provide the necessary incentives and regulations. For example, in 2003, with the help of the federal Energy Star program that makes appliances and electronics more energy efficient, Americans saved enough energy to power 20 million homes. That saved consumers $9 billion. But much more could be done. For example, if fuel efficiency standards were raised from 27.5 to 40 miles per gallon for cars and light trucks, U.S. oil consumption would be reduced by 3 million barrels every day. The change would also cut carbon dioxide emissions by an equivalent of those from more than 115 million cars and save consumers at least $45 billion each year at the gas pump.

Two Hulls Are Better Than One

After the Exxon Valdez oil spill in 1989, many people pointed out that the disaster could have been avoided if the oil tanker had been double-hulled. That means that the part of the tanker that carries the oil (the hull) lies within a second, equally strong, steel hull. If damage occurs to the outer shell, the inner hull often remains intact. In response, the U.S. government issued a requirement that all tankers that come into U.S. ports be double-hulled by 2015, although activists are pushing for that deadline to be shortened. In 1998, one oil company—Conoco (now ConocoPhillips)—voluntarily met that goal for all of its tankers that operate within U.S. waters. When one of Conoco's double-hulled tankers was rammed in October 1997, not a single drop of the ship's 550,000 barrels of oil leaked into Louisiana's Calcasieu River.

There's No Business Like Bus Business

Take a look around the country and the world, and you'll see that buses aren't what they used to be. In Chattanooga, Tennessee, people are riding and selling locally made electric buses that produce less pollution than typical diesel buses. Washington, D.C., and a number of other cities have begun using buses that run on clean-burning compressed natural gas. Elsewhere, communities are updating school buses and even police cars with cleaner-burning technologies. And some cities—such as Curitiba,
Brazil, and Brooklyn, New York—are creating special bus-only lanes so that riding the bus can become not just cleaner, but speedier.

Under the Amazon Sun
Porvenir, Bolivia, is a village of 600 people located 250 miles from the nearest paved road. Despite its small size, the village is thinking big when it comes to meeting its energy needs. With the help of corporate and public partners, Porvenir now gets all of its electricity from solar power. Solar panels collect energy that powers the village's three computers, its Internet hookup, its refrigerator for medicines and vaccines, and the lights in its school. Obviously it wouldn't have been easy getting power lines to this isolated village. So solar energy has proved just right for powering Porvenir and empowering its residents.

Tiger Triumph
In 2001, oil companies and the government of Bangladesh signed an oil-production-sharing contract. But this contract had a special clause: It specifically stated that there could be no oil or gas exploration in the Sundarbanis. The Sundarbanis are a biologically rich part of Bangladesh, boasting rare mangrove forests and the world's largest tiger reserve. By excluding this area from any development, the government is ensuring that it continues to provide critical habitat for wildlife and contribute to the overall health of the region.

It's a Breeze
A new source of energy has blown into the Spirit Lake, Iowa, school district. Several years ago, at an Earth Day talk by Harold Overmann, the school district's superintendent, a group of students asked, "If the school system is interested in preserving the environment, why do we rely so much on fossil fuels?" That question inspired Mr. Overmann to find a clean-energy solution to the school district's fuel needs. After months of research, he realized the obvious answer was wind power. Spirit Lake sits on a high ridge above the grasslands of Iowa. The area gets so windy it's been called "the Saudi Arabia of wind power." Two years after Mr. Overmann's first meeting with the students, a single wind turbine began providing all the electricity for one district school, plus a surplus. Now a second wind turbine has been installed. When that one's paid for, the combined savings could be as much as $125,000 a year. What's more, the high school physics teacher has calculated that every year the new turbine will prevent the emissions of more than 2.6 million pounds of carbon dioxide and nearly 4,000 pounds of sulfur dioxide, not to mention hundreds of tons of other pollutants.
Ten Tips for Saving Energy

Ten Tips for Saving Energy

Buy Smarter. Encourage your school and your parents to purchase energy-efficient cars and appliances. They are sometimes more expensive, but they save money in the long run by reducing energy use. Information on fuel-efficient cars can be found at www.fueleconomy.gov. The Energy Star label is given to the most efficient appliance models.

Draft Dodging. If your rooms are being heated or air-conditioned, close the windows. If you notice drafts near windows and doors, report them to your parents (at home) or your teachers and custodians (at school). (You can test for drafts by asking a parent, teacher, or custodian to hold a candle in front of window edges and doorjams. If the flame flutters, the window isn't tightly sealed.)

Hold the Packaging. When you shop, choose items with less packaging. And if you don't need a plastic bag, don't take one! Use your backpack or a canvas bag instead. Making plastic bags, plastic wrap, paper bags, and other packaging uses lots of energy, water, and raw materials.

Easy Off! Turn televisions, computer equipment, copy machines, and other kinds of equipment off when they won't be used for a while. Of course you'll need to ask permission before turning off equipment at school. You might even want to make reminder notes to post above these machines at school. If you can't turn off your entire computer, at least turn off the monitor, which is a big energy eater.

Think Before You Peek. Try to decide what you want to eat before you open the refrigerator. Refrigerators can account for about 15 percent of a home's total energy usage. Every time you open the door, the cool air escapes and your refrigerator has to use electricity to replace it.

Go to Sleep. Many kinds of equipment, such as computers and copy machines, will automatically go into a "sleep" mode if they're not used for a while, which saves a lot of energy. Be sure to turn on the sleep function whenever you can. (Note: A darkened computer screen is in sleep mode, but one with a screen saver isn't.)

[How Many Kids Does It Take to] Change a Light Bulb. Replace the standard light bulbs in your house with compact fluorescent light bulbs (CFLs). About 25 percent of electricity in the United States is used for lighting. CFLs use 50 to 80 percent less electricity than regular light bulbs and last up to 10 times longer! Check out www.ibuydifferent.org.

Put Your Sweater On! Take It Off! Instead of turning your home's thermostat up to 72 degrees in the winter, try turning it to 68 and wearing a sweater. In the summer, leave the thermostat at 75 and wear a T-shirt indoors.

Use Your Own Energy. Walking or riding your bike instead of riding in a car can save lots of energy and reduce pollution locally and globally. Using public transportation and carpooling with your friends is also better than driving alone or getting driven around.

Take Charge of the Light Brigade. See any lights on in empty rooms at home and school? Switch them off!
Community Action Guide

“If you don’t like the way the world is, you change it. You have an obligation to change it. You just do it one step at time.”

– Marian Wright Edelman, lawyer and activist
Today there are more ways than ever to change our consumer patterns for the better—from making small changes around our homes to making sweeping changes in our communities. One person's determination and hard work can lead to meaningful and powerful changes in a community. A focused and committed group can almost always accomplish even more. Group action projects not only benefit the community, but also help the group members learn more about themselves, their community, and the issues they're addressing.

If you and your group are interested in making changes in your community, this action guide will provide you with some enjoyable and creative activities. In addition to the "Community Action Guide," check out the Buy Different Action Center at www.buydifferent.org for personal action ideas.

This guide contains a variety of resources to help you take on a group action project. We've included general tips on organizing an action project, provided 25 ideas for taking action on consumer issues, and developed step-by-step suggestions for how your group might pursue three different community action projects.
Taking Action: Key Steps

So, you and your group have decided to take action in your community. You might not be sure what kind of project you want to take on, or how you'll go about it, but you know that you want your actions to be meaningful. Your hard work can pay off with real change in your community if you take the time to understand your community's needs, organize your group around an important project, and follow through with your plan.

This can also be an exciting opportunity for your group to incorporate service learning into your project. Service learning is a method of teaching that enriches learning by engaging young people in meaningful service to their schools or communities through careful integration with established curricula. For those group leaders who wish to transform their service project into a successful service-learning project, whether to satisfy a curriculum mandate or to enhance the experience, make sure the following elements are present:

- **Youth Voice**: Make the most use of youth input and ownership in selecting, designing, implementing, and evaluating the service project.
- **Curriculum Integration**: Apply concepts, content, and skills from academic disciplines and involve students in their own learning.
- **Academically and Developmentally Appropriate Service**: Engage students in tasks that challenge and stretch them cognitively and developmentally.
- **Genuine Community Needs/Assets**: Involve youth in service tasks that have clear goals, meet genuine needs in the school or community, recognize and leverage community assets, and have significant consequences for themselves and others.
- **Partnerships**: Promote communication and interaction with the community and encourage partnerships, collaboration, and reciprocity.
- **Program Evaluation**: Employ systematic evaluation of the service effort and its outcomes through formative and summative methods.
- **Student Assessment**: Use assessment as a way to enhance student learning as well as to document and evaluate how well students have met content and skill standards.
- **Diversity**: Promote diversity in participants, projects, and outcomes.
- **Preparation**: Prepare students for all aspects of their service experience, including understanding their role, the required skills and information, safety precautions, and sensitivity to the people with whom they will be working.
- **Reflection**: Use critical thinking skills to cement the learning that begins during the project process and throughout the service activity. Reflection activities should occur continuously and reflect a variety of learning styles.

You might also wish to use the service-learning planning tool available online at www.buydifferent.org.

The following list describes some of the major steps involved in developing and pursuing a community action project.

1. **Discover project topics.**
Before your group takes action, you should find out about important issues in your community. You can gather information on these issues in several ways:

   - Research consumer and environmental issues by reading articles in local newspapers, talking to local leaders, interviewing community members, or contacting local organizations or government agencies.
   - Take a community walkabout and document the area's assets and needs. Create a map or photo essay that displays things that are positive and you would like to see more of, as well as things that do not look good or could use improvement.
   - Conduct a community survey to see how your perception of needs and assets compares with that of other community members.
   - Engage in a community search focusing on the impact of consumer patterns on the environment. (See the "Smart Consumers/Community Search" on page 236 for one way to introduce consumer and environmental issues.)
As the group gathers information, they may discover lots of bad news. Avoid getting bogged down with negative information. Rather, find the upside to situations—be for something you care about rather than against something.

2. Brainstorm possibilities.
Next, you can brainstorm about the kinds of projects that would address those issues. Use the following three questions as a guide in the brainstorming process:

• Who or what could we teach?
• What product could we make?
• What service could we provide?

For example, if your group learns that solid waste levels are rising in your community, you might consider offering courses on composting to reduce organic waste, creating a pamphlet to encourage recycling, or working with local retailers to limit packaging on products.

At this stage, it’s important to encourage creativity among your group. Don’t criticize any ideas during brainstorming sessions. Be sure the group treats everyone—even those who might disagree with them—with respect. Encourage all group members to participate, and build off of each other’s ideas. Collect as many ideas as you can, and then look for any recurring themes or issues. Try to group ideas to help in the next stage of planning.

3. Narrow the possibilities.
Once you’ve thought through all the possibilities and grouped those that address similar issues, it’s time to narrow the choices to a few that you’ll consider closely. The group should consider some of the following questions while choosing three to five final possibilities:

• What projects seem the most interesting? You’ll be much more likely to dedicate your energy and time if the project is interesting and fun.
• Which projects can be finished in a realistic amount of time? Think about how much time you can devote to each possible project, and eliminate projects that will take more time than you have.
• Which projects are too complex? If you don’t want to eliminate a project altogether, think about simplifying the project to make it more manageable.
• Which projects will lead to measurable change? Think about what kinds of changes in your community each project would create and how you can measure those changes.
• Which projects require too many resources? Some projects may seem interesting but would require so many resources—such as money, expertise, or travel—that they are not feasible. Eliminate projects that require too many resources, or revise projects so they are more reasonable.

4. Choose a project.
Once you’ve narrowed the possibilities, it’s time to choose a project to tackle. Research each of the possibilities by searching the Internet, visiting the library, talking with local experts, and gathering other information that helps the group better understand the issues and ways to address them. If you can, you might invite speakers to visit your group and offer their perspectives.

As the group learns more about the different issues, smaller groups might emerge in support of particular projects. You might schedule a meeting to decide on a plan, allowing each group to make a presentation on the project they like best. The group should then come to a consensus about what project to take on. They might decide on one of the projects already identified or develop a hybrid that combines the best aspects of several projects.

5. Create a plan.
Once you’ve decided on a project, you’ll need to create a work plan for how to complete it. Be sure to include the following in your plan:
• The objectives of the project
• The skills or concepts your group will need to learn and how they will learn them
6. Take action.
Putting the plan into action requires that each member of the group remains involved and keeps careful records of what she or he has done. Group members should check in with each other periodically to be sure that they’re on track and sticking to the plan they’ve laid out. No project is without its problems. But don’t let failures or setbacks derail your project. Instead, rethink your plan and adjust it to accommodate changing situations.

Also, be sure the community knows about what you’re doing. Find ways to publicize your project to gain community support.

7. Assess the project.
As you wrap up your project, evaluate the project as well as the group’s feelings about the role they’ve played. Also, evaluate how well you met the goals you originally established. Can you notice any changes in your community? What lessons did the group learn that can be applied to other situations? Do the group members think they’d like to take on other projects in the future?


"I Buy Different" Mall Scavenger Hunt

Environmentally friendly skateboards, Corporations using renewable energy, Magazines printed on recycled paper. These are some of the products and facts that youth discovered at the mall. Sustainable Seattle, a local non-profit organization, loved the idea of a community search so much that they turned it into a scavenger hunt service project with a goal of introducing youth to the environmental impacts of their consumer choices while identifying a range of environmentally friendly products that are already in stores near them. Teen organizers surveyed stores at the mall to explore the story behind the products they buy and the companies that make them. Then the teens partnered with ten stores to develop and publicize a mall scavenger hunt.

On the day of the big event, each team received organic cotton T-shirts and I Buy Different passports with a list of clues about how different stores and companies are being more environmentally or socially responsible. For each correct store they found, participants received a stamp in their passports. Those with full passports were entered into a drawing for environmentally friendly prizes, with a grand prize trip to Hollywood for the Environmental Media Awards.

To learn more about this fun project and how to organize a similar project in your own community, visit www.ibuydifferent.org.
Reflection

Reflection is the use of critical thinking skills to cement the learning as participants move through the project process. Reflection activities occur continuously before, during, and after a service project. The following table offers samples of ways to promote reflection by doing, telling, reading, and writing at all stages of a service project. Create your own table like the sample below to make sure your group is processing the service experience and making the connection to learning.

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>During</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doing</td>
<td>Make a collage of product ads from magazines and decide which are needs and wants.</td>
<td>Create a photo essay documenting your project from beginning to end.</td>
<td>Perform a skit about an obstacle you overcame during the project.</td>
</tr>
<tr>
<td>Telling</td>
<td>Ask your neighbors what three wishes for the environment they would grant if they could.</td>
<td>Broadcast public service announcements about your project topic in your community.</td>
<td>Share your success story with other youth groups by providing short presentations.</td>
</tr>
<tr>
<td>Reading</td>
<td>Read articles in your local newspaper about environmental issues of concern in your community.</td>
<td>Find out which local businesses are environmentally responsible in the National Green Pages.</td>
<td>Read about other youth projects on Web sites for national and local community organizations.</td>
</tr>
<tr>
<td>Writing</td>
<td>Write a poem about your vision of a perfect environment.</td>
<td>Write letters appealing to local businesses or groups for support.</td>
<td>Write an original song about something you learned during the project.</td>
</tr>
</tbody>
</table>

Many of these activities could easily be shifted across both columns and rows. For example, reading about other youth projects would be insightful during all phases of a project. Also, some activities might lead to others; writing song lyrics, for instance, could lead to performing them.

Mixing Hip Hop and the Environment!

The Center for a New American Dream and World Wildlife Fund partnered with five youth organizations to launch a hip hop contest in Baltimore to spread the word about the connections between consumer choices and the environment. Participants worked with a local rapper to create and professionally record songs, raps, and spoken word pieces for an online contest. The hip hop community in Baltimore welcomed the opportunity to help young people voice their thoughts on how youth can make a difference. Contest judges included a local radio DJ, a rap artist, a hip hop producer and promoter, and the winner of the Baltimore Idol contest.

To celebrate their efforts, youth performed their original pieces at a concert as part of the African American Heritage Festival at Camden Yards.

