

Earth Day Project Ideas: Grades 9-12

Carbon Cartographers

Students create artistic “carbon maps” of the school, identifying both carbon sources (e.g., photocopiers, heating units, school buses—things that emit carbon dioxide) and carbon sinks (e.g., trees, shrubs—things that absorb carbon dioxide).

Divide the class into small groups. Each group can do its own map of the entire school grounds, or you can divide the grounds into sections and give each group a part.

Instructions: Begin by doing a rough sketch of the school and the grounds. You might want to have group members scatter to cover different areas. Observe everything around you in terms of carbon sinks and sources.

- Jot down the location of every tree and bush on the property
- Count the number of school buses
- Count the number of car parking spaces
- Locate every photocopier, computer and printer on the premises
- Ask permission to visit the cafeteria, boiler room, teachers’ lounge and administrative offices

Short version: Have group leaders present their findings and write tallies of items on the board (e.g., 17 trees, 25 shrubs, 8 photocopiers, 42 computers). When finished, survey the scene and assess the balance of carbon sources to carbon sinks. How is the balance?

Longer version: Have students choose to join one of two groups: A) artists and cartographers or B) researchers and mathematicians. Group A will make a large mural-size map to illustrate their findings. Make it colorful, detailed and informative, and hang it in the school lobby or a public place like your local library or town hall. Group B will calculate the amount of CO₂ released from the use of electricity and heating fuel for one school year, to the best of their ability. (See “Earth Day Footprints” activity for resources.)

Extension: Devise a plan for adding more trees and perhaps a school garden or two to the school grounds. Where would you put them? Do a rough sketch or, time permitting, map out your “green dream school campus.”

Green Schools Initiative

<http://www.greenschools.net/>

Green School Alliance

<http://www.greenschoolsalliance.org/>

Earth Team: An Environmental Network for Teens, Teachers and Youth Leaders

<http://www.earthteam.net/>

Sources and Sinks of Carbon Dioxide – EPA

http://www.epa.gov/climatechange/emissions/co2_human.html

Earth Day Footprints

Through this exercise, students see how every small step they take makes an impact on the environment—for better or worse.

Instructions: Using your choice of online calculators, figure out your footprints (the estimated amount of natural resources you consume in a year). Then work together as a group to calculate the footprint of the entire class.

Estimate how many tons of carbon dioxide and other greenhouse gases you create each year. See how the choices you make—how you travel, what you eat, what you buy, what you throw away—influence your carbon footprint.

Many factors contribute to your carbon footprint. For example:

- Cars
- Public transportation
- Electricity
- Heating
- Air conditioning
- Refrigeration and freezing
- Food production and preparation
- Clothing and cosmetics
- Length of showers
- Lawn care

Discussion points:

Q: How can you reduce your footprint?

A: Here are some ideas to get started:

- Walk or ride your bike to school.
- If you live too far from school, go by school bus, not car.
- Use public transportation.
- Always use reusable cloth shopping bags rather than plastic or paper bags. Make sure your family members carry cloth bags in their car or purse!
- Use a reusable water bottle, not individual plastic ones.
- Buy local food from local farms and sources.
- Do not buy foods with excessive packaging. Avoid snack-size packages.
- Reduce the amount of meat you eat (livestock production is a huge source of emissions). Consider eating vegetarian meals at least one day a week.
- Conserve energy at home. Turn off computers, phone chargers, lights, etc. when not in use.
- Take shorter showers.
- Write on both sides of paper; reuse envelopes.
- Buy your clothes in thrift shops—it's another form of recycling!

Footprint Calculator from Planet Green

<http://planetgreen.discovery.com/games-quizzes/ecological-footprint-calculator.html>

Your Carbon Footprint: Calculating, Reducing and Offsetting Your Impact

<http://www.treehugger.com/files/2008/02/carbon-footprint-green-basics.php>

The Nature Conservancy's Carbon Footprint Calculator

<http://www.nature.org/initiatives/climatechange/calculator/>

Zerofootprint Youth Calculator

<http://calc.zerofootprint.net/youth/new>

EPA (Environmental Protection Agency) Emissions Calculator

http://epa.gov/climatechange/emissions/ind_calculator.html

BP's Carbon Footprint Toolkit

<http://www.bp.com/genericResource.do?categoryId=8043&contentId=7037374>

Reduce your Carbon Footprint in Half in Three Steps

<http://planetgreen.discovery.com/home-garden/reduce-carbon-footprint-threesteps.html>

Earth Day Infographics

Students work in teams to research statistics about the environment and then create infographics to illustrate their findings in creative and compelling ways.

Instructions: Pick environmental topics that you find most interesting and research the latest statistics—e.g., CO₂ emissions by country, breakdown of pollutants in the air, percentages of waste items recycled vs. thrown away, areas affected by deforestation, etc.

Now figure out how to visually depict these facts in creative ways—pie charts, icons, graphs, hand-drawn or digital illustrations, etc. Statistics are often more striking and thought-provoking when represented visually, rather than mere words and numbers on a page. Make them colorful, draw attention to contrasts and alarming facts. Your graphics should be accurate, clear and attention-grabbing to make an impact.

Use computer graphics software if available, or search for free chart-making or presentation tools on the web. Or be creative and do it all by hand and include some illustrations relevant to the topic. When finished, hang your infographics on a bulletin board in a central area.

Do you have a class blog or wiki? A school newspaper? Upload or submit your favorite infographics and spread the word!

Here are some examples to get you thinking:

Did you know?

- Average American's annual carbon footprint: 20 tons
- Global average: less than 4 tons
- Tropical forest destroyed each year: over 32 million acres
- % of the Earth's natural forests already destroyed: over 80%

What is the breakdown of greenhouse gases in the atmosphere? Find the percentages and illustrate in a chart:

- Carbon dioxide
- Methane
- Nitrous oxide
- Fluorinated gases

What's the source of greenhouse gas emissions? (Fill in the blanks)

- Deforestation
- Transportation fuels
- Industrial processes
- Agriculture
- Livestock
- etc

Resources:

EPA – Climate Change

<http://www.epa.gov/climatechange/>

Climate Change Facts and Statistics

<http://climatechange.ws/facts/>

United Nations – Environmental Statistics Division

http://unstats.un.org/unsd/environment_main.htm

World Resources Institute – EarthTrends Environmental Information

<http://earthtrends.wri.org/>

NCES Kid's Zone: Create a Graph

<http://nces.ed.gov/nceskids/createAgraph/default.aspx>