

The World of Coca-Cola Middle School Green Guide

What's Your Carbon Footprint?

Pre-visit Activity

Objectives:

1. Students will increase their awareness of how their personal choices impact the planet and global warming.
2. Students will make a graph (line, pictograph, or bar).
3. Students will learn and use the concepts of mean, median and mode when using data.
4. Students will use the Internet to gain information.

Opening:

Our trip to the World of Coca-Cola is coming soon. The Coca-Cola Company has put forth a great effort to reduce their carbon footprint not only within the World of Coca-Cola building but within their business worldwide. To prepare for our trip, we are going to look at your own carbon footprints.

Materials:

- ❖ Access to the Internet
- ❖ White board
- ❖ Graph paper
- ❖ Calculators

Time: 2 class periods of 45 minutes each



Procedure:

1. Ask students to go online to: www.mec.ca/Apps/ecoCalc/ecoCalc.jsp. Follow the directions. Choose English or another language, if desired. Choose the United States of America and take the quiz. Note that the carbon footprint is tallied as students take the quiz. At the end, students will see the number of earths that would be needed if everyone in the world had the same lifestyle that they have.
2. On the whiteboard, list names and number of earths for each person in the class.
3. Ask students to use graph paper to make a line, pictograph, or bar graph of the number of earths needed for each person in the class as determined by the online program.
4. Calculate the mean, medium and mode using this information. Ask students to explain how they went about finding these answers.

Closing:

The results of the test are usually very surprising, as well as alarming to students. The Coca-Cola Company realized years ago that their impact on the environment could be reduced if they made decisions to operate differently. During your trip to the World of Coca-Cola, ask students to take notes on the efforts made by The Coca-Cola Company, as well as how these efforts have influenced their lives, or will influence their lives in the future.

Assessment:

Ask students to write a paper on their thoughts about the results of the online test. Will it change anything they do? If so, what will they do differently? If not, why not? Teachers may also use the graph along with mean, medium and mode information for assessment.

The World of Coca-Cola Self-Guided Tour for Teachers Middle School Green Guide

Note to Teachers:

The Green Tour may be added to either the Social Studies or Language Arts links & lesson plans with ease. As students proceed through the tour, you may bring your students' attention to ways The Coca-Cola Company has worked to make the World of Coca-Cola building as environmentally compatible as possible.

The Green World of Coca-Cola



Location-Pemberton Place, just outside the World of Coca-Cola

Connections

As you look at the building from the outside, you will notice an area of plants and landscaping at the Baker Street entrance to Pemberton Place. Also note the colors used on the building and paving materials.

Impact

This area demonstrates what The Coca-Cola Company has done to address the cyclical Georgia drought issue as well as decrease the heat island effect that contributes to smog and ozone in Atlanta.



All areas of the new World of Coca-Cola construction and operation have been planned to reflect the company's commitment to the environment. The building was constructed in accordance with the United States Green Building Council's (USGBC) Leadership in Energy and Environment Design (LEED) standards. This group encourages thoughtful building design with an emphasis on recycling, reuse of resources and waste reduction. The World of Coca-Cola building minimizes negative environmental impact, conserves energy, and minimizes water use. This reflects The Coca-Cola Company's worldwide efforts to protect our natural resources.

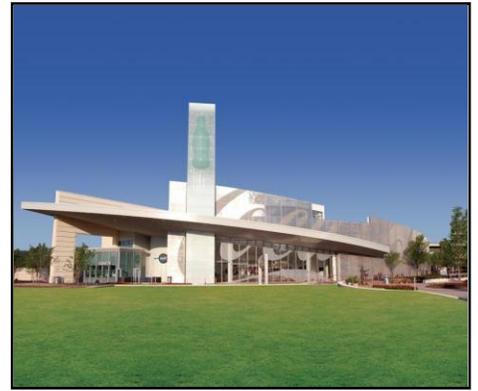
A. When the World of Coca-Cola opened on May 24, 2007, Pemberton Place was filled with streams, waterfalls and ponds. It was beautiful, but as Georgia went deeper into another cyclical drought, The Coca-Cola Company became concerned about the 34,000 gallons needed to keep the stream and waterfall flowing each day. To be more environmentally conscious regarding the drought, the company decided that the water features had to be removed. The water features were filled in with 640 cubic yards of dirt. The area was then planted with 2000 drought tolerant plants such as liriopse, cleystera, and knock out roses. Other areas that were changed from outdoor water features into areas that were more drought-friendly will be noted later in the tour.



When the World of Coca Cola opened, many water features such as the pond above were found throughout the grounds.

To conserve water during Georgia's cyclical droughts, the water features were replaced with drought resistant plants and other landscaping features.

B. Pemberton Place accounts for 5 acres of additional green space in downtown Atlanta. Urban green space is important because it provides habitat for birds, insects, and other organisms and prevents soil erosion. Trees absorb pollutants in the air. Just 20 trees can replace the pollution from a car driven 60 miles a day. Since there are so many cars in the city, trees are especially important. Plants reduce the urban heat island effect that happens when buildings, asphalt, and concrete absorb radiation from the sun and cause air temperatures to rise. Plants reduce this effect because they shade heat-absorbing surfaces. Green spaces also reduce noise pollution. But that’s not all. Urban green spaces give people a place to play, gather and rest. In fact, you may enjoy eating your lunch in Pemberton Place today!