To play or download the songs created by the youth or to look for more information about this project and how you too can make consumer and environmental issues come alive, visit www.buydifferent.org.
Smart Consumers Community Search

This activity is designed as a hands-on activity to help prepare young people for conducting service projects related to consumer patterns and the environment. Have your group members find as many of the following items as possible and write down their sources. Compile these sources into your own Consumers and the Environment Resource Guide that you can use to help with brainstorming about possible projects. Give points for each item and provide a reward for the individual with the highest total points. Encourage your group to find multiple examples from suggested categories (for example, two hybrid car ads would be 40 points).

- The total population of the world, according to the U.S. Census Bureau (20 points)
- An example from www.ibuydifferent.org showing how youth have power as consumers (30 points)
- Drawing of the logo for the Marine Stewardship Council (MSC) (30 points)
- Advertisement for a hybrid car (20 points)
- A definition of sustainability (10 points)
- Name of a business in your state that is listed in Co-op America's National Green Pages (20 points)
- Schedule for one public transportation route in your area (30 points)
- Library call number for the book titled Material World: A Global Family Portrait (20 points)
- Name of a local store that sells energy-efficient light bulbs or notebooks made from recycled paper (30 points)
- Name of a product that displays a Forest Stewardship Council (FSC) logo (20 points)
- Description of a conservation effort to protect an endangered species (30 points)
- Book review for Stuff: The Secret Lives of Everyday Things (40 points)
- Identify how two common bathroom products in WWF's Virtual House (www.virtualhouse.org) are connected to biodiversity (20 points)
- Name of one environmentally friendly school-supply item from the Center for a New American Dream's back-to-school Web site at www.shopbacktoschool.org (30 points)
- Name of an organization that collects and distributes "gently used" prom dresses (20 points)
- Comparison of the average city miles-per-gallon rating of a hybrid electric vehicle to that of a large SUV (20 points)
- Brand and model number of a television that is Energy Star qualified (20 points)
- Photograph or drawing and name of an endangered species of plant (40 points)
- Name of a paint manufacturer that makes products approved by Green Seal (20 points)
- National Organic Standards Board's definition of the term "organic" (30 points)
- Name of an organization or business that collects used cell phones (20 points)
- Name and address of a company that manufactures organic cotton clothing (20 points)
- A fact from the life story of a notebook at www.ibuydifferent.org (10 points)
Inspiration: Twenty-Five Things You Can Do in Your Community

1. Develop a green shopping guide for your community. Help people in your community learn more about the options they have for buying environmentally friendly products. Your group can do the legwork to find out what products are available at which shops, and can organize it all into one easy-to-use guide. (See “Step-by-Step Project One” on pages 241-246 for more details.)

2. Hold a consumer festival. Plan a festival or other community event to celebrate some of the opportunities consumers have to create change using their consumer power. The festival should focus on the positive and offer plenty of opportunities to have fun and learn about smart consumption in your community. (See “Step-by-Step Project Two” on pages 247-254 for more details.)

3. Sponsor a consumer contest. Challenge schools, businesses, government offices, or others to a contest to reduce their levels of consumption. You might focus on reducing paper or energy use, solid waste, or other indicators of consumption. (See “Step-by-Step Project Three” on pages 255-264 for more details.)

4. Conduct an energy audit. Many schools, companies, government offices, and other organizations can save money and resources by closely evaluating the way they use energy in their buildings. Working with your local utility company, conduct an energy audit for an interested school or business, evaluating how efficiently they use energy in their building. Prepare a written summary with tips for ways to save energy and track the results by monitoring the organization’s energy bills for several months. The organization should find that they save money over time if they follow your energy-saving tips. (For ideas on energy audits, visit the U.S. Department of Energy’s Web site at www.energystatistics.com/consumerinfo.)

5. Put together a “Don’t Can Your Can” campaign. Make sure there are plenty of recycling bins for aluminum in heavily trafficked areas of your community. To encourage people to use these bins, sponsor a contest in which people can win prizes for recycling their cans. Have them use a marker to write their name and email address or phone number on their cans before they recycle them; then pick cans out at random and award prizes to the people who recycled them.

6. Organize a “Buy Better” campaign. You can raise awareness about the power consumers have by helping people understand the impacts of what they buy. As part of the campaign, you can develop flyers, sponsor schoolwide announcements, talk with local civic groups, write articles for local newspapers, and meet with local retailers. You may even help your school board develop a list of green products for back-to-school shopping.
7. Create a green cleaning products "recipe book." Many household cleaning products contain harsh chemicals that can cause health and environmental problems and require special handling when thrown away. Many people would rather use less-toxic alternatives, and you can help them by researching and printing up "recipes" that describe how to make and use more environmentally friendly cleaning products. Make sure you test cleaning products before adding them to your recipe book and can vouch that they work.

8. Organize a green gift-wrapping station in a local mall. Beautifully wrapped gifts are a nice way to show someone you're thinking of them, but you can also show that you're thinking of the planet. Get permission to set up a gift-wrapping station in a mall or department store and use environmentally friendly materials to create unique and colorful packages. For example, to decorate gifts, you might use recycled content wrapping paper, reusable fabric ribbons, scraps of brightly colored cloth, dried leaves and flowers, and colorful reused paper (such as photographs from magazines and calendars or the Sunday comics pages). You can ask for donations to help support your group.

9. Organize a paper-recycling event after the holidays. A great deal of waste is generated over the holidays because people throw away used wrapping paper. Encourage people to hold on to their wrapping paper, and then have it collected and taken to a recycling facility on a designated day.

10. Mount a green advertising campaign. Research some of the more common techniques that advertisers use to encourage people to buy things, and mount an advertising campaign in your community to promote smart consumption. See "Analyze an Ad" on pages 138-14 for ideas.

11. Organize a collection for a local thrift store or charity. Not only will you help the organization raise money, but you'll also be keeping many items out of landfills.

12. Organize a carpool system for your school. Many kids come to school in separate cars, so help parents save time and produce less pollution by creating a system in which kids that live near each other can share rides.

13. Start an organic vegetable garden. Backyard or community gardening can be fun, and it can help cut consumer spending while avoiding the use of potentially harmful pesticides and fertilizers. Start a garden in a community plot or help establish a community garden if one doesn't exist already.

14. Decorate and sell reusable shopping or lunch bags. Paint or decorate canvas or other durable bags with smart consumption messages and attractive artwork. You can sell the bags as a fundraiser, and they'll also help spread your important message.

15. Create a green grocery guide. Create a brochure to hand out in front of grocery stores that describes some of the green products available at those stores and the benefits of buying green products.

16. Organize a household toxics collection day. Many household items contain toxic chemicals that should not be thrown away with the trash. Paints, used motor oil, used lawn chemicals, batteries, household cleaning products, and other potentially toxic items can be sent to special facilities for disposal.
help people in your community do this, you can work with your local solid waste managers to sponsor a collection day when people can drop off their items at one or more convenient spots.

17. Organize a "Share Your Wares" program in your community. Organize a program in your community where people can share magazine subscriptions, books, tools, or other items. You could also organize a Web site or board at a local community center where people can advertise free wares.

18. Promote local farmers. If your community holds a farmer's market, work with market organizers to publicize the market, being sure to highlight the environmental and social benefits of buying locally grown produce.

19. Stick up for your community with "Turn It Off" stickers. Produce small stickers reminding people to turn off the lights to help save energy. Distribute those stickers to local schools, businesses, community centers, and individuals to place on or around light switches.

20. Cut waste in local school cafeterias. Look for ways to reduce the use of disposable trays and plastic cutlery, and encourage students to minimize the number of throw-away containers they bring to school. You could also help local schools start compost piles to dispose of fruit and vegetable waste. The compost will not only help cut the school's solid waste, but it can also help improve school grounds with rich soil.

21. Hold a composting demonstration day. Work with local community gardens, botanical gardens, nature centers, or other environmental organizations to educate your community about how and why to compost organic waste.

22. Start a newsletter. Your publication can focus on consumption-related issues through short articles, inspiring or funny stories, drawings, photographs, poems, and fun facts written by you and your friends. Print your newsletter or other publication on recycled paper or distribute it through email or on the Web.

23. Develop a back-to-school education campaign. Raise awareness about green alternatives for school supplies, such as recycled paper and notebooks, Forest Stewardship Council-certified pencils, rechargeable batteries, and other options.

24. Launch a "Responsible Recreation" campaign. Recreational activities, such as power boating, snowmobiling, or off-road driving, are fun, but they can have a big impact on the environment. If activities like these are popular in your community, learn about the most responsible ways to take part in them, and let others know how they can minimize their impact.

25. Organize a "Power to the People" campaign. In an increasing number of cities across the United States, there are new options in electrical power providers, and some offer more environmentally friendly alternatives. Research the alternatives in your community, and let people know if they have a choice in buying electrical power. For instance, is it possible to purchase wind power in your community? Help people better understand the pros and cons of each alternative by developing informational materials they can use to make informed decisions about their energy sources.
Step-by-Step Project Ideas

We've included step-by-step suggestions on the following pages for three sample projects to show how you might accomplish consumer-related projects in your community.

We've also included stories about groups that have successfully taken on similar projects. We hope the suggestions and stories give you ideas about how your group might take on a project, but you shouldn't feel that the steps we've laid out represent the only way to take these actions. Be sure to adapt the steps to suit your project, your community, and your group.
Step-by-Step Project One
Develop a Green Shopping Guide for Your Community

Many people agree that it's a good idea to buy environmentally friendly products, but they don't know where to go or what to buy. Your group can help take the guesswork out of green shopping by doing the legwork for shoppers in your community.

A green shopping guide to your community can help shoppers find the products and services that will help them make a difference. You can direct community members to shops that offer recycled products, have reduced packaging, offer organic food alternatives, carry products certified as sustainable, or offer other green alternatives that you want to highlight.

How Long It'll Take: Four to Six Weeks for a Basic Guide
The amount of time this project takes depends on how often your group meets, and how detailed you want your guide to be. Plan on four to six weeks for a basic guide.

Tasks You'll Need to Tackle:
1. Decide what kind of guide you want to create.
2. Develop a work plan.
3. Conduct the research.
4. Write and design the guide.
5. Print the guide.
6. Distribute the guide.

Who Should Do It: Ages 12 and Up
This project is appropriate for middle school, high school, college, and adult groups.
INTRODUCTION
For many people, buying environmentally friendly products isn't easy. It requires knowing about consumer issues and the options available, shopping around to find out who sells green products, and finding out how much those products cost. Many people just don't have the time to do the research.

Your group can help make it easier to shop green in your community. With all the necessary information at their fingertips in one easy-to-use guide, many shoppers will choose environmentally friendly options they might not have known about otherwise. At the same time,

The "Twin Cities Green Guide"

Ami Vbeta just wanted to be greener. "I wanted to find resources for reducing my own waste. I started doing research, and I found so much information, I thought I should share it."

But when friends learned she was only planning to photocopy the information she found and pass it along to a few people, they encouraged Ami to think bigger. So she did. Ami applied for a state grant that could provide funds for developing and printing a more comprehensive guide, and, when she received the grant, she quickly put together a small team to tackle the task.

The group envisioned a guide that would help residents of the Minneapolis-St. Paul area live more sustainably. "Our two goals were to help people learn ways to cut back on consumerism and learn to make or build things themselves, and to give people resources for thinking about how they spend their money when they do have to buy things," Ami explains. Their guide contains listings of local businesses and organizations that sell green products and help the environment. It also contains articles written by volunteers that offer suggestions and contacts for do-it-yourself projects. The guide offers tips, for example, on how to grow your own food, make your own nontoxic cleaning supplies, and create your own gifts.

A year and a half later—and with the help of over a hundred volunteers who wrote and edited articles, proofread the guide, conducted research, entered data, provided artwork, and took on other jobs—the group was ready to distribute the guide, which was available both in print and on the Web. But with limited funds, advertising the guide required some creativity.

The group decided to promote the guide by decorating old, unusable bikes with signs announcing the availability of the guide. They locked the bikes up at bike racks around town where the bikes served as small "billboards" for their project. They also fixed up bikes, decorated them with information about the guide, and rode them in community bike rides.

So far, the group has distributed over 5,500 copies of the printed guide, and the Web site is used both by people in the Twin Cities area and far beyond. In addition to creating a revised edition of the guide, Ami is also planning to teach others how they can make a similar guide in their communities. She's developing a workshop that discusses how to develop a work plan, apply for grants, recruit volunteers, and meet other challenges in developing a green guide.

According to Ami, "We have the power to keep our environment healthy by giving our money to good companies that care about how their products are made and how their products affect the Earth and our health." She hopes the Twin Cities Green Guide will help her community put their consumer power to work.

You can find the entire Twin Cities Green Guide online at www.thegreenguide.org.
your group will learn more about what's available in your community.

**BEFORE GETTING STARTED**

Your group might begin by investigating some other green shopping guides. For example, Co-op America publishes the "Green Pages", which is designed for a national, rather than a community, audience. This guide is available online at www.greenpages.org. The Blue Ocean Institute has produced a popular guide to seafood, which is available on the Web at www.blueoceaninstitute.org/seafood. After looking at those and other green shopping guides, your group should discuss what you like and don't like about the guides you've seen and should evaluate whether you think that a green shopping guide tailored to your community might be a worthwhile project.

**CREATING THE GUIDE**

1. **Decide on the approach.**
   This decision will depend upon the interests and age of your group as well as your community's needs.

   A straightforward approach would be to produce a guide to the businesses in your community that highlights the green products and services those businesses have available. It might list the businesses in alphabetical order and provide a list of each type of green product or service that each business sells. At the back of the guide, you might also list the green products and services, accompanied by the names of businesses that offer them.

   Depending on the size of your community, the amount of time available, and the number of people who are working on the project, you might choose to profile all of the businesses in your community, or you might focus on one neighborhood. You'll also have to decide what types of green products and services your guide will highlight.

   To develop your list, encourage the group to first conduct some research and then brainstorm about as many different kinds of green products and services as possible. Later, the group will narrow the list based on research into product availability and community interest. The following are some different types of green products and services to help start the brainstorming session:

   - Bakeries that use organic ingredients
   - Bulk foods
   - Clothes made from organic cotton
   - Energy-efficient appliances
   - Energy-efficient light bulbs
   - Environmentally friendly dry cleaners
   - Environmentally friendly lawn care
   - Environmentally friendly or hybrid cars
   - Forest Stewardship Council (FSC)-certified wood
   - Locally grown produce
   - Marine Stewardship Council (MSC)-certified seafood
   - Native-plant landscaping
   - Non-toxic household cleaners
   - Organic food
   - Rechargeable batteries
   - Recycled office paper and notebooks
   - Recycled paper napkins and towels
   - Seafood recommended by the Blue Ocean Institute or Monterey Bay Aquarium
   - Soaps, lotions, shampoos, and other products made with organic ingredients

   After the group has finished brainstorming, choose the products that are most frequently used or purchased, have the greatest environmental impact, and would most interest the audience. You may also want to explore what other organizations have said about critical issues and key consumer choices. For example, The Consumer's Guide to Effective Environmental Choices (published by the Union of Concerned Scientists) highlights...
actions that are most beneficial to the environment. Other groups that may have advice include the Rainforest Alliance, the National Wildlife Federation, World Wildlife Fund, the Center for a New American Dream, and the Worldwatch Institute.

Now your group will need to decide what other information the guide will feature. The following are some ideas to consider:

- **Introduction to the guide.** Explains what green consumption is, why you produced the guide, and how to use it.

- **A guide to green products and services.** Describes each type of green product and service included in the guide and explains the environmental benefits they offer.

- **Business listings.** Lists names and contact information for the businesses in your community or neighborhood that sell green products or services.

- **Product and service listings.** Serves as a cross-reference. Lists the green products and services included in the guide as well as the businesses where those products and services are available.

- **Advertisements.** Features certain businesses that sell green products and services. Some of the businesses included in the guide might be willing to buy ad space in the guide, and the proceeds can help cover the cost of printing.

