

be a hero

for the planet



**Paint your school
green with Earth-
friendly activities**
OUR QUICK GUIDE ▶

By Tara Bardeen

PHOTO: GREG LORD; JEFF STYLES; STYLING: GROOMING JENNIFER WOBITO

our green guide

Some material in this article was adapted from *The Down-to-Earth Guide to Global Warming*, by Laurie David and Cambria Gordon (Orchard Books, Scholastic, 2007). Illustrations by Stephen Schudlich.

Global warming affects every living thing on Earth—people, plants, and animals. While scientists are working to better understand how the Earth's climate will change over time, some effects are already evident: rising sea levels, shrinking glaciers and polar ice caps, changes in the distribution of plants and animals, increases in intense weather, and thawing of permafrost. As global warming is caused by an overabundance of greenhouse gases in the atmosphere, scientists suggest that it can be slowed by reducing greenhouse gas emissions and recapturing carbon dioxide (CO₂) from the atmosphere.

For average citizens, this means reducing the amount of energy we use in our daily lives. Kids—and teachers—can be instrumental in making a difference and changing the planet's future. Here are some activities and resources that can help you protect our only home.

A Big Responsibility

As we now know, Earth's climate is changing as a result of human activities. Challenge your students to consider the issue of our impact on the plants and animals that share our planet by hosting a mock debate. Begin the discussion with these questions posed by Laurie David and Cambria Gordon, the coauthors of *The Down-to-Earth Guide to Global Warming*: "We now know that the way we are living is causing many species to become extinct. Is it okay for humans to interfere with nature so much? What is our responsibility to the polar bear, coral, frog, butterfly, and all the others?"

Have two teams of three students each take one side in the debate—one suggesting that extinction doesn't matter and the other suggesting that it does—and argue their stance as best they can. Stage the debates for the rest

of the class, and invite discussion about what was shared and what students' conclusions are.

Global Warming in Your Own Backyard

Global warming is more than just an increase in temperature; it's a change in the climate of our planet, which affects weather patterns, sea levels, and the normal range of plants and animals.

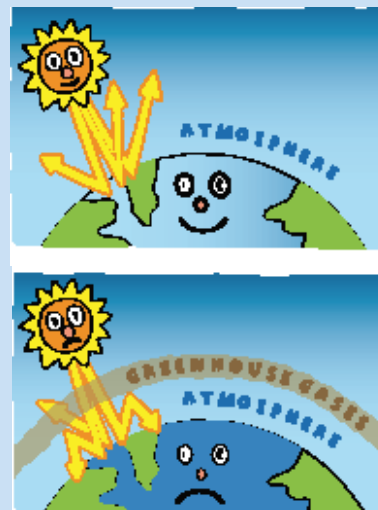
Ask students to imagine the impact global warming will have in their own backyard and home. Have them create posters depicting what this scenario might be like, along with a short essay, story, or poem about this new and different world. Here are some possible impacts of global warming to suggest:

- ❖ Poison ivy grows larger and becomes itchier as CO₂ levels in the air increase.
- ❖ Fall leaves turn a dull color and don't last as long since frosts are delayed.
- ❖ Disease-carrying ticks and mosquitoes expand their territory as northern regions become warmer.
- ❖ Ski seasons shorten as less snow falls.
- ❖ Allergies are triggered and asthma worsens as more pollen is produced due to high CO₂ levels in the air.
- ❖ Pancakes get drier as maple syrup production declines.
- ❖ There are fewer outdoor ice rinks as winters get warmer.
- ❖ Bark beetle populations explode due to lack of winter frosts, killing trees and making them more vulnerable to forest fires.

Make Your Voice Heard!

Get your students involved in local government by having them write to their elected officials about the importance of reducing greenhouse gas emissions. A good first step is to see if your city's mayor has signed the U.S. Mayors Climate Protection Agreement. Visit www.scholastic.com/downtoearth to look up your mayor and to download a sample letter your students can use to ask their mayor to join the more than 400 mayors who have already signed. Next, register to join the virtual march at www.stopglobalwarming.org.

What is Global Warming?



Before launching into a study of global warming, refresh your knowledge of how it all works.

What is global warming?

The term *global warming* refers to the increase of the average global temperature as measured near the Earth's surface and in the oceans that has been observed in recent decades and is projected to continue. Since 1900, the average global temperature has increased 1 degree.

What causes global warming?

Scientists believe the Earth's temperature is increasing due to the greenhouse effect. Like a heavy blanket covering the Earth, certain "greenhouse gases" collect in the atmosphere and do not allow enough heat to escape. The most common greenhouse gases are carbon dioxide, methane, nitrous oxide, and ozone, as well as water vapor.

Where do greenhouse gases come from? While greenhouse gases do occur naturally on Earth, human activities have become a significant source of additional greenhouse gases. Human activities such as burning fossil fuels (coal and petroleum, for example) and clear-cutting forests have changed the composition of the atmosphere.

our green guide

Lightbulb Audit

How many lightbulbs are there in your school? How much energy and how many pounds of CO₂ would your school save if all the lightbulbs were changed to energy-efficient compact fluorescents? First, ask the class to discuss and record their estimate for the total number of lightbulbs in your school. Next, divide the students into teams and ask each team to perform a field count of lightbulbs in the area of the school they are assigned. Once all numbers are tabulated, use these formulas to calculate your energy savings (formulas derived from www.usctcgateway.net/tool):

◆ Energy used by regular lightbulbs per school year in kilowatt hours = (number of lightbulbs) x (average wattage of lightbulbs) x (hours in a school day) x (number of days in a school year) x .001

◆ Energy used by compact fluorescent lightbulbs per school year in kilowatt hours = (energy used by regular lightbulbs per school year in kilowatt hours) x .25

◆ CO₂ emissions from regular lightbulbs per school year in pounds = (energy used by regular lightbulbs per school year in kilowatt hours) x 1.535 lbs CO₂/kilowatt hour

◆ CO₂ emissions from compact fluorescent lightbulbs per school year in pounds = (energy used by compact fluorescent lightbulbs per school year in kilowatt hours) x 1.535 lbs CO₂/kilowatt hour

Next, calculate the cost savings of using compact fluorescents throughout the school. Here is data for just one of these environmentally friendly bulbs, used over a "life cycle" of about 10,000 hours. (A regular bulb lasts only about 1,000 hours.)