C. Bring students’ attention to the color of the paving, building, and the roof. All of these areas are finished in light colors in what is called “cool landscaping”. When cool landscaping is used, the sun is reflected off of the surface rather than being absorbed. Why is this important? Lighter colored surfaces absorb less heat than dark surfaces, causing less energy to be needed for cooling the building.



D. Bring your students’ attention to the bike rack outside the parking garage. The Coca-Cola Company encourages alternative transportation options such as riding a bike to work. The company also has showers and locker rooms for employee use. The attraction is located close to public transportation which offers employees & guests another transportation option.



Location – Lobby

On March 5th, 2008 The Coca-Cola Company announced that the World of Coca-Cola had achieved the official “green” status as an environmentally friendly building. This means that Coca-Cola has followed the U.S. Green Building Council’s standards for Leadership in Energy and Environmental Design.



Location- The area just outside the Hub

Connections

Bring your students’ attention to the area outside the windows located on the left side of the Hub.

Impact

The Coca-Cola Company has used plants plus light colored paving materials to help reduce the heat island effect around the World of Coca-Cola.

A. For a quick review of what your students learned in Pemberton Place, ask your students why the World of Coca-Cola would put so many plants around their building, and why all of their paving colors are light in color.



B. Ask your students to look around the Hub at the walls. All paint used at the World of Coca-Cola is low Volatile Organic Compounds paint. Why is low VOC paint important? Let's look at regular paint first. Regular paint has almost 10,000 chemicals in it, 300 of them are toxic! This means that some people can have breathing problems, allergies, and other health problems caused from the fumes that come from regular paint. In fact, paint is considered to be one of the worst environmental polluters. Low VOC paint reduces the toxins from paint, doesn't pollute groundwater, and is easily cleaned up with soap and water. VOC paint results in a very low odor when used and no odor once it is dried. This improves indoor air quality. The World of Coca-Cola has also used low-emitting adhesives, sealants, and carpet which is made from recycled carpet, called "cradle to cradle" carpet within the building. So go ahead, take a deep breath. The air at the World of Coca-Cola is squeaky clean!



C. Bring your students' attention to the few lights used at the ceiling level in the Hub. Very little energy is needed to light the Hub because the building was not only constructed with large windows, but it is facing in a northwest/southeast exposure to the sun. This cuts down on electrical usage because the sun does most of the work! The building was designed to optimize energy efficiency and is 30% more energy efficient than a conventionally constructed building. This is important because buildings use 1/3 of all the energy and 2/3 of all electricity produced in the United States.

Location - Gallery 7; Within Arms Reach of Desire

Ask your students to look around this room at some of the various vending machines used in the past. Recent research has shown that the coolants used in older vending machines were damaging to the environment. The Coca-Cola Company has taken a number of measures to correct this situation as well as reduce their carbon footprint worldwide.



Location- Window between Pop Culture and the 4-D theater (Second Floor)

Connections

As you look out this window, you will notice green glass as well as many plants that were used to replace a water feature.

Impact

The area outside this window demonstrates how the World of Coca-Cola has attempted to maintain the look of a water feature while doing it in an environmentally friendly manner. This area was altered in response to the cyclical drought our state experienced.



A. Coca-Cola has used recycled, tumbled green glass to represent the waterfall that was removed due to the drought. It is meant to represent the look and reflective properties of a waterfall. Drought tolerant plants have been added at the bottom of this area. Once again, this helps to reduce the heat island effect.



Location-Restrooms and water fountains throughout the building

Connections

Ask students to note the small plaques discussing the conservation of water throughout the building.

Impact

Thanks to the low-flow faucets, waterless urinals, and other fixtures used in the attraction, the World of Coca-Cola uses 30% less water than other buildings of its size constructed in a conventional fashion.

A. In 2005, The Coca-Cola Company conserved enough water through its facilities around the world to flush toilets in their headquarters for over 300 years.

B. It is estimated that the water supply in Atlanta will only last another 20-30 years. It is imperative that Atlanta businesses and citizens do all they can is possible to conserve water.

C. The Coca-Cola Company is participating in The Global Water Challenge, which is a growing public-private partnership designed to help bring safe drinking water and sanitation to people all over the world who need it.

D. In 2007, it was announced that The Coca-Cola Company and the World Wildlife Fund (WWF) would be working together to help conserve and protect freshwater resources throughout the world. They will do this by conserving key watersheds, improve the efficiency of the Coca-Cola system's water use, support efficient water use in the company's agricultural supply chain, decrease Coca-Cola's carbon dioxide emissions and energy use, and inspire a global movement to conserve and protect freshwater resources around the world.



Reducing the Carbon Footprint

This is an example of a new dispenser using CO2 coolant.

A carbon footprint is the amount of greenhouse gases caused directly or indirectly by a person or organization in a given time. The following items are a few of the efforts The Coca-Cola Company has put into place to lower their carbon footprint.