Finally, develop a rough outline for the guide so that everyone understands how the guide will be organized.

Note: The type of guide described here is just one of many ways your group might choose to organize their guide. Some groups might be interested in developing a more focused guide that requires more research. For example, they might want to develop a guide that highlights specific products—and businesses that sell them—that can help cut a business office's environmental impact. Or, another group might be interested in focusing on the needs of builders, car shoppers, or others.

2. **Develop a work plan for completing the guide.**

Set some concrete goals for when you'd like to complete the guide. Your timeline will vary depending on your setting and the group's ideas about how you'd like the guide to be used. For example, you might want to complete the guide in time for Earth Day, by the beginning of the school year, or a new semester, or during summer break. Be sure to consider your audience and how you plan to distribute the guide when thinking about when you'd like to finish it.

Next, have the group brainstorm about all of the tasks that need to be completed. This list will differ depending on the kind of information your group has decided to include and how you plan to organize your guide. The following are some general types of tasks that might need to be completed:

- Develop criteria for listings
- Research businesses to profile
- Go to stores to find out what products they sell
- Talk to store managers and owners about buying ad space in your guide
- Raise any other funds necessary to produce the guide through grants and in-kind donations
- Write an introduction to the guide
- Write a section describing different green products
- Check the facts listed in the guide
- Design a cover
- Design and organize the inside of the guide
- Print the guide or put it up on the Web
- Distribute the guide

Once you've developed a complete list of tasks, have the group match this list with the timeline you've developed. By what date should each task be completed to meet your target for finishing the guide?

Finally, have the group members take on those tasks that interest them and that most closely match their talents.
3. Research products and services.
Now it's time to tackle the toughest part of the project: finding out what products and services are available and where to find them. Group members who are visiting community businesses should take with them the list of products and services the guide will cover. Then, they should use that as a checklist as they go through each store. If possible, they might also ask to speak to the store's owner or manager to confirm the availability (or unavailability) of the products and services. If they can't go to every store they want to include in the guide, group members can also call and speak to a manager over the phone.

4. Write and design the guide.
While some members of the group are doing research, others can begin to design the guide. The guide will need an attractive cover and some introductory paragraphs. The group should decide on a format for displaying the products available at each store. Will the guide include any drawings or photographs? How about ads?

Have the people who are assigned to writing and designing the guide fill in the product and service information as it's collected. You might assign a group member to verify the information in the guide, calling any phone numbers listed to be sure they're correct, double-checking mailing addresses, and testing Web addresses. Another group member might be in charge of selling ad space.

The last step is to ask someone not associated with the project to proofread the guide, looking for mistakes the group might have missed.

5. Develop a marketing plan.
Now think through a plan for how to best reach the target audience and how many copies they'll need.

Will group members go door to door? Will they hold a meeting or other event? Will they advertise the guide? If so, where will they place their advertisements? The group should also be able to quickly and convincingly explain to skeptics how this guide will help the community. You might even suggest that the group spend a little time playing "devil's advocate," challenging each other to explain why the guide is important.

6. Publish the guide.
Once the guide is complete and without errors, it's ready to publish. One way to save resources is to post the guide online. If you decide creating hard copies is a better alternative for your community, then you'll have to cover the printing costs. If your group doesn't have the money, then you'll have to raise it.

First, you'll need to decide whether you're going to use a photocopier or have it professionally printed. For photocopies, estimate the cost of printing one guide and then multiply that cost by the number of guides you'd like to distribute. If you're going to have the guide professionally

The "Utah Green Pages"
Sometimes, one group can't do it all. Joining forces with other groups can mean more resources, more ideas, and more ways to distribute your guide. Three Utah organizations had just that idea when they joined forces to create the "Utah Green Pages." The local public broadcasting station (KUED), the local public radio station (KUER), and the Utah Society for Environmental Education came together to offer Utahans a Web site that would guide them to greener living. The site contains tips, links, and information on a variety of topics, from water and energy to transportation and conservation. The guide even gives suggestions for places to go for fun, adventure, and education, and it lists local organizations that offer volunteer opportunities. Check out the "Utah Green Pages" online at www.utahgreenpages.org for more ideas.
printed, talk to several local printers to find the one using the most environmentally friendly practices and offering the best price. (Keep in mind that the price per guide usually decreases as the quantity increases.)

Next, you'll need to raise the funds, and the options for doing this are as varied as you can imagine. As mentioned earlier, you might sell ad space to local businesses. You might also make one copy of the guide as a sample, and ask for donations from local businesses or environmental groups. Another alternative is to sell the guide, charging enough for each copy to cover the costs of printing. If you like, you can even charge more than the printing costs and use the sale of the guide as a fundraiser, with the profits going to fund future group projects.

7. Distribute the guide.

Finally, it's time to get your guide into the community. If your guide is online, you will want to encourage people to go to the Web site. You might create flyers containing the Web address and information about the guide and then pin them up on community message boards or distribute them to mailboxes and stores. Or, to keep the guide entirely paper free, you could send out email announcements via local list servs.

If you have printed versions of your guide, distribution will depend on how many you printed, how much money you have, and whether you are charging community members for copies. You may want to leave free copies in people's mailboxes, arrange to leave copies in stores, or give out or sell copies at community events.

As the guide begins to circulate in the community, you may begin to receive feedback about usefulness and accuracy. Your group may want to keep track of these comments and address them in a future version of the guide or on a Web site that is linked to the project. The group could expand the guide over time, updating and changing incorrect or out-of-date information, and adding new sections or types of products that they think would be useful.

"National Green Pages"

If you're considering creating a green guide to your community, you might find inspiration from the National Green Pages, developed by Co-op America. This resource, available in print as well as online at www.greenpages.org, provides listings of businesses that Co-op America has approved based on the businesses' commitment to social and environmental responsibility. Providing listings for everything from art supplies to water purifiers, the guide can direct green shoppers to virtually any type of green service or product. And Co-op America is also beginning to work with local groups to develop green guides to different states.
Step-by-Step Project Two
Plan a Consumer Festival

Celebrate positive consumer action with a consumer festival or other local event. Use this opportunity to educate people in your community about consumer-related issues and how we can all work together to become smarter, more environmentally conscious consumers. Choose a festival theme that will attract local participants, and remember that the goal of the festival is to bring people together to learn about and celebrate the power that consumers have to change the world.

How Long It’ll Take: Three to Six Months
Event planning takes time, and the larger and more intricate your event, the more time you’ll need.

Tasks You’ll Need to Tackle:
1. Decide what kind of event you want to hold and where you’ll hold it.
2. Identify partners to help you and organize planning committees.
3. Prepare an event budget and raise funds for the event.
4. Secure speakers, entertainers, vendors, and other participants.
5. Prepare signs, posters, and other promotional materials for the event.
6. Organize volunteers.
7. Hold the event.
8. Follow up by providing information to the community on the event’s impact, holding team meetings to discuss how the event went, and writing thank-you notes to key participants.

Who Should Do It: Ages 12 and Up
This project is appropriate for middle school, high school, college, and adult groups. Kids under the age of 12 can play important roles but will need older volunteers for guidance throughout the planning process.
INTRODUCTION

Community festivals provide great opportunities to meet neighbors, celebrate special occasions or accomplishments, and have fun. By organizing a community festival or other event around the topic of consumption, your group can help people in your community learn more about consumer issues and how they can make a difference using their consumer power.

Your festival can be as small or large as you can manage. You might want to organize an ambitious event—complete with exhibits from local artists who use recycled materials, musicians who sing about consumer culture, store owners who sell green products, demonstration stations that feature important issues in your community, and speakers who inspire festival-goers to take action. Or your event might be smaller, centered on a single aspect of our consumer culture, such as recycling, water conservation, or other issues that are important in your community.

We've provided a checklist to help you organize your group to plan a major event. The timeline we've suggested is about six months long, but your plan may take more or less time.

WHAT YOU SHOULD KNOW

Before planning a consumer festival in your community, your group will have to spend time thinking about the event's focus. This will require research into the consumer issues that are of concern in your community. You might consider interviewing local environmental leaders, government-agency employees, journalists, and others. In addition, you might find more information through Web and library searches. (The "Thinking About Themes" box on page 249 may also give you some ideas for sustainable consumption festival themes.)

You'll need to think about where you want to hold your event. Find out what permits you might need for various local venues. The fire and police departments, park authority, and other local agencies may have specific guidelines you'll need to follow, and you should be aware of those as you begin planning.

Finally, you might also contact other groups that have recently hosted successful community events to get advice. They will probably be happy to share some helpful tips they learned from the process of planning an event.

EVENT PLANNING CHECKLIST

Adapted from The Texas Environmental Event Planning Guide, developed by the Texas Natural Resource Conservation Commission (Publication number 91-137, Revised 9/99).

✔ Five to Six Months Before Event

DETERMINE THE EVENT LOCATION

In thinking about where to hold your event, you'll need to consider a variety of factors. First, how many people do you anticipate will attend? Second, consider who your target audience is and what your key themes are. If you want to reach young people, a school might be a logical location. If you want to target shoppers, you might invite your local shopping mall to sponsor the event by providing space.

You'll also need to consider logistics. If you're planning an outdoor festival, is an alternative site available in case of bad weather? Is public transportation available to your site? If you're planning an indoor event, are there options that offer natural lighting (to reduce electricity use), recycling, or other environmentally friendly benefits? Be sure to consider handicapped accessibility, your event site should be appropriate and comfortable for all members of your community.

ENLIST PARTNERS

Holding a community-wide event takes a lot of time and many resources, so try to engage partners in the planning and implementation of the event. Once:
you've decided on the event's focus and theme, think about the kinds of organizations or agencies that might be able to help. Local environmental groups, government agencies, businesses, informal/nonprofit educational organizations, and civic associations might be good partners.

Once you've identified a range of possible partners, send each one a letter describing your event and how you think that partner might help. Then follow up with phone calls or personal visits. Try to focus on how the event will help the partners better accomplish their goals, achieve their missions, or meet their customers' needs. When you're satisfied that you've secured enough partners, arrange a meeting to introduce everyone, generate excitement about the event, and begin planning.

SELECT THE EVENT DATE

Working with your partners, think about a date that makes sense for your event. First, you'll need to be sure that your event date gives you plenty of time to plan. You'll also need to think about dates that coincide with your theme. Earth Day, for example, may be appropriate for holding environmental celebrations. Arbor Day would be a good choice if your theme is related to paper and wood products.

Also keep in mind other important dates in your community. You may want to avoid dates when your city or town already plans major celebrations, remembrances, or other important gatherings if you feel that those would compete or interfere with your event. Alternatively, you might piggyback on those events by figuring out a way to tie your event in with the town's celebration.

Thinking About Themes

If your group wants to hold an event to educate your community about consumption, you'll first have to decide on a theme. What aspect of the consumption issue most interests your group, and what does the group think is most important for your community to know about? Answering these questions will take time and research. In the meantime, we've provided a few sample event ideas to help spark your thinking.

- **Sustainable Seafood Festival.** This festival could be a fun and tasty way to show people in your community that they can have their fish and eat them too. You can even invite local restaurants to showcase seafood that represents sustainable choices. World Oceans Day, celebrated every June 8, would be a great occasion to educate consumers about how they can help keep oceans healthy through their consumer choices.

- **Found Art Festival.** If your group enjoys the arts, then an art show might be up your alley. Many artists are finding ways to recycle materials they find into beautiful and interesting works of art, sometimes called "found art." Your group could sponsor an event that encourages local artists to find creative uses for "junk" materials. You might allow event goers to vote on their favorite pieces of art, and you could auction off the pieces of art to support consumer-related initiatives in your area.

- **Swap Day.** As the saying goes, "One person's trash is another person's treasure." Why not help your community discover some treasures and cut back on trash by holding an event that allows people to sell or donate their old stuff? One option is to collect donations and hold an event to sell what you've collected, having music, educational booths, and other organizations on hand to talk with your guests about how they can cut back on waste. You can also hold an event to help people in your community sell their own used goods—something like a community yard sale. Again, the sale of the used goods would offer an opportunity to educate people in your community about ways to reduce waste.
CREATE PLANNING COMMITTEES AND SELECT COMMITTEE LEADERS

To make the task of planning manageable, you might divide the group into committees. While specific committee responsibilities will depend on the event, the following list of potential committees will help get you thinking about organizing.

Fundraising: Takes the lead on securing funding and sponsorship for your event.

Permits: Finds out what kinds of permits are needed and takes charge of getting them.

Advertising: Ensures that the target audience finds out about the event. This committee might contact local television and radio stations, produce posters or flyers about the event, attend community meetings, or use other approaches to reach the intended audience.

Public relations and signage: Draws a crowd to the event using creative publicity tactics. Posters and signs might display the event name and objective, while others might be informational, and still others logistical. Roadside signs should advertise the event and provide directions to festival-goers. Signs throughout the venue can be used to direct people to key services such as water or restrooms. This committee’s job is to think through all the signs that will be needed, and make sure the signs are ready by the day of the event.

Presenter and vendor booking: Books the people, companies, groups, or agencies that will be at the event, and takes care of them throughout the event.

Event-day logistics: Recruits a group of volunteers who can answer questions about electrical power, parking, station set-up and take-down, and other logistics.

Education: Ensures that the event has plenty of educational components and works with the booking committee to make sure it has included a variety of engaging educational participants. This committee might provide pamphlets, educational displays, demonstration stations, skits, and other creative educational materials and activities.

The number and type of committees you develop will depend on your group’s composition, and the goals and size of your event. Each committee should have a leader who is responsible for making sure that the group stays focused and completes its tasks on time.

DEVELOP A BUDGET

Early on, you should think about how much your event will cost. The following is a list of items you may want to include in your event’s budget:

- Permits
- Food and drinks
- Tents (if outside)
- Lighting (if outside)
- Location rental fees
- Table and chair rental
- Microphone and speaker rental
- Poster boards, markers, tape, staplers
- Solid waste disposal (including recycling)
- Portable toilets (if outside and without access to indoor toilets)
- Fire extinguishers
- Photocopies
- Decorations
- Trash bags
- Security (depending on local requirements)

Try to think through every possible cost you might incur. Also be sure to constantly revise your budget with actual figures you spend your money so that you keep to your budget as planned.

DEVELOP LIST OF POSSIBLE DONORS AND SPONSORS

Now you can begin to think about who can help you secure the resources for each of your needs. Even if you decide to charge admission (and this should be done only if you have planned a very large festival that includes many participants who your community would likely pay to see), you'll probably need additional funds to do everything you'd like.

First, consider which of the items you, your partners, and others can contribute. For example, if your
group is connected to a local school, the school might be able to donate tables and chairs so you can avoid rental fees. And if you need sign-making supplies, perhaps a business that sells those items may be able to provide the supplies free or at a discount.

Second, make a list of individuals, organizations, and companies outside your group that can either donate the supplies you need, or provide funds so you can buy them. A detailed budget will help ensure that you’ve thought through every item you’ll need.

DEVELOP LIST OF POSSIBLE PARTICIPANTS
Who can help make your festival a success? Be sure to set aside plenty of time for your group to brainstorm about the kinds of people, organizations, artists, and others that can help educate and entertain your guests. The participants you consider will depend on your theme, the size of your event, and other details specific to your event. Some participants you might consider include:

- Artists or musicians
- Environmental organizations working on issues related to your theme
- Local agencies or government offices working on issues related to your theme
- Businesses selling products you’d like to highlight
- Restaurants selling foods you’d like to highlight (such as organic produce, locally grown foods, or sustainably harvested seafood)
- Youth groups conducting projects related to your theme
- Farmers using methods you’d like to highlight
- Local experts on your theme, such as college professors, extension agents, environmental professionals, or teachers

At this stage, accept everyone’s input and encourage your group to build on each other’s ideas. The diversity of your final group of participants will depend entirely on the brainstorming you encourage at this stage.

✔ Two to Four Months Before Event
BOOK PARTICIPANTS.
You should spend time paring down the list of possible participants to those you think are the most appropriate. This list should still be extensive, however, because not every participant you identify will be able to attend.