Initial cost difference:.....	\$3
Life cycle savings:.....	\$77
Net life cycle savings (life cycle savings — initial cost):.....	\$74
Life cycle energy saved:.....	543 kWh
Life cycle air pollution reduction:.....	833 lbs of CO ₂
Air pollution reduction equivalence (number of cars removed from the road for a year):.....	0.07
Air pollution reduction equivalence (acres of forest):.....	0.10
Savings as a percent of retail price:...	2116%

For an Excel spreadsheet, visit www.energystar.gov/index.cfm?c=cfls.pr_cfls.

Have students share their findings with the school administration, publish them in the school paper, and send e-mails to other classroom teachers. Invite students to think of other ways to spread the word that cleaner technologies not only save the planet, but also save money over the long run.

Teaching With the Poster

In the center of this issue of *Instructor*, look for a global warming poster that not only encourages kids to think green, but also includes four great reproducible activities on the back! Use these activities in conjunction with ideas from the magazine to help students better understand our planet's environmental challenges and the ways in which they can help. Missing the poster? No problem! The reproducible activities are also available online at www.scholastic.com/instructor.

Online Resources

◆ JOIN THE MARCH!

You and your students can add your voices to stop global warming by participating in this virtual march.

www.stopglobalwarming.org

hey, you too!

Teachers can also do their part to reduce greenhouse gas emissions at school.

1. Reduce, reuse, and recycle.

If your school doesn't have a recycling program for office paper, glass, plastics, and aluminum, get one started!

Reducing, reusing, and recycling at school helps conserve energy and reduces air pollution generated by manufacturing and disposal.

2. Start a no-idle rule in your school's carpool lane.

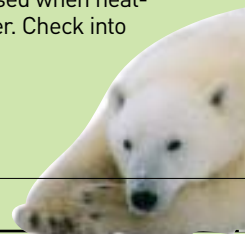
Cars that sit for more than 30 seconds with their engines running use up more gasoline and emit more global warming pollution than if the motor is turned off and on again.

3. Suggest changing the paper in your school.

Talk with your school's principal about using only recycled paper made from at least 30 percent post-consumer waste. Also, educate fellow teachers and office staff about double-sided printing to save on the total amount of paper your school uses.

4. Investigate your school's water heater.

If your school's water heater is more than five years old, it's inefficient and too much CO₂ is being released when heating the water. Check into replacing it.



◆ **YOUR HONOR!**

Print or e-mail a letter to your mayor asking him or her to join the U.S. Mayors Climate Protection Agreement.
www.scholastic.com/downtoearth

◆ **SPIN THE EMISSIONS WHEEL**

This printable wheel activity is a great way for students to calculate their greenhouse gas emissions and learn how to reduce them at the same time.
www.epa.gov/climatechange/emissions/wheel_card.html

◆ **CLIMATE CHANGE FOR KIDS**

Learn more about climate change with the help of kid-friendly graphics and explanations. There's also a list of things kids can do to reduce greenhouse gas emissions.
www.epa.gov/climatechange/kids

◆ **TIME TO CALCULATE**

Use this greenhouse gas equivalencies calculator to help students visualize reductions in greenhouse gas emissions in ways that are much easier to conceptualize, like equivalent number of cars not driven for one year or number of trees planted.
www.usctcgateway.net/tool

◆ **WIN A TRIP TO NEW YORK!**

Solve a local environmental issue with an innovative solution. You could win a trip to New York City, where you'll share your innovation with a real scientist who will talk to you about bringing your ideas to life.
www.youinnovate21.net

◆ **GRASSROOTS GRANTS**

Lexus is awarding \$1 million in scholarships and grants to middle- and high-school students to help develop and implement innovative environmental programs that impact communities on a grassroots level.
www.scholastic.com/lexus

◆ **HOW GREEN ARE YOU?**

Students can take this fun quiz to find out just how green they really are.
www.scholastic.com/downtoearth/quiz/howgreenareyou

◆ **JOIN THE GREEN SQUAD**

Designed primarily for students in fifth through eighth grade, The Green Squad teaches kids about the relationship between their schools and environmental and health issues.
www.nrdc.org/greensquad □

1/3 Vertical
Right

5. Fund-raise for a green school.

Raise money to fund projects that reduce your school's greenhouse gas emissions. Some planet-friendly ideas include a walkathon (encourages people to leave their cars at home) and a switch-off day, in which everyone switches off their computers and lights at home and at school.

6. Ask your principal about getting solar panels on the roof.

Across the country, elementary, middle, and high schools, as well as colleges, have installed solar panels to supplement or generate their own electricity. These schools are saving money and stopping global warming at the same time.

7. Start a no-waste policy in your cafeteria.

Institute a policy requiring all food brought to school to be in reusable containers and all trash to be taken home with the students. This will help kids and parents see just how much is wasted at lunchtime.