To approach possible participants, send a letter or email to alert them about the event, its goals, and the key partners involved. Your letter might also discuss the kind of participation you’re envisioning (e.g., “We’d like you to provide an informational booth,” or, “We thought you might be interested in displaying and selling green products from your store”). Then follow up with phone calls or personal visits.

Don’t be surprised if the individuals or organizations you contact have different ideas from yours about how they can participate. The organization or individual might want to scale back on what you envision, or might be able to provide more.

While you may need to negotiate a bit about what the participant will do, be sure that, in the end, you’re all very clear about what they’ll do and what they’ll need. For example, if you’ve booked a singer, be sure you’re all clear on how long they’ll perform, the kinds of songs they’ll perform, and what they need in terms of technical support. A good rule of thumb is to make sure all arrangements are in writing.

SOLICIT DONATIONS
For many people, asking for donations of money or materials can be awkward. But keep in mind that you’re asking for something that your group needs to put on a great event, and it’s an important cause that will make a difference in your community. The people you’ll be approaching are probably accustomed to groups soliciting them for donations and, if you’ve already sent a letter ahead of time, they’ll be ready for your questions.

Be sure to emphasize to possible donors how their support of the festival will benefit the community and how it can help organizations achieve their missions or businesses reach their customers. Also,
be specific about what you're asking for. Do you need materials? If so, what materials do you need and in what quantities? Are you seeking funds? If so, what amount are you seeking? If you're applying for a grant, be sure to provide specifics about the role of the event in the community, the event's budget, and how the grant money will be spent.

Don't be discouraged if several donors turn you down. Having a long list of possibilities should help ensure that in the end you get enough donations to hold your event. If you can't find donors for certain items that you can't buy, consider revising your plan so that you can have a successful event without those items.

**DESIGN AND PRODUCE EVENT MATERIALS**

The types of materials needed for your event will depend on the type of event you're hosting and the participants you've booked. Undoubtedly, you'll need large signs announcing the name of the festival and acknowledging the groups hosting the event. You'll probably also need to produce educational materials to supplement those provided by your participants.

**PUBLICIZE THE EVENT**

The success of your event depends on getting people there for the big day. Your group should brainstorm about some creative ways to get the word out to the target audience. Then have a smaller group decide on the best approaches and follow up with those. The approaches might include developing posters and flyers, making announcements at community meetings, contacting local television and radio stations, and writing letters to the editor of local papers.

**DETERMINE FOOD AND BEVERAGE NEEDS**

Be sure to seriously consider whether food and beverages should be part of your festival. Even if

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**Walk the Walk: Greening Your Event**

Your festival will not only be more environmentally friendly, but also more educational, if you practice green consumption as the event's planner.

Including environmental considerations in your event will help demonstrate your commitment to green consumption, and can serve as a powerful example to event goers. The following are some of the ways you might "green" your event:

**Recycle.** Providing opportunities for recycling cans, plastic and glass bottles, newspaper, and office paper will set a positive example. If the venue you've chosen doesn't offer recycling services, consider doing it yourself. If your event is small enough, you can have volunteers make recycling bins from used boxes and haul away the materials to a nearby recycling center.

**Reduce waste.** Look for ways to cut down on waste at your event. Use both sides of the paper for printed materials and avoid unnecessary handouts. Try to cut down on disposable utensils and plates by selling foods that don't need them, such as wraps, pizza slices, and finger foods.

**Buy recycled.** Whenever possible, use recycled products with the highest possible post-consumer waste content. Use recycled paper for handouts, signs, napkins, and other paper products.

**Reduce energy use.** If your event will be held indoors, look for venues that offer natural lighting, helping to cut down on electricity use. Also consider holding your event at a location that's accessible by public transportation. Highlight the bus, train, or other options people should use to get to the event.
the group has decided that you don't want food and beverage services, you should at least provide water. You'll also need to decide whether the food and beverages will be a part of your theme. For instance, if your event is a back-to-school celebration to raise awareness about green school supplies, then a school group might want to sell bagged lunches that demonstrate some environmentally responsible options.

**One Month Before Event**

**CONFIRM PARTICIPANTS**

Follow up with the participants you've booked to confirm the event's time and date, and to answer any questions they may have. Confirm their equipment needs, if any, and give them instructions about how and when they should set up and take down any materials they're bringing.

**SEND OUT A MEDIA ADVISORY**

Use a media advisory or press release (see pages 265-266) to encourage local media to cover your event. The advisory should include a short lead that discusses the "who, what, why, when, and where" of the event. Be sure to emphasize how the festival will benefit your community. Include directions, event times, and participant highlights. Describe opportunities for photographs, television coverage, and other visuals. You may want to send out a second media advisory a week before the event as a reminder.

**ORGANIZE VOLUNTEERS**

Depending on the size of your festival and your group, you may need additional help for the big day. Volunteers can direct event-goers, sell food or other items, run demonstrations or educational stations, help with safety and security, and perform other services. Hold a meeting in advance of the event to orient the volunteers to your group. Explain to them why you're hosting the event and what roles they might play. During the planning meeting, be sure that each person who is interested in participating has committed to a specific job.

**ARRANGE FOR FIRST AID**

You might also enlist a volunteer qualified to administer first aid in case of emergencies. At the least, have on hand a first aid kit and an adult who is trained and certified to use it. Preferably, talk with local authorities and find a registered nurse or doctor to volunteer to help out at the event.

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**Water Week**

A group of sixth-grade girls in an after-school program at Sheridan Middle School in Sheridan, Colorado, spent an entire school year focused on water use in and around their school and at home. They wanted to share what they had learned with their schoolmates and community, so they decided, "If we can have a Spirit Week, why not have a Water Week?"

In late April, the girls hosted a school-wide water-related event. They decorated the school with gallon jugs representing daily water use at the school, offered demonstrations on groundwater pollution, posted messages about water conservation in strategic locations (such as the backs of bathroom doors), organized games based on interesting water facts, and handed out reusable water bottles and booklets filled with water-saving tips. Teacher Wendy Hitzges said, "I think I saw them applying more of their school work in this after-school club than in the classroom! Having it be something they cared about made all the difference. And I think their enthusiasm rubbed off on other students."

Adapted from Water Week, a FreshRanger Earth Force Project Story (www.earthforce.org/frostranger).
**Week of Event**

**CONSTRUCT A SIGN THANKING SPONSORS**
Once you’ve received all the materials and monetary donations from donors, create a large sign to thank donors for their support of the festival. If possible, thank the sponsors in a speech as well.

**CONFIRM WORK ASSIGNMENTS**
Hold a final meeting with your group members and volunteers to confirm plans for the event, and review each person’s job for the day of the event. Be sure everyone understands what time they should arrive, where they should meet, when they can expect to leave, what they should bring, and any other relevant information.

**Day of Event**

**HAVE FUN**
If your group has thoroughly planned for the event, the day of the festival should be your time to celebrate your accomplishment, enjoy each other’s company, and educate your community. However, even if your event is meticulously planned, some unexpected issues may arise. Having people with clearly defined responsibilities will help the event run smoothly. Also, having one person who is “in charge” of the event can ensure that problems are handled efficiently. Make sure someone takes notes throughout the day for follow-up and reference after the event.

**Immediately After Event**

**SEND OUT A “RESULTS” NEWS RELEASE** (See pages 265–268)
In the days immediately following the festival, summarize the results. Let others know how many people attended, how many groups or individuals helped put on the event, what officials attended, and what results may already be visible. Send these details out in a news release to local media—both those that did and didn’t cover your event on the day it occurred.

**The Great Hudson River Revival**
In 2001, the New York–based nonprofit group Clearwater became the first ever to entirely power a festival with renewable energy sources. Performance stages were powered by bio-fuels, wind, and solar energy. And the group provided educational stations and activities to raise awareness about sustainable energy options available to consumers in their area. [www.clearwaterfestival.org](http://www.clearwaterfestival.org)

so that they can let the community know what you did and what effect it had.

**One to Two Weeks After Event**

**SEND THANK-YOU NOTES**
Be sure to thank all of the organizations and individuals that made your event possible. Mention in your notes to donors, participants, volunteers, partner organizations, and others the results of the event and the long-term effect you think it’ll have on the community.

**HOLD FINAL “WRAP-UP” MEETING**
Hold a final meeting with your group to wrap up the event. Be sure there are no outstanding matters that group members have yet to address, such as returning loaned equipment or writing thank-you notes. Also, share and discuss the results of the event if you haven’t already. Be sure to thank the group members for their hard work. You may even want to distribute certificates or other awards to thank the group for their efforts. This is a good time to consider whether you want to make this a yearly event.
Step-by-Step Project Three
Sponsor a "Change Your Paper Profile" Contest

Contests are a great way to motivate people to take action. With this contest, you can encourage people to change their consumer habits for the better by challenging them to improve their paper profile—a measure of all the ways they use paper. Throughout the contest, they'll work to change the ways they buy, use, and dispose of paper. The prizes you collect from donors may motivate each team to outdo the others, but the benefits of the contest won't be limited to the prize winners. As the groups develop smart consumer skills, they'll probably all find that they can save money while helping protect the planet.

How Long It'll Take: Six to Eight Weeks

Tasks You'll Need to Tackle
1. Decide on a type of contest.
2. Develop contest rules.
3. Collect donations.
4. Enlist participants.
5. Run the contest and plan a wrap-up event.
6. Hold a wrap-up event.
7. Follow up.

Who Should Do It: Ages 12 and Up
This project is appropriate for middle school, high school, college, and adult groups. Kids under the age of 12 can play important roles but will need older volunteers for guidance throughout the planning process.
INTRODUCTION

Paper is a big part of life in America, and it also represents a big part of our waste stream. In fact, paper makes up the greatest portion of trash generated by people, businesses, and institutions. It's no wonder if you consider how many paper products we use: Each year, 24 billion newspapers, 2 billion books, and 350 million magazines are published in the United States alone. Add to that paper used for writing and copying, paper towels and napkins, packaging, and hundreds of other uses, and it's easy to see why paper is such a big part of our lives.

Since we use so much paper every day, becoming smarter paper consumers can have a positive effect. Buying recycled paper and recycling paper when we're finished with it can help save trees, energy, and other resources. That's because every ton of paper made from recycled materials saves about 17 trees, and recycling paper uses 60 percent less energy than manufacturing paper from virgin fiber.

A paper profile contest can help educate people in your community about the ways they use and dispose of paper. A contest will help motivate people to make bigger changes than they might otherwise make. In the process, contest participants might learn that they can save money—and make positive environmental contributions—if they use paper more wisely.

In this contest, groups in your community will compete as teams to create the most positive paper profile. The teams can represent a diversity of backgrounds, ages, and interests—from schools to community associations to local businesses. Members of your planning group will serve as mentors, supporting the teams as they compete. At the end of the contest, you can hold an event to help celebrate the competing teams' accomplishments and have judges on hand to designate the winners.

You can also alter the competition in ways that better fit your needs and interests. You might, for example, want to focus on waste reduction or energy use instead of paper. Or you might think of different ways to score your competition. But no matter what your decision, it'll be a fun way to get your community involved in changing their consumer habits for the better.

WHAT YOU SHOULD KNOW

To help you decide if a paper profile contest is something your group wants to tackle, you might spend some time researching paper issues. Is reducing paper usage something that your group thinks is important? Are there options for buying recycled paper in local stores? Does your local government collect paper for recycling? If so, what are the current recycling rates? Do waste managers think the percentage of paper recycled in your community should be higher?

If you decide to sponsor a paper profile contest, you might also want to research the ways other people have run contests. We've provided a few examples in this guide, but you can do further research for more inspiration and ideas.

SPONSORING THE CONTEST

1. Decide on the type of contest.

In making the decision, you might choose a different theme or mix of participants, depending on the needs and interests of your group, the time of year, and your goals for the contest. For example, if you're a school group, you might want several classes, grade levels, the entire school, or different schools to compete. A girls' or boys' club, on the other hand, might want to focus more on the community, having different businesses or community groups compete.
2. Develop contest rules and structure.
Before you enlist your contestants, you will have to carefully design your contest so everyone knows what they're getting into. The specifics of how you design your contest will depend on who your contestants are, how much time you have, and what issues most interest your group. Some general design suggestions are outlined below, but you should adapt this list to fit your needs and interests.

CONTESTANTS
Every contest needs contestants. To keep the contest fair, you should focus on one general category of contestants—for example, school classes, grade levels, schools, community associations, or businesses. The groups you choose to target should use paper products regularly as a part of how they work. For example, it wouldn’t make much sense to include a local bird watch club if they only meet outside to watch birds. A local bird conservation organization with an office in your town, on the other hand, might be a good fit.

TIMING
How long should your contest run? A typical amount of time would be about six weeks, but your group might decide to make it shorter or longer depending on local conditions. If you do run the contest for six weeks, the following schedule might make sense:
- **Week 1:** Set paper-use baselines for each contestant team. Create plans for improving paper profiles.
- **Weeks 2, 3, and 4:** Implement plans for changing paper use, and then document results.
- **Weeks 5 and 6:** Summarize changes in the paper profile and produce a presentation of the results.
- **End of week 6:** Hold a celebratory event and judge the contestants’ paper-use reductions to determine winners.

Note that you’ll probably need to set aside a week or two before the contest begins to make final decisions about how the contest will be organized. You’ll also need about a week after the contest to follow up.

BEING ADVISORS
Your group knows best what you have in mind for the contest, and since you’ve taken on the project, you probably know more about ways to improve a paper profile than the contestants do. So providing one or more group members to each competing team as mentors or advisors will help the teams get more out of the contest. For example, a Girl Scout troop sponsoring the contest might split up into several sets of girls each. Each set of girls could “adopt” a business or other community group, helping that group to develop a plan to reduce its paper profile. One set of girls in the troop should not adopt a team, but instead should take responsibility for coordinating contest details.

As team advisors, you can help the contestants understand the contest rules, evaluate their paper profile, think about ways to improve it, implement the plans, and document the contestants’ results. To make sure the teams are clear about the criteria that they will be judged by, share the score sheet developed for the judges to use (see sample on page 260). All of that is a big responsibility in itself, so don’t let the teams also try to get you to do their work for them. Remember, you’re there only to help.

SETTING BASILINES
To know which team has done the best job of improving its paper profile, you’ll need to know what a team’s profile is to start. During the first week, the advisor and key members of the contestant team should get together to identify all the different ways the team uses paper products, trying to estimate about how much of each kind of paper the team uses. There are many ways the team and advisor might do this. For example, a school class might monitor all the paper they use during a typical day, and then multiply by five to get an estimate of how much paper they use during the school week. An office might research exactly how much paper they bought during the last month or year, and divide by the number of days that paper lasted to get an estimate of how much paper they use per day. The team might not be able to identify every single way
they use paper, but thinking about all the kinds of paper they use, and how much of it they use, will help them best target which actions they will take. Also, the judges might award more points to teams that have worked on improving their use of different types of paper.

MAKING A PLAN

After the team has figured out what kinds and how much paper they're using, they need to think about how they can improve their paper usage. At this stage, you need to be sure that each team understands just what a paper profile is. Here’s one way you might explain it:

A paper profile is the way a team uses and disposes of paper—what kind and how much paper they buy, how they use it, and how they get rid of it when they’re finished with it.

When groups buy paper products, they have lots of options. Most have at least some control over how much they buy, who they buy it from, and how much of it is recycled. A team with a not-so-good paper profile might buy more paper products than they really need, and they might not buy any recycled paper products. A more positive profile would belong to a team that buys the minimum amount of paper products necessary and buys recycled when possible.

The way a team uses paper products is also an important part of their paper profile. Unless someone has made them think about it (as you'll do in this contest), many people don’t pay much attention to how much paper they use. They might grab two paper towel sheets rather than one, they might make copies on only one side of the paper, or they might write short notes on large pieces of paper. If groups used paper more carefully, they might find that they don’t need to buy as much as they do.

The final piece of the paper puzzle is how people get rid of their paper. Between tossing paper in the trash or recycling, recycling is, of course, usually the more environmentally friendly choice because it helps save resources. But another option for a piece of paper is for it to be used again for another purpose. A sheet of paper that’s been used on only one side can be cut up to be used as notepaper, or put back into a printer to be printed on the other side. A team with a more positive paper profile would have less paper trash, and more of what they throw out would be reused and then recycled.

Advisors should help their team think through the three key parts of the paper profile—buying paper, using paper, and disposing of paper—and identify ways the team can improve. The best way to improve a team’s paper profile is to do the following:

Buy less paper. Of the paper that you do buy, try to find types with the highest recycled content, especially post-consumer waste content.

Get creative with paper. When you do use paper, try to find creative ways for getting the most out of each piece. Put signs over paper towel dispensers reminding people to use only as much as they need. Set copiers and printers to copy on two sides. Write on both sides of notebook paper. Cut up used pieces of paper for notepaper. There are many creative options.

Recycle. If all goes well with the first two steps, there should be less paper waste. Ideally, the teams will be reusing paper and then recycling a lot of the waste, leaving only those kinds of paper that can’t be recycled to be thrown out with the trash.

TAKING ACTION

Now it’s time for the teams and their advisors to put their plans into action. Weeks 2, 3, and 4 in the timeline are for doing things differently, and documenting the results. Three weeks is a good length because it lets the teams have a little time to get used to the new ways they're using paper, and to adjust their strategy as needed.
DOCUMENTING RESULTS
Since this is a contest, the teams will have to provide proof of what they've done so they can be judged. The way the teams document what they're doing is up to each team and its advisors, but remember that the judges will only know what the teams tell them. The more the teams show the judges what actions they've taken and the impact the actions have had, the better.

You might suggest that teams take photos or videos of some of the things they're doing. Also, think about ways they can quantify what impact the actions have had. For example, they might try to count or estimate the amount of different types of paper each group is using at the start of the contest, and then try to keep track of how much they use throughout the contest. They might also weigh the amount of paper a group throws away or recycles at the start of the contest, and then weigh how much they're throwing out and recycling as the contest progresses. This way, the teams can prove that their hard work is paying off with a real improvement in their paper profile.

Once the groups have collected all the evidence, they'll need to compile it in a way that shows the judges what the team has done. The planning team should create guidelines about how the results should be presented so that the teams can be judged fairly. You might, for instance, set guidelines about how much space each group will have to display its results (a table top, for example), what audiovisual equipment they can use (this will depend on where you're holding your event—you may have a limited power supply), and how many pages of text they can supply. The judges won't have time to read large amounts of text.

As advisors, you can be a great resource in helping the teams put together their displays. The advisors should know the specifics of the requirements your group has set for presentations, and they might also provide some creative ideas for how the presentations can be made.

JUDGING THE CONTESTANTS
You'll need to be very clear with contestants about how contest winners will be selected. We suggest that you designate a panel of judges to decide on winners and let everyone know up front about the criteria for judging.

A panel of three to five judges from different backgrounds and with different interests will probably fit your needs. People with a range of backgrounds will have diverse perspectives on what the contestants have done and can help to ensure fairness in the judging process. Be sure that the judges do not have too many conflicts of interest—if they're closely connected to the contestants, they might find it difficult to judge them fairly. Student leaders, teachers, local environmental professionals, business people, and facility or maintenance managers might make good judges.

Once you've selected the judges, they'll need guidance on how to judge the contest. Before the big celebration, hold a meeting to fill them in on the details. (You can even do this the day of the celebration if you don't have time to hold a separate meeting in advance.) Be sure the judges understand why you've developed the contest, what the contestants were asked to do, and how they should be judged. If you like, you can give each judge a scoring sheet to assess each contestant's entry. The judges might also use the form to record feedback that they'd like to share with the contestants.

There are many different ways you might want to have judges evaluate the contestants. On page 260 is a sample scoring sheet that you might want to use. According to this method, each group can receive a top score of 100 points. Each judge can fill out one sheet per contestant group. When the judges are finished, you should collect the sheets, average the scores for each group, and then return the sheets to the contestants so they can benefit from the judges' comments.
# Paper Profile Contest Score Sheet

**Contestant Team Name:**

**Judge Number:**

### Buying Paper—Up to 30 points

- The team demonstrates that they were able to buy less paper overall. (Assign 0–15 points)
- The team demonstrates that they increased the proportion of recycled paper they bought. The team might also demonstrate that they increased the amount of post-consumer waste in their recycled paper materials. (Assign 0–15 points)

### Using Paper—Up to 30 points

- The team has found new ways to cut down on the amount of paper used. The team also has focused on reducing its use of a wide variety of paper types and found creative solutions. (Assign 0–30 points)

### Disposing of Paper—Up to 30 points

- The team demonstrates that it has reduced the amount of paper waste generated. (Assign 0–15 points)
- The team demonstrates that it has increased the proportion of paper that is being recycled. (Assign 0–15 points)

### Bonus—Up to 10 points

- The team has demonstrated commitment to the contest. (Assign 0–5 points)
- The team has provided an excellent presentation that is informative and creative. (Assign 0–5 points)

### Point Sub-Totals

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buying Paper</td>
<td></td>
</tr>
<tr>
<td>Using Paper</td>
<td></td>
</tr>
<tr>
<td>Disposing of Paper</td>
<td></td>
</tr>
<tr>
<td>Bonus</td>
<td></td>
</tr>
</tbody>
</table>

### Total Number of Points

**Comments:**
3. Collect donations.
Before you can enlist your contestants, you'll need some prizes to encourage participation. While some people will want to compete just because of the environmental benefits they'll create, some will be more motivated by the promise of prizes or recognition. So the better the prizes, the more people you're likely to enlist, and the harder they might try.

First, brainstorm about some of the things you think might make good prizes. Try to think about your contestants and what might interest them. For example, you might ask a movie theater for movie passes if you're working with students, or you could ask a local office supply store for a set of recycled paper products if you're working with businesses. If you're working with a youth group, you might ask a local celebrity to make an appearance at a celebration at the end of the contest. Also think about the potential prize donors—what kinds of businesses or individuals might want to be associated with your contest? Be sure to be realistic—a new car would be a great incentive to participate, but you might not be able to get one donated. Besides because of the environmental theme of the contest, you'll want to focus on environmentally friendly prizes.

Now it's time to get out and ask for what you need. Be sure to explain, either in a letter or in person, who you are and what role you play in your group. Also explain how your contest will work, why your group is sponsoring the contest, and how the prizes are serving as incentives to motivate people to make real changes in how they use paper. Be sure to highlight how the potential donor might benefit through the advertising opportunities offered to sponsors. Here's a sample of what someone might say in asking a movie theater for a donation:

Hello. My name is Jamie Kevin. I'm in the environmental club at Conner High School, and we're sponsoring a "Change Your Paper Profile Contest." We're working with the students at Conner Middle School to educate them about paper, its environmental impacts, and ways we can better use and dispose of it.

As part of the contest, every homeroom class at the middle school will be competing to improve their paper profile—the way they use paper. To help encourage kids to participate, we would like to offer prizes, and we think you can help.

We'd like to offer as a grand prize a free pass to the movies for every student in the winning homeroom. Most homerooms have about 30 students, so we're asking you to donate about 30 passes. In return, we'll be sure to mention the name of your movie theater on all of the posters and flyers describing prizes. Every student in the school, as well as many of their parents, will see those flyers and posters. We're also planning to promote the contest on our Web site, and we'll provide a link to your theater's Web site. We think this contest would present a good advertising opportunity for your theater. Your donation of movie passes will help the contest to be successful, and we believe that more kids will learn about smart consumption because of your help.

We would appreciate it if you could respond to this request by next Friday. In the meantime, please let me know if you have any questions about the contest or our needs. Thank you for your time.

Winning and Prizes
The team with the highest average score wins the grand prize. If you've collected several prizes, you might designate winners in several categories. Those categories can be anything you like, depending on the number of prizes you have to award. You might offer prizes for the group with the most creative solutions, the biggest reductions in paper use, the most creative presentation, or other categories.
Your sponsors might not be able to donate exactly what you've requested, so be flexible in thinking about how they can help. Try to secure several donations, and reserve the best, most exciting donation for the grand prize. Use the other donations for smaller prizes or giveaways at the end of the contest.

In addition to prizes, you might think about other donations you'll need throughout the contest. For example, your wrap-up celebration and judging day will need a venue. Therefore, you could make a request to a local school or business to donate the space as well as some of the materials (such as tables, chairs, food, and drinks). Also, you might encourage the groups participating to take pictures, and then ask a local camera shop or film developer to donate cameras or film and to develop the film for free. Try to anticipate everything you might need and have as much as possible donated.

4. Enlist participants.
Once you're clear on the contest rules, you can start to recruit participants. Before they agree to anything, groups will probably want to know what they'll have to do and why they should do it, so be ready to answer their questions. You might need to explain the environmental benefits of participating and highlight the prizes they can win. Also, explain the contest rules, the prizes, the role of the advisors, what the teams will need to produce for the judges, and when the teams will be judged. Be sure to allow time for advisors to meet with their groups at least once before the contest begins so they have time to answer any remaining questions the groups might have and to help the groups plan for the contest.

You might also think about producing a flyer, brochure, or other handout that highlights key information about the contest. Be sure to print double-sided on recycled paper (and let readers know you've done so!). In this publication, you should thank all the donors of the prizes, mentioning the businesses or people by name.

5. Run the contest and plan a wrap-up event.
Ideally, most of the planning group will be working as advisors to the teams while a small number of group members—no more than five people—coordinates the contest. The coordinators should help organize the advisors and judges, field questions during the contest, and plan the judging event.

Green Games

At the University of North Carolina at Chapel Hill (UNC), it's not all books and studying—students and staff also find time for games. The school's Office of Waste Reduction and Recycling sponsors the Green Games every year, pitting one residence hall against another in a battle to be the greenest residence hall on campus.

The school keeps track of how much energy and water each residence hall uses, and also monitors the amount of materials that are put out to be recycled. Each residence hall is ranked according to its conservation efforts. The school also evaluates the programs and activities each hall devises to promote conservation, and those programs, together with the rank, determine the winner.

In addition to awarding prizes to residence halls, the school also offers prizes for the best bulletin board display, recycled art, T-shirt or bumper sticker design, and conservation idea.

To learn more about UNC's green games contest, visit www.fac.unc.edu/WasteReduction/green_games.asp.
Finalize the wrap-up celebration date. Ideally, the event should be held on a date and at a time when representatives of each team can attend.

Secure a location. Be sure the location can accommodate everyone you'd like to have attend. School gyms, community centers, and local parks might be good options. If your event will be outside, try to secure a pavilion or other location where you'll be protected in case of rain.

Arrange for tables, chairs, and other materials. If the location doesn't have tables and chairs already, you'll need to borrow or gather them. Contestants will need tables to display their results, and people attending the event will need additional chairs.

Plan for entertainment. It wouldn't be a celebration without some entertainment! Music can be a great way to liven up the atmosphere. If you can get the equipment you need (such as electrical wiring, a microphone, speakers, and tape or CD players), have someone volunteer to DJ. Or, if you can, arrange for live music. The event should also be educational, so think about providing some interesting demonstration stations where people can learn more about paper-related issues. For example, you might ask volunteers to work a station that shows participants the benefits of using recycled paper in terms of trees and energy saved. You might consider asking local celebrities, political or business leaders, or environmental activists to give a short talk about the contest, local issues, and the importance of what the groups have done.

Arrange for refreshments. Having food and drinks will add to the festivities, so try to have some on hand. You might ask local businesses to donate refreshments. For example, many bakeries will donate cookies or muffins that have not been sold by the end of the day. You can often pick these up when the store closes and use them the next day while they're still fresh. You can also ask volunteers to bake or buy items that they'd like to donate.

Remember your own paper profile. Set a good example at your event by watching how you use paper. Try to avoid unnecessary paper use by asking people to bring their own cups to the event and providing reusable cups and plates at the event. If you need napkins, buy recycled. If you print any materials, be sure to use recycled paper and print on both sides.

Prepare judges. If you can, try to meet with the judges in advance of the event so that they're clear on what you're asking of them. If that's not possible, set aside time before the wrap-up event starts to review the scoring sheet and explain what you're looking for in terms of presentations.

Thank your donors. Be sure to set aside time to thank the people and businesses that have made the contest possible. Mention each one, and what they've donated, at a time and in a way that everyone will hear. For example, don't wait until the end of the event when people are leaving to thank your donors. You should also prepare individual letters to thank the donors and supporters, and you should send these immediately after the event.

Publicize the event. Depending on how large the event site is, you might want to invite guests. You might also want to invite the local media if you'd like them to cover your event. In that case, you should send press releases and media advisories to local newspapers and television stations to invite them to cover the story and publicize the results (see pages 265-266).
6. Hold the wrap-up celebration and judging event.
On the day of the wrap-up event, you'll be busy coordinating details. You'll need to help the contestants arrange their displays, get the judges what they need, make sure the people providing entertainment know where they should set up, and award the prizes when the judging is complete. If possible, assign one person to be in charge of each of these different jobs, and also have one person who is responsible for the overall event.

7. Follow up with the overall results.
During the wrap-up celebration, make sure one person is in charge of recording the major results of each team. That way, you'll be able to sum up the contest's impact on your community. Use this information to create an evaluation of the contest, noting the number of teams that participated, the improvements in their paper profiles, the items that were donated, who won prizes and for what, and some of the highlights of the wrap-up celebration. Use this summary to write thank-you letters (or send emails to save paper!) to the contestants, donors, volunteers, and others who helped so that they know the results of their work. In addition, you might want to send a press release to local newspapers and television stations (see pages 265-266) so they can report on your contest, letting the community know what you've done. Another option is to write letters to the editors of several local newspapers, telling the community about what the contest achieved.

The Battle of the Schools

High school students in Los Angeles County think about garbage more than most teenagers. That's because a local organization called Generation Earth sponsors a yearly contest named the Battle of the Schools, which challenges all of the area high schools to a countywide waste reduction contest. In a recent contest, the schools were required to perform campus waste audits to determine the type and amount of waste materials they generated. Students at each school targeted cafeterias, classrooms, offices, and other areas to determine their school's need for waste reduction.

With this information, the students created plans for school-wide waste reduction programs. They worked with school administrators, faculty advisors, teachers, plant managers, waste haulers, and other students to put their plans into action. A local radio station helped launch the competition, and they encouraged listeners to call the competition hotline and learn how to participate.

The top two schools collected a total of 12 tons of paper, cardboard, newspaper, plastic, and aluminum and established permanent recycling programs at their schools. Some of the winning students also were invited to be guests on the radio station promoting the competition. Not only did they get to brag about their accomplishments, but they also educated others in the community about creative ways to reduce waste. www.generationearth.com
After an Event

Sending Out a Press Release

Following your event (or even before, if possible), you may want to let the local press know about your various successes. How many people attended? Which businesses and organizations were involved? Were local officials present? Any news coverage you can get following the event will help people to remember the event, as well as let those who did not attend know what they missed.

When writing a press release, the key point to remember is that press releases are about news—new information that is of immediate relevance to the public. They should also be succinct and to the point. If you want a more detailed story to get out to the media, you should package it as a feature story, not a press release.

How to Write a Press Release

- Write down the key points you would like others to know about the event. These should go at the top of the press release to grab reporters’ attention.
- Following the key points, list supporting facts about the event.
- Include any quotes that shed more light on the event. Quotes from the organizers (yourself) are good, but quotes from local leaders and participants are particularly useful in terms of emphasizing the importance of the event.
- Keep the least interesting information for the end of the release—but remember to include only those facts that constitute news. There is no need to include information if it is not relevant.
- If your release is more than one page in length, make sure you state “-more-” or “-continued-” at the bottom of the first page so that reporters know to look for another page. At the top of the second page, use a key word to indicate that it is the second page of the release. For example, a release about a consumer awareness fair might use “consumer/page 2.”
- Make sure the release has information about your group (a mailing address and other contact information) as a header. Include the date of the release and a contact person’s name clearly at the top of the first page. Also include a phone number where journalists can reach the contact.
- You may wish to end your release with “###” to signal to reporters that they have received the entire document.

Submitting Your Release

Press releases should be faxed, emailed, or hand delivered to:
- Reporters who regularly cover the issues you’re addressing, such as environment and consumer issues
- Editors at local radio and television stations who hand out reporter assignments
- Radio and TV producers who may want to cover your issue on shows they schedule, such as morning and weekly talk shows

Be sure to save a copy of any articles or recordings for your scrapbook and future use.

www.greenmediatoolshed.org/training/WrittenCommunication/PressReleasesandPressLett.html
Press Release:

Consume Wisely Local Action Group
395 Orange Street
Mailtown, USA 12345
Monday, August 16, 2004, 12:01am

Contact: Regina Harris, 123-555-1385
[Cell phone: 123-555-0013]

CONSUMER AWARENESS FAIR ATTRAITS LOCAL COMMUNITIES, BUSINESSES
Mailtown Consumer Awareness Week Launched by Alderman

Over 150 people attended the Consumer Awareness Fair in East Creek Park yesterday. Local business leaders helped organize the fair, and Green Party Alderman Bob Edgerton was present to launch Mailtown Consumer Awareness Week.

The fair provided participants with opportunities to learn about how they can change their consumer habits to lessen their impact on the environment. It also showcased Mailtown businesses that provide environmentally friendly goods and services.

“Everything you buy has come from the Earth and must go back to the Earth,” said Alderman Edgerton at the Consumer Awareness Week launching ceremony. “I urge you to consider the impact your purchases can have on the environment and to start buying more carefully this week.”

Both the Consumer Awareness Fair and Mailtown Consumer Awareness Week were spearheaded by a group of local citizens concerned about the effects of consumer choices on the environment. They worked with businesses such as Brookside Supermarket, Loco Auto, and Ferdinand’s Fabulous Fudge to organize the fair. The fair highlighted products and services that are good for the environment, easy to find, and affordable.

Alderman Edgerton also pointed out that, in the last 50 years, Americans have consumed more natural resources than the entire global population consumed up to that time. If everyone in the world consumed as many resources as the average American, he said, we would surpass the Earth’s sustainable output by four times. “We just have to find ways to do better,” Edgerton said in conclusion.

###
"One generation plants the trees; another gets the shade."

—Chinese proverb
Appendices

"[T]he major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly in industrialized countries, which is a matter of grave concern."

—“Agenda 21,” the action plan of the 1992 Earth Summit
Appendix A
Glossary

acid rain: rain that has become acidic (with a pH of less than 7) from mixing with sulfuric, nitric, and other acids that are released into the atmosphere by the burning of fossil fuels.

alternative fuel: a fuel used in vehicles that comes from a source other than petroleum, such as ethanol made from corn and biodiesel made from vegetable oil.

biodiversity: the variety of life on Earth, reflected in the variety of ecosystems and species, their processes and interactions, and the genetic variation within and among species.

climate change: a regional change in temperature and weather patterns. Current science indicates a link between climate change over the last century and human activity, specifically the burning of fossil fuels.

composting: a process in which organic materials such as leaves, grass clippings, and food waste are broken down into humus-like material.

conservation: the protection of natural resources.

communicator: an individual who purchases and uses goods or services.

conventional agriculture: a type of farming that emphasizes chemical and energy inputs. It is typically mechanized and takes place on a large-scale.

cost-benefit analysis: a type of economic evaluation in which both the disadvantages (costs) and advantages (benefits) of an investment, purchase, or process are weighed.

developed country: a country with a relatively high per capita income, where most people have a higher standard of living with access to more goods and services than most people in developing countries.

developing country: a country with a relatively low per capita income, where most people have a lower standard of living with access to fewer goods and services than most people in developed countries.

eco-label: a seal or logo suggesting that a product is environmentally friendly.

ecological footprint: a calculation that estimates the area of the Earth's productive land and water required to supply the resources that an individual or group demands, as well as to absorb the wastes that the individual or group produces.

Energy Star: a program of the U.S. Government that certifies and labels products that are energy efficient.

fair trade: a name used to describe a social responsibility movement demanding that farmers receive fair prices for their products; also describes products that are produced by these farmers.

fertilizer: a material that is added to soil to increase its fertility and enhance plant growth; includes manure (a natural fertilizer) and synthetic materials made from nitrogen, phosphorus, and potassium compounds.

fishery: the occupation or industry of catching, processing, and selling fish and shellfish; an area where fish or shellfish are caught.

Forest Stewardship Council (FSC): an international organization that has developed standards emphasizing environmentally
and socially responsible criteria to certify and label wood products from well-managed forests.

**fossil fuels:** fuels formed millions of years ago from decayed organisms. Oil, coal, and natural gas are all fossil fuels. See also **nonrenewable energy.**

**global warming:** the increase in Earth’s temperature caused by emissions of carbon dioxide and other gases that blanket the planet and trap heat within the atmosphere.

**greenhouse gas:** see heat-trapping gas.

**habitat:** the area where an animal, plant, microorganism, or other life form lives and finds the nutrients, water, sunlight, shelter, living space, and other essentials it needs to survive. Habitat loss, which includes the destruction, degradation, and fragmentation of habitats, is the primary cause of biodiversity loss.

**heat-trapping gas:** any of several dozen gases in the earth’s atmosphere that absorb infrared radiation. The two major heat-trapping gases are water vapor and carbon dioxide; others include methane, chlorofluorocarbons, and nitrogen oxides.

**hybrid-electric vehicle (HEV):** a vehicle with a dual power system, usually a conventional internal combustion engine that runs on gasoline and an electric motor powered by batteries. HEVs are more fuel efficient and emit fewer pollutants than conventional vehicles.

**life cycle analysis:** a comprehensive examination of the environmental and economic effects of a product at every stage of its existence, from production to disposal and beyond. Also known as cradle-to-grave assessment.

**Marine Stewardship Council (MSC):** an international organization that has developed standards emphasizing environmentally and socially responsible criteria to certify well-managed fisheries.

**natural resource:** any aspect of the environment that species depend on for their survival. People depend on natural resources such as land, soil, energy, and fresh water.

**needs:** things that are essential to survival, such as food, water, and shelter.

**nonrenewable energy:** energy obtained from sources that are exhaustible, such as oil, coal, and natural gas.

**opportunity cost:** what a person gives up by choosing to spend money in a particular way or on a particular item. For example, by paying for one product, the opportunity cost is not having that money to buy or invest in something else.

**organic:** grown or raised without synthetic fertilizers, pesticides, or hormones; a product composed of ingredients grown or raised in this way. Foods certified as organic by the state in which they were produced or the U.S. Department of Agriculture (USDA) have met strict regulations.

**overconsumption:** the use of resources at a rate that exceeds the ability of natural processes to replace them.

**pesticide:** a chemical that kills or inhibits the growth of organisms that people consider undesirable. Fungicides (which kill fungi), herbicides (which kill plants), and insecticides (which kill insects) are all types of pesticides.

**post-consumer waste:** waste, often used in manufacturing, that originates from things consumers have used. For example, newspapers that have been read and recycled are often reprocessed and used to manufacture more paper.
**pre-consumer waste**: waste created during manufacturing that is recovered for use. For example, scraps and roll-ends left over after a batch of paper is made at a paper mill are considered to be pre-consumer waste.

**qualitative data**: information expressed through words and examples.

**quantitative data**: information expressed through numbers.

**recycling**: the series of activities in which discarded materials are collected, sorted, processed, and converted into new materials for use in the production of new products.

**renewable energy**: energy obtained from sources that are essentially inexhaustible. Renewable sources of energy include wind, wood, and the sun.

**socially responsible**: a description of a company, organization, or individual that conscientiously takes positive actions in terms of the welfare of employees and society at large.

**sustainable**: meeting the needs of the present without diminishing the ability of people, other species, or future generations to survive.

**wants**: things that are not essential for survival but are desired for comfort, convenience, or status.
Appendix B

Biodiversity Education Framework

Studying consumer patterns opens doors into a wealth of topics, issues, and ideas. Investigating where the things that we buy come from and go, for example, will help your students better understand the life cycles of common products. Exploring the "ecological footprint" of people around the world will open their eyes to cultural diversity and how resources are distributed unequally around the world. Exploring energy sources can provide insights into the interplay of biodiversity, economics, and values.

To help you identify the broader themes, concepts, and skills embedded in each activity, we've developed the biodiversity education framework. The framework covers general biodiversity concepts, as well as specific concepts related to consumer issues and the environment. You can use and adapt the framework for any biodiversity-related lessons you teach, and we hope you'll find it especially useful for organizing your exploration of consumer issues.

Here's what you'll find when you visit the Biodiversity Education Framework site:

- **Part I: The Conceptual Framework**
  In Part I of the framework, you'll find more than 80 key concepts that address biodiversity and related issues. The concepts are organized under the following major sections headings:

  - What Is Biodiversity?  
    Defines biodiversity and explores basic ecological principles as well as key ecological definitions that help us understand biodiversity.

  - Why Is Biodiversity Important?  
    Explores how biodiversity affects our lives and supports life on Earth.

  - What's the Status of Biodiversity?  
    Describes some of the most serious threats to biodiversity.

  - How Can We Protect Biodiversity?  
    Suggests ways for addressing the biodiversity crisis, including learning more about biodiversity and working to conserve biodiversity. Reviews predictions about the importance of maintaining and restoring biodiversity.

- **Part II: The Skills Framework**
  In Part II of the framework, you'll find a list of skills that we think are essential for learning about biodiversity and making responsible decisions about how best to protect it. Grouped into eight major categories, this framework includes the skills students need to gather, process, and act upon information, as well as those they need to become effective and engaged citizens.

To save paper and make our materials more widely available, we've put the Biodiversity Education Framework on the Web in PDF format: [www.worldwildlife.org/windows](http://www.worldwildlife.org/windows)
Appendix C
Language Learning Tips

If you have been working with students who need special language assistance, the following tips are probably very familiar to you. However, if you are a new teacher or community educator working for the first time with language learners, you might want to read these tips before starting a unit that explores consumer issues and the environment.

1. Developing Strong Listening and Speaking Skills

Students’ literacy begins with developing strong listening and speaking skills. To encourage speaking fluency, linguists recommend that you first ignore the students’ grammatical mistakes if they do not interfere with understanding. Instead, encourage expression. The following are specific ideas to help you develop your students’ ability to express themselves:

- Have students express concepts in more than one way by using both scientific and ordinary language.
- Help students “unpack” the meaning of sentences that have abstract terms by restating them in concrete, everyday language.
- Use structured organizers such as outlines, charts, graphs, symbols, and diagrams; demonstrate what you are discussing whenever possible; and show visually the relationship among terms, processes, or steps by using concrete objects.
- Ask questions often and rephrase the students’ questions and answers to summarize what they’ve learned.
- Use cooperative group activities to help students process difficult information before they tackle individual assignments. Students can ask one another for summaries and explanations of the material, or they can practice posing and responding to specific questions.

2. Building Vocabulary

As students acquire new vocabulary related to consumer issues and biodiversity, it’s essential that they know more than a simple definition of words. Terms such as “consumption” or “conservation” carry with them a set of ideas and values that students need to know before they can truly understand the material. Here are some ways to help students develop vocabulary skills:

- Preview topics and vocabulary when presenting new material. Pictures and other visuals are important aids for understanding.
- Provide vocabulary games or worksheets so students can practice working with key terms.
- Focus attention on technical terms, defining them in language that is familiar. Go beyond defining, making sure students understand the range of issues relevant to the term.
- Pay attention to “cultural” vocabulary that might be unfamiliar to students from some backgrounds. For example, names of foods, current trends, and familiar expressions (“sweet tooth,” “green thumb”) are often unfamiliar.
- Help students see connections between verbs and nouns [consume/consumption] or adjectives and nouns [extinct/ extinction].
- Have students use new terms often. Encourage them to use technical terms when they ask questions, contribute to a discussion, or write about biodiversity topics.
- Have students develop vocabulary journals in which they list any new words they encounter.
3. Creating Readers

Many of the activities in this module contain text that could be a challenge for some of your students. Several ways to help your students get through material that's dense or that contains a lot of technical terms are described below:

- Read aloud to students, and allow them to read aloud to one another (not necessarily in front of the whole class). Hearing a text read aloud while they follow along gives students a chance to hear how words are pronounced and how the bits of information are parcelled out. This method can help students make associations between spoken and written forms of language.
- Provide reading strategies for tackling difficult passages. For example, you might focus students' attention on headings, provide preview questions, or highlight key points.
- Provide outlines or other reading aids for students to complete as they read.
- Pay attention to terms that occur more often in written language than in spoken language and therefore may be unfamiliar to students. Words used to compare or make causal connections (such as produces, leads to, causes, and results in) and abstract vocabulary (such as principle, example, property, explain, and generalize) are important for academic literacy.

4. Developing Writing and Editing Skills

By middle school, students are ready to go beyond the narrative and imaginative writing they did in elementary school to more advanced writing. Many of the activities in this module help develop students' skills in classifying, analyzing cause and effect, expressing their opinions, and justifying their hypotheses. You'll want to focus on different aspects of their writing, depending on the assignment. For example, you might focus on content alone for journal writing, or you might help students with organization, grammar, and vocabulary or more formal reports. In addition, consider the following writing tips:

- Brainstorm with students before they write, helping them develop the vocabulary that they will need for the writing task.
- Assign writing tasks after listening activities and oral discussions. Give students practice in writing descriptions, comparisons, captions, definitions, reports, and other types of pieces. Provide examples to help them compare their writing with that of others.
- Present models and outlines of the kind of writing you expect from students. Point out some of the key features of the grammar in the models (for example, that the verbs are in present tense or that there are numerous causal conjunctions such as if, because, or so).
- Use a process approach to writing that allows students to draft, review, revise, and rewrite the most important assignments. This approach gives them a chance to develop their writing skills by focusing on the same piece of text in different ways.

Language Learning Tips—Web Resources

AAA EFL Links. Searchable list of language links for students and teachers. www.aaael.org.uk

ALS EFL Cybersite. Online site with resources for the student and teacher, including free software. www.stat-sm05.qc.ca/ESL/cybersite/cybersite.html

The Linguist List: ESL, EFL, and L2 Information by Eastern Michigan University and Wayne State University. Provides links to several language-related Websites. www.linguistlist.org/esl.html
# Cross-Reference and Planning Chart

## Appendix D

## Cross-Reference and Planning Chart

<table>
<thead>
<tr>
<th>Activity</th>
<th>Overview</th>
<th>Subjects</th>
<th>Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Buy-O-Diversity (pages 56-73)</td>
<td>Solve short mysteries and take a quick, just-for-fun quiz highlighting the connections between buying and biodiversity. Then go on a simulated shopping hunt to explore the &quot;consumer connection&quot; in more detail.</td>
<td>social studies</td>
<td>gathering, brainstorming, analyzing, identifying components and relationships among components, discussing, interpreting, drawing conclusions, identifying cause and effect, applying (predicting, presenting) reporting, citizenship (working in a group)</td>
</tr>
<tr>
<td>2. Notable Quotables (pages 74-78)</td>
<td>Read and discuss quotes that reflect different attitudes and values about money and consumer choices. Then devise quotes that describe your own attitudes toward these topics.</td>
<td>language arts, social studies</td>
<td>gathering, creating awareness, listening, analyzing (comparing and contrasting, discussing), interpreting (translating, inferring, drawing conclusions), evaluating (comparing), presenting (explaining, articulating, writing), citizenship (working in a group, taking a position)</td>
</tr>
<tr>
<td>3. Back in the Day (pages 82-89)</td>
<td>Analyze graphs and then conduct interviews with parents, grandparents, or neighbors as part of an investigation into how consumer patterns have changed from the past to the present.</td>
<td>social studies, mathematics</td>
<td>gathering, interviewing, analyzing (identifying patterns, comparing and contrasting), questioning, discussing, interpreting (summarizing, inferring, drawing conclusions, identifying cause and effect), applying (predicting, preparing solutions), presenting (reporting, illustrating, public speaking, reporting)</td>
</tr>
<tr>
<td>Framework Links</td>
<td>Vocabulary</td>
<td>Time</td>
<td>Materials</td>
</tr>
<tr>
<td>-----------------</td>
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</tr>
<tr>
<td>L. 12, 23, 38, 39</td>
<td>biodiversity, climate change, consumers, fossil fuels, heat-trapping gas, natural resource, pesticides, sustainable</td>
<td>one session</td>
<td>copies of “Buy-O-Diversity Connections” (page 63); one copy of each of the “Shopping-Spree Products” cards (pages 84–88); cut apart</td>
</tr>
<tr>
<td>37, 58, 60</td>
<td>consumption</td>
<td>one session</td>
<td>copies of the “Question Cards” (pages 77–78)</td>
</tr>
<tr>
<td>37, 40, 58, 59, 63</td>
<td>climate change, consumer, consumers, fossil fuels, interdependence, natural resources, per capita, qualitative data, quantitative data, vehicle miles</td>
<td>two sessions, plus time to conduct research</td>
<td>copies of “Tips for Interviewing” “Consumer Waste Charts” and “Topic Tips” (pages 80–86)</td>
</tr>
<tr>
<td>Activity</td>
<td>Overview</td>
<td>Subjects</td>
<td>Skills</td>
</tr>
<tr>
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<tr>
<td>4. Money Matters (pages 90-95)</td>
<td>Explain how attitudes affect behavior by surveying and analyzing people's beliefs and behaviors concerning consumer choices and the environment. Write and send a confidential letter to yourself about your own consumer behaviors and your plan to reduce your impact on biodiversity.</td>
<td>social studies, mathematics</td>
<td>gathering (observing, cloaking, organizing, interpreting, analyzing (identifying patterns, comparing and contrasting, discussing, summarizing, interpreting (generalizing, applying (classifying), presenting (writting, reporting, citizenship (working in a group, planning and taking action)</td>
</tr>
<tr>
<td>5. A Material World (pages 96-106)</td>
<td>Analyze the lyrics to pop songs and discuss the songs' perspectives on human needs and wants. Explore definitions of needs and wants, and then create an original song or poem that describes the needs and wants of young people.</td>
<td>language arts, social studies</td>
<td>gathering (reading (comprehension, listening, organizing (categorizing), analyzing (identifying patterns, comparing and contrasting, questioning, discussing, interpreting (inferring, drawing conclusions, identifying cause and effect), applying (classifying, presenting (writing, public speaking)</td>
</tr>
<tr>
<td>6. Analyze an Ad (pages 108-114)</td>
<td>Create a formula to calculate the average daily rate of exposure to advertisements, analyze contemporary ads from the viewpoint of a future archeologist, and create your own ads about the links between consumer choices and biodiversity.</td>
<td>language arts, social studies, mathematics</td>
<td>gathering (collecting, recording), organizing (listing), analyzing (comparing and contrasting, calculating, interpreting (summarizing, drawing conclusions, identifying cause and effect), applying (estimating, creating, evaluating (assessing), presenting (illustrating, acting), citizenship (working in a group, taking a position)</td>
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<td>Framework</td>
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<td>Links</td>
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<tr>
<td>30, 37, 40, 58</td>
<td>attitude, consumer, conventionally given, pesticide</td>
<td>fine sessions, and at least one session three months later</td>
<td>copies of the &quot;Consumer Survey&quot; (pages 194-195) and an envelope per student; one envelope per pair of students</td>
</tr>
<tr>
<td>32, 40</td>
<td>diffusion, consumer, consumption, goods and services, money, literary technique, needs, pull, wants</td>
<td>one session</td>
<td>copies of &quot;Material Girl&quot; and &quot;More&quot; (pages 190-191); copies or overhead transparencies of &quot;I Got Plenty of Makin', I Got Rhymin', &quot;The Best Things in Life Are Free,&quot; and &quot;I Love Don't Cost a Thing&quot; (pages 194-195); soundtracks of &quot;Material Girl&quot; and &quot;More&quot; (optional)</td>
</tr>
<tr>
<td>37, 42, 52</td>
<td>advertisements, anthropologist, artifact, overconsumption</td>
<td>two to five sessions, plus time for research and creating ads</td>
<td>a variety of advertisements from old magazines and newspapers (approximately five ads for each topic); copies of the Advertising Archetype and &quot;Anatomy of an Ad&quot; worksheets (pages 113-114); topic: drawing materials; examples of environmentally responsible and other positive ads</td>
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<td>Activity</td>
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<tr>
<td>7. Measuring Your Footprint</td>
<td>Calculate your ecological footprint, determine whether it's sustainable,</td>
<td>mathematics,</td>
<td>gathering (reading comprehension, listening, simulating, brainstorming),</td>
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<tr>
<td>(pages 116-129)</td>
<td>compare it to footprints of people in other parts of the world, and brainstorm about ways to reduce your ecological footprint.</td>
<td>science, social studies</td>
<td>organizing (synthesizing), analyzing (comparing and contrasting, discussing), interpreting (drawing conclusions, identifying cause and effect), applying (predicting, proposing solutions), citizenship (working in a group)</td>
</tr>
<tr>
<td>8. Saving Planet X</td>
<td>Explore the relationship between population growth and consumption in a simulation of global negotiations on an imaginary Planet X.</td>
<td>social studies</td>
<td>gathering (reading comprehension, listening, simulating, brainstorming), analyzing (comparing and contrasting, discussing), interpreting (drawing conclusions, defining problems), applying (hypothesizing, proposing solutions, problem-solving, decision making, developing and implementing investigations and action plans), presenting (debating, explaining), citizenship (working in a group, debating, compromising, seeking consensus, evaluating a position)</td>
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<td>(pages 130-139)</td>
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<td>9. Investigating Green Claims</td>
<td>Read a fictional story to learn more about manufacturers' use of &quot;green claims,&quot; and then analyze the green claims of products in local stores.</td>
<td>language arts, social studies</td>
<td>gathering (reading comprehension, researching, organizing (charting), analyzing (identifying patterns, comparing and contrasting, discussing), interpreting (defining problems), applying (predicting), evaluating (interpreting, verifying))</td>
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<td>(pages 142-154)</td>
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<td>Links</td>
<td>Consensus, ecological footprint, natural resources, productive, sustainable</td>
<td>2-4 sessions</td>
<td>Two pieces of different colored chalk; computers with internet access; copies of &quot;Average American Ecological Footprint&quot; chart; &quot;Earth's Resources&quot; chart of pie charts; and &quot;Six Families&quot; photos (pages 122-129)</td>
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<p>|          | Affluence, consumption, equitable, infant mortality, literacy, natural resource, population growth, sustainable | 1-2 sessions | Copies of &quot;Panting over Plenitude&quot; and &quot;Country Descriptions&quot; cards (pages 126-136); pieces of card stock to make placards | For further exploration of population issues, try &quot;Food for Thought&quot; in Biodiversity Basics. |
|          | Biodegradable; biodiversity, eco-label, green claims, nontoxic, organic, pesticide, recyclable, renewable, sustainable, sustainable | Two sessions, with time for our-affiliation research is stores | Copies of &quot;String Greens,&quot; &quot;Sorting Out Green Claims,&quot; and &quot;Shopping List&quot; (pages 148-154); computers with internet access (optional) | For an introduction to the decision-making process that people use when shopping, try &quot;Wise Shopping&quot; (pages 155-157) before conducting this activity. |</p>
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<th>Activity</th>
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<td>10. Aisle Hopping (pages 156-165)</td>
<td>Read a fictional dialogue between two friends deciding what breakfast cereal to buy and evaluate some of the things that are important to people when they shop. Use a cost-benefit analysis to evaluate alternative choices in foods. Then play a simulation game to find out how people's purchasing decisions change as they learn more about products.</td>
<td>social studies, language arts</td>
<td>gathering (listening, recording, brainstorming), organizing (prioritizing, listing, checking), analyzing (comparing and contrasting, calculating, discussing, interpreting (summarizing, identifying cause and effect), applying (decision-making), evaluating (establishing criteria), testing, assessing)</td>
</tr>
<tr>
<td>11. A Day in the Life (pages 166-176)</td>
<td>Act out narratives that describe the life cycle of a conventionally produced cotton T-shirt, then create a presentation about an alternatively produced T-shirt. Brainstorm about some of the environmental effects of the two products' life cycles. Consider the pros and cons of different production methods, and explore the factors that influence how things are produced.</td>
<td>science, social studies, language arts</td>
<td>gathering (observing, listening), analyzing (comparing and contrasting, discussing), interpreting (summarizing, drawing conclusions), applying (predicting), presenting (demonstrating, acting)</td>
</tr>
<tr>
<td>12. Trash to Treasure (pages 178-180)</td>
<td>Play the role of a trash expert sorting trash as you learn about waste and ways to reduce it.</td>
<td>science, social studies, mathematics</td>
<td>organizing (sorting), analyzing (comparing and contrasting, calculating, discussing), interpreting (drawing conclusions, identifying cause and effect), applying (decision-making, proposing solutions), citizenship (working in a group, compromising, writing conservation)</td>
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<td>Framework Links</td>
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<tr>
<td>30.2, 30.3, 30.4, 32, 62, 77</td>
<td>cost-benefit, analysis, economic decision, opportunity cost, and cost</td>
<td>one to two sessions</td>
<td>copies of “A Tale of Two Cities” (page 160), two grocery products of your choice (see the box “Choosing and Discussing Your Products” (pages 198-199) for more information)</td>
</tr>
<tr>
<td>32, 20, 20.1, 30.4, 35, 72, 54, 53, 63, 68, 49, 71.3, 77</td>
<td>consumer, conventional agriculture, fertilizers, fungicides, herbicides, improper irrigation, life cycle analysis, organic pesticides, socially responsible, synthetic</td>
<td>one to two sessions, or longer if additional research is assigned</td>
<td>one copy each of “The Life Cycle of Cotton” activity and “An Alternative Cotton T-Shirt Life Cycle” cards (pages 170-172)</td>
</tr>
<tr>
<td>33, 43, 89, 71.2</td>
<td>compact, fertilizer, hazardous waste, monoculture, landfill, municipal, recycling, recyclable, solid waste</td>
<td>six stations, each containing four sorting signs (Label, Recycle, Reuse, Compost, and Trash); a set of the “Assorted Sortables” cards (pages 180-183); and a copy of “Trash Patrol” (page 190); copies of “What’s in Our Trash?” (page 191) and “Sorting Solutions” (page 193)</td>
<td>“Measuring Your Footprint” (pages 191-196) helps students compare the amount of trash they produce (as well as the amount of resources they use) with the amount produced by other people.</td>
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<td>Activity</td>
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<td>13. Car Quest (pages 192-201)</td>
<td>Assess the environmental impacts of a fleet of cars and then research and prepare a report about greener transportation choices.</td>
<td>science, social studies, mathematics</td>
<td>gathering (collecting, researching, recording), organizing (charting), analyzing (comparing and contrasting, calculating, discussing), interpreting (generalizing, inferring, drawing conclusions), applying (hypothizing), evaluating (assessing), presenting (writing, illustrating, reporting), citizenship (working in a group)</td>
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<p>| 14. Polar Bears and Petroleum (pages 202-227) | Create posters for a session exploring the connections between energy consumption and biodiversity. | science, social studies, art | gathering (reading comprehensively, researching), analyzing (identifying components and relationships among components, comparing and contrasting, discussing), interpreting (inferring, drawing conclusions, defining problems, identifying cause and effect), applying (proposing solutions, problem-solving), evaluating (verifying), presenting (illustrating, reporting), explaining, identifying, citizenship (working in a group) |</p>
<table>
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<th>Framework Links</th>
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<tr>
<td>13, 28, 42, 53, 63, 68, 72</td>
<td>airborne pollutants, climate change, emissions, fuel-efficient, global warming, greenhouse gas, heat-trapping gas, run-off</td>
<td>four sessions and time for Web research</td>
<td>copies of the &quot;Vehicle Fuel Environmental Impact Summary&quot; chart (page 191); copies of &quot;Web Guest Group Tests&quot; (pages 200-203), computers with Internet access</td>
<td>For more on the effects of climate change, try &quot;Coral Bleaching: A Dilemma in Four Acts&quot; in Ocean of Life.</td>
</tr>
<tr>
<td>8, 9, 25, 29, 30, 31, 33, 41, 52, 53, 62, 63, 68, 69, 80, 71, 72</td>
<td>acid rain, biodiversity, climate change, energy-efficient, fish ladder, fossil fuels, habitat, heat-trapping gas, non-renewable energy, pollution, power plant, radioactive, renewable energy, reservoir, run-off, subdue, subside</td>
<td>two sessions, plus time to create posters</td>
<td>copies of &quot;Energy Fact Sheets,&quot; &quot;Wildlife Cards,&quot; &quot;Big Idea Ideas,&quot; &quot;Ten Tips for Saving Energy&quot; (pages 200-215), posters and poster-decorating materials, such as glue, colored paper, and markers</td>
<td>If your students are interested in climate change after completing this activity, try &quot;Coral Bleaching: A Dilemma in Four Acts&quot; in Ocean of Life, which explores the impact of climate change on coral reefs. If they are interested in other connections between human activities and wildlife, try &quot;The Case of the Florida Panther&quot; in Biodiversity Basics.</td>
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Appendix E

Resources for More Information

The following list of resources, which includes books, periodicals, organizations, Web sites, and curriculum materials, will help you further explore consumer issues. Of course, this list is not comprehensive—in many cases, we've provided more general resources instead of focusing on specific issues or actions. But we hope that you'll find a wealth of information here, including ideas for investigating more specific issues in greater depth.

Books

All-Consuming Passions: Waking Up from the American Dream by the New Road Map Foundation is an informative booklet that explores how our consumption patterns affect our lives, the lives of others, and the health of the planet. The booklet also introduces readers to new trends in "low-consumption, high-fulfillment" lifestyles. (New Road Map Foundation, 1993.) Available from QTS, P.O. Box 15352, Seattle, WA 98115. (206) 527-0437.

The Consumer's Guide to Effective Environmental Choices by Michael Brower and Warren Leon explores the most important consumer issues and the most effective solutions. The book offers straightforward, doable, and—most importantly—effective ways to improve the planet's health. (Three Rivers Press, 1993.)

Do Americans Shop Too Much? by Juliet Schor explores Americans' shopping habits from a variety of angles, and includes debates on the topic of consumerism. Schor argues that Americans' shopping habits are unhealthy and unsustainable, while other experts respond with different perspectives on the topic. (Beacon Press, 2000.)

How Much Is Enough?: The Consumer Society and the Future of the Earth by Alan Durning provides a wide-ranging look at the consumerism issue with a global perspective. This book considers some of the roots of overconsumption, the environmental impacts of consumer actions, and ways we might confront the cultural trends that have led to overconsumption. (W.W. Norton & Company, 1992.)


Material World: A Global Family Portrait by Peter Menzel is a collection of photographs of people around the world. Statistically average families from 30 countries were asked to display all of their household possessions in front of their houses. The resulting photographs and brief biographical sketches in the book provide readers with a different perspective on consumer lifestyles across the planet. (Sierra Club Books, 1994.)

More Fun, Less Stuff Starter Kit by Betty Taylor provides readers with practical tips to help them cut out time, money, and energy and to protect the environment. Also included are nine actions that consumers can take that have a measurable effect. Readers can learn more about these actions at the Center for a New American Dream's "Turn the Tide" Web site at www.newdream.org/turnthetide. (Center for a New American Dream, 2001.)

No Logo: Taking Aim at the Brand Bullies by Naomi Klein has won several awards for its investigative look into the making and marketing of brands across the world. The book explores some of the recent shifts in the global economy that have encouraged the spread of brand awareness and raised the wrath of many anti-corporate activists. (Picador, 2000.)

Our Ecological Footprint: Reducing Human Impact on the Earth by Mathis Wackernagel and William
Seven Wonders: Everyday Things for a Healthier Planet
by John C. Ryan provides readers with seven ideas for ways we can lighten our impact on the planet by changing some of our everyday habits. (Sierra Club Books, 1999.)

State of the World 2004, Special Focus: The Consumer Society
by the Worldwatch Institute provides a fact-filled overview of our consumer patterns and their impact on the environment. Chapters focus on food, water, energy, the politics of consumption, and redefining the good life. (Worldwatch Institute, 2004.)

Stuff: The Secret Lives of Everyday Things
by John C. Ryan and Alan Thein Durning offers an inside look at the lives of common products including coffee, shoes, hamburgers, and cola. This book strives to help consumers better understand the effects of the consumer lifestyle and how we can each make more conscious, environmentally friendly choices. Accompanied by a curriculum and resource guide. For details, see page 202. (Northwest Environment Watch, 1997.)

Sustainable Planet: Solutions for the Twenty-First Century
by Betty Taylor and Juliet Schor includes essays by 16 thinkers offering visions for ways of living that are good for the environment and for people. Ideas include new thinking on industrial design, engineering, and production systems that generate no waste; how we might create a fashion industry that serves aesthetic pleasure with social justice; economic policy recommendations that would move us toward a sustainable economy; and proposals from citizens and workers that provide a fair-trade model of global commerce. (Beacon Press, 2002.)

Your Money or Your Life: Transforming Your Relationship with Money and Achieving Financial Independence
by Joe Dominguez and Vicki Robin is a resource for questioning the modern work-and-spend treadmill. The book offers advice for breaking our modern consumer habits. (Penguin USA, 1993.)

Affluenza
is a one-hour program produced for public television. The film uses personal stories, expert commentary, dramatized vignettes, and “anti-commercial” breaks to examine the high cost of maintaining our consumer lifestyle. (KCTS Seattle & Oregon Public Broadcasting, 1997.)

All the Right Stuff
is a 23-minute video designed to teach middle- and high-school students about media and money. The film helps young people better understand the ways companies use advertising and marketing to attract consumer dollars. (The National Film Board of Canada, 1998.)

The Cost of Cool
is a 26-minute video that helps teenagers better understand the consequences of pursuing “coolness” through consumerism. The film features a variety of young people who share their perspectives on consumerism and also provides information about the environmental effects of consumption. A supporting teacher's guide is also available. (Population Communications International and Cognizant Media, 2001.)

The Ad and the Ego
is an hour-long documentary that explores how advertisements work on a subconscious level to influence consumer behavior. With fast-paced editing and music, this video appeals to younger audiences. (Parallax Pictures, 1997.)

Videos and DVDs

Resources for More Information

Smart Consumer: Exploring Consumer Issues and the Environment
videoproject.net. This Web site also contains ordering information for
the teacher’s guide.

**Escape from Affluenza**

picks up where Affluenza left off, offering tips for treating the
"affluenza bug." The film includes profiles of people and organizations
that are reducing consumption and waste, choosing work that reflects their values, and
working to live in balance with the environment. (KCTS and John
de Graaf, 1998.) VHS copies are available through Bullfrog Films at
(800) 543-FRGG, or on the Web at www.bullfrogfilms.com.
An accompanying teacher’s guide and further information about the
video are available online at
www.pbs.org/kcts/affluenza/
escape/index.html.

**Jam Packed**

provides a young person’s perspective on issues of overpopulation
and consumption. Experts and teens discuss population-related
issues and solutions around the globe. (Population
Communications International, 1997.) Available on VHS from the
Video Project at (800) 4-PLANET, or online at www.videoproject.net.

**Merchants of Cool**

was developed by PBS’s
"Frontline" to reveal the creators and
sellers of teen pop culture.
The film takes viewers inside
focus groups, onto the streets,
and inside malls where marketers
search for new ways to capture
teens’ attention—and dollars.
(Frontline, 2001.) DVDs are available
from the WGBH online shop
at main.wgbh.org/wgbh/shop/
products/wg2123.html. A Web
site that explores these consumer-
related issues in greater depth is
available at www.pbs.org/wgbh/
pages/frontline/shows/cool.

**More Fun, Less Stuff: The Challenges and
Rewards of a New American Dream**

explores some of the hidden costs of
the "more is better" definition of
the American dream. Hosted by
actor Danny Glover; this 30-
minute film features profiles of
individuals, companies, and
organizations that are changing
the way they consume to improve
quality of life, protect the envi-
ronment, and promote social
justice. (Center for a New
American Dream, 2002.) Available online at
www.newdream.org/publications.

**Think Twice**

is a 7-minute video that follows
two high-school students through
a typical day at school to look at
the issues of teenage consumption
and its environmental impact. The film explores why
everybody should "think twice"
before buying things, and how
our happiness isn’t connected to
the things we own. The video works
well as a series with "The Cost of
Cool" and can be obtained on the
Web at www.videoproject.net.

**Organizations and Web Sites**

**Affluenza**

is a Web site maintained by
the Public Broadcasting Service (PBS).
It supports the program of the
same name with a variety of
resources and information for the
diagnosis and treatment of this
consumer "bug."
www.pbs.org/kcts/affluenza

**The Center for a New
American Dream**

provides a variety of information
and resources for protecting the
environment, simplifying life,
countering the commercialization
of culture, and promoting changes in the way goods are
produced and consumed.
www.newdream.org

**Don’t Buy It: Get
Media Smart!**

is a PBS Kids Web site that provides
an overview of methods used in advertising, accompanied
by examples and interactive
games. www.pbskids.org/dontbuyit

**Earthday Network**

provides information and
resources for taking environ-
mentally responsible action and
includes an online ecological
footprint calculator.
www.earthday.net

**Earth Trends: The
Environmental Information Portal**

is a comprehensive online
database developed by World
Resources Institute. The site
provides information from a
variety of sources on current
environmental, social, and
economic trends. www.earth
rends.wri.org

**EE-Link**

includes directories to connect
environmental educators to class-
room materials, organizations,
grants, and other resources.
www.eelink.net
I Buy Different is the Web component of the Be, Live, Buy Different campaign, which includes this Smart Consumers guide. The site was developed by World Wildlife Fund and the Center for a New American Dream and is aimed at teens and tweens. It contains information about smart shopping habits, the life cycles of common products, and free smart-shopping resources to download. Kids who register on the site can record simple actions they’ve taken, either individually or by forming a team with friends. An online calculator measures collective and individual impacts to see the number of trees, gallons of water, and pounds of carbon dioxide these actions have saved. www.ibuydifferent.org

Redefining Progress is a nonprofit organization focused on sustainability. The group’s Web site has information about the ecological footprint concept, as well as downloadable publications about sustainability. www.redefiningprogress.org

Simple Living Network provides tools, examples, and contacts for reducing consumption. The site also offers a free email newsletter. www.simpleliving.net

World Wildlife Fund is working to change consumer markets and create patterns that promote sustainable resource use that protects people and the planet. www.worldwildlife.org

Worldwatch Institute is an independent research institution that conducts studies into environmental, social, and economic trends. It produces its flagship Stone of the World and Vital Signs books annually. These and many other publications written for a nonscientific audience can be found on their Web site at www.worldwatch.org.

World Watch Magazine is an award-winning publication of the Worldwatch Institute that helps readers track global trends related to a variety of environmental issues. Order the magazine online at www.worldwatch.org/pubsmag.

Consumer Guides

Blue Ocean Institute Guide to Ocean Friendly Seafood is an online guide that can help consumers make appropriate decisions about purchasing seafood in a store or restaurant. The site allows you to search for your favorite type of seafood and learn about the status of that species. Free seafood mini-guides can be ordered from the Web site. www.blueoceaninstitute.org/seafood

The Consumers Union Guide to Environmental Labels allows users to compare products with “eco-labels” to those without such labels; learn more about particular eco-labels; keep track of new labels; and compare labels quickly with a printable label report card. www.ecolabels.org

Co-op America’s National Green Pages is a directory of thousands of socially and environmentally responsible companies offering over 25,000 different products and services. The guide is available online at www.greenpages.org. For the expanded print version, call (800) 58-GREEN.
Eat Well Guide

was developed jointly by the Global Resource Action Center for the Environment and the Institute for Agriculture and Trade Policy. This online guide is designed to help consumers locate sustainably raised meats, eggs, and dairy in their local area. The guide also contains information about the different production methods and labels that are oriented toward sustainability.

www.eatwellguide.org

Forest Stewardship Council

marks sustainably harvested wood with the FSC label so that consumers can quickly identify environmentally friendly wood products in stores. Visit www.fscus.org to learn more about the organization and how to find certified products in your area.

Fuel Economy Guide

was created by the U.S. Environmental Protection Agency and the Department of Energy to provide information on gas mileage, greenhouse gas emissions, air pollution ratings, and safety ratings for new and used cars and trucks. The guide is available online at www.fueleconomy.gov.

Global Ecolabelling Network

is an association of eco-labeling organizations founded to develop, promote, and improve the ecolabelling of products. Their Web site contains information about eco-labelling, links to the Web sites of eco-labelling organizations, and lists of products that have eco-labels. www.gen.org

Good Stuff? A Behind-the-Scenes Guide to the Things We Buy

examines the environmental and social effects of everyday products, from computers to chocolate. The guide is available online. (Worldwatch Institute. 2004.)

www.worldwatch.org/pubs/goodstuff

Home Energy Saver

is an online tool to help consumers save energy around the home. Using information about where you live, in addition to details about your home, the Web site can tell you the best ways to improve energy efficiency as well as the dollar savings these changes will make.

homeenergysaver.lbl.gov

Marine Stewardship Council

marks seafood products that have been certified as sustainably harvested with the MSC label so that consumers can quickly identify environmentally friendly seafood products in stores. Visit www.msc.org to learn more about the organization and how to find MSC-certified products in your area.

Monterey Bay Aquarium's "Seafood WATCH" Cards are wallet-sized cards designed to help consumers select sustainable seafood in markets and restaurants. They are downloadable at www.mbayaq.org/or/seafoodwatch.asp.

Responsible Purchasing For Faith Communities

helps congregations take concrete steps to improve the environment and promote social justice. The guide provides resources and tips for taking action and helps congregations calculate the effects of their actions. Order the guide online at www.newdream.org/publications.

Twin Cities Green Guide

provides a list of green businesses in the Minneapolis-St. Paul area, as well as a wealth of suggestions and resources for more sustainable living. The guide is available online at www.thegreenguide.org. To order the printed version, visit www.america.org.

Air to Earth

is a resource kit developed by Nike for elementary school students. The kit uses the life cycle of an athletic shoe to introduce larger issues of resource conservation, sustainable communities, and personal action. The kit can be ordered online at www.airtoearth.com.

Assignment

Media Literacy

provides teachers with a range of tools and resources for incorporating media literacy concepts and skills into the K-12 curriculum. View sample student media productions, including scripts, posters, Web sites, essays, and political campaign ads, and find order information online at www.marylandpublicschools.org/MSOE/programs/mediavid.
Biodiversity Basics: An Educator’s Guide to Exploring the Web of Life

is a middle-school curriculum guide produced by WWF’s Windows on the Wild education program. The guide focuses on biodiversity—what it is, why it’s important, what its status is, and what we can do to protect it—and includes connections to consumer issues. With background information, a variety of activities, action ideas, unit plans, and other resources, this is an important guide for anyone wishing to delve deeper into the topic of biodiversity. Available from Acorn Naturalists, 155 El Camino Real, Tustin, CA 92780. (800) 422-8886. www.acornnaturalists.com

Living in a Material World: Lessons on Commercialism, Consumption, and Environment

is produced by the Center for the Study of Commercialism and is designed for use with students in grades 8 through 12. The guide contains eight lessons that support media literacy, global perspectives, and critical thinking. The guide is available from the Center for Science in the Public Interest, 1875 Connecticut Avenue, NW, Suite 300, Washington, DC 20009, (202) 332-9110. www.espinet.org

Exploring Environmental Issues: Municipal Solid Waste

is a high school-level curriculum from Project Learning Tree (PLT). The guide helps students and teachers explore the topic of solid waste through background information, activities, resources, and other educational tools. Available to educators who attend PLT workshops. For information on scheduled workshops, visit the PLT Web site at www.plt.org.

Oceans of Life: An Educator’s Guide to Exploring Marine Biodiversity

is a middle-school curriculum guide produced by WWF’s Windows on the Wild education program. The guide focuses on marine biodiversity—what it is, why it’s at risk, and what we can do to protect it. The module includes background information and introductory activities; case studies and related activities on sharks, salmon, shrimp, algae, and coral reefs; mini case studies; marine legislation; and more. Available from Acorn Naturalists, 155 El Camino Real, Tustin, CA 92780. (800) 422-8886. www.acornnaturalists.com

Critical Consumerism

is a ninth-grade, language-arts curriculum developed by the Oakland Unified School District’s Urban Dreams project. The curriculum helps students explore the values, analyze advertisements and music videos, and develop advertisements of their own. Available online at www210.pal.com/stellowlessonplans/consumerism/index.html.

Earth Day in Your School and Community: Working with the Earth, the Economy, and the Environment

illuminates connections between our economy and the environment. The guide helps students understand the issues from a variety of perspectives, including those of native cultures and major corporations. Available from Heartland All Species Project.

The Life Cycle of Everyday Stuff

is a National Science Teachers Association (NSTA) guide that uses common products like the telephone to help students learn about the flow of energy and matter through the Earth’s system. Seven illustrated sections provide hands-on activities to teach about what a life cycle is, how product design influences the life cycle, and how products can be less wasteful at the end of their useful lives. Includes a “Life Cycle of a Pencil” classroom poster. The guide can be ordered from NSTA online at http://store.nsta.org.

An Ounce of Prevention

is a National Science Teachers Association (NSTA) middle-school science curriculum focused on reducing waste through source reduction. With activities on packaging, hazardous waste, life cycle
analysis and action skills, the guide provides a science-based resource for teachers. Available online at www.cygnus-group.com/use-less-stuff/NISTA.html.

Seeds of Simplicity is a program of the Center for Religion, Ethics, and Social Policy at Cornell University. The program has produced curriculum packets for pre-K, elementary, and secondary students that focus on critical thinking, media literacy, and voluntary simplicity. Available online at www.seedsofsimplicity.org.


Teaching and Learning for a Sustainable Future is an online, multimedia education program for teachers. Presented by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the module provides teachers with a variety of information and curriculum resources for teaching and learning about sustainability issues. Module 9 addresses sustainable consumption. View the program online at www.unesco.org/education/tlsf.

The Things We Carry: Sustainable Consumption, Environment, and Global Issues is an educational kit created by the Environmental Youth Alliance (EYA). The kit contains two videos made by young Canadian filmmakers who asked students in Canada, England, East Africa, and the United States about "the things they carry." The kit also contains related student activities and extension ideas. To learn more about the kit, or to download the teacher's guide, visit the EYA Web site at www.eya.ca.

Wildlife for Sale: An Educator's Guide to Exploring Wildlife Trade is a middle-school curriculum guide produced by WWF's Windows on the iNet education program. The guide focuses on the international trade in wildlife and wildlife products. The module includes background information, 16 interdisciplinary activities, a list of resources, and unit-plan ideas. Included free with the module is a slide show that highlights the issues in the activities by following four characters who are consumers of wildlife products—both knowingly and unknowingly. Available from Acorn Naturalists, 155 El Camino Real, Tustin, CA 92780. (800) 422-8888. www.acornnaturalists.com.

All Web sites checked August 2004.
# Appendix F

## Metric Conversions

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<th>To Find</th>
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FEEDBACK FORM

WHAT DO YOU THINK?
Please take a few minutes to give us feedback so that we can improve Smart Consumers when we reprint. We will also use your comments to help us develop other materials in the WOW family. Thanks for taking the time to give us your ideas!

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Please use the numbers below to rate the sections in Smart Consumers. Feel free to add any specific comments on content, design, and usefulness.

Ratings: 4 = Great! 3 = Good 2 = Average 1 = Poor

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☐ Activities  ☐ Overall Design
☐ Community Action Guide

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