- In 1969, The Company commissioned the first study to examine the environmental impact of a package which laid the framework for the life cycle assessment methods used today.
- The company has reduced the amount of polyethylene terephthalate (PET) plastic used in bottles by up to 35% (the 500 m. Dasani bottle), while continuing to use recycled content when possible.
- The use of smaller caps for plastic bottles has eliminated 40 million pounds of plastic used annually in the United States alone.
- Investment in technologies and recovery systems has enabled the company to use more recycled materials.
- The Coca-Cola Company will grow its company without expanding its carbon output. This will be done by making investments in energy efficiency at all of the 1,000 plants and with bottlers around the world.
- Efforts to improve the efficiency of coolant systems (a large contributor of greenhouse gasses) include a number of initiatives:
 1. Improve the efficiency of vending machines. By using an energy system called EMS-55 which can use up to 35% less energy than machines without the technology.
 2. Make insulated foam for vending machines environmentally friendly by removing materials that cause greenhouse gasses from the insulation of all new coolers. This action alone eliminates 75% of the direct emissions from the coolers.
 3. CFC's (chlorofluorocarbon, which has been implicated in depleting the ozone layer) had been used in vending machine coolant mechanisms but was removed from all new coolers in 1994. At first, the CFCs were replaced with HFCs, but it was found that these gases also contribute to greenhouse gases. The company then spent almost \$40 million to identify and test another alternative refrigerant-CO2. CO2 is more efficient and is much safer for the environment than CFCs or HFCs. The company has made the commitment to deploy 100,000 CO2 coolers by the end of 2010.
- The Coca-Cola Company has issued a Call to Action to encourage other companies to lower their carbon footprint by replacing commercial refrigeration equipment with CO2 systems.





Location-Taste It (Second Floor)

Connections

In the Taste-It room, bring your students' attention to the poster called "Packaging from Nature".

Impact

This poster is a flow chart about how corn becomes a cup. It demonstrates how the World of Coca-Cola has replaced plastic with 100% compostable cornstarch cups throughout the Taste It room.



A. Read the poster "Packaging from Nature" with your class. Discuss the flow chart and ask students why cups and products that decompose easily are important to their lives. Explain to students that The Coca-Cola Company has put thought into not only providing a biodegradable cup in the Taste-It room, but they are also working on a biodegradable bottle that will soon hold Coca-Cola products they purchase in the future.



Location-The Coca-Cola Store

Connections

In this room, students will notice the two types of floors used in the store and discuss the materials they are made from. They will also view products made from recycled materials which are for sale in the store.

Impact

The Coca-Cola Company has encouraged the use of recycled materials and supports artists who produce products made in this way. Written descriptions located on each product give consumers a short education in how the product uses recycled materials as well as the people who produce the product



A. Bring your students' attention to the floor in The Coca-Cola Store. The wood floor is actually made of bamboo like the flooring in Pop Culture. The Bamboo plant grows more quickly and is more sustainable than wood and is just as strong. For example, the bamboo in The Coca-Cola Store and Pop Culture room has endured the feet of over one million visitors each year.



B. Bring your students' attention to the black rubber section of the floor in The Coca-Cola Store. This floor is made from recycled tires. First, the tires are shredded and turned into crumbs for many products, including flooring. Americans dispose of over 245,000,000 tires every year, adding more and more waste to our environment. Using recycled tires not only reduces waste, but also reduces the need for new materials for new products. Recycled tires can be used for flooring, fuel to power furnaces, cushioning material in playgrounds, as well as other uses.

C. Go to the wall to your right as you entered The Coca-Cola Store. Located on this wall are a number of products made from recycled/repurposed Coca-Cola products. Be sure to read a few of the tags on some of the products as they give information on how the product is made. For example, there are T-shirts that tell how many plastic bottles went into making the shirt and jewelry by Kathleen Plate that is made out of recycled/repurposed Coca-Cola bottles.

Bring your students' attention to the pop-top handbags by *Escama*. This company is run by two women's co-operatives in Brazil and the tag is signed by the woman who made the bag. To learn more about this company go to: www.escamastudio.com. Another company whose products are displayed in this area is *Ecoist* which is a company from Peru. This company uses discontinued or imperfect Coca-Cola labels to make products for sale in the retail store. A company called *Remarkable.co.uk* makes notebooks with recycled tire covers and even recycled plastic. Bottom line...Everything has a use!



Concluding Your Tour

To end your tour, review what your students have seen at the World of Coca-Cola that demonstrates their efforts to be environmentally friendly.

Green Quiz

May be given orally or by pencil and paper after returning to class.

The World of Coca-Cola Green Quiz

1. What steps has the World of Coca-Cola taken to lower the heat island effect around their building?
2. What did the World of Coca-Cola do as a result of the Georgia drought?
3. What steps has the World of Coca-Cola taken to encourage alternative transportation?
4. What steps have been taken inside the World of Coca-Cola to improve air quality?
5. What has the World of Coca-Cola done to improve water conservation?
6. What has the World of Coca-Cola done to reduce waste in the Taste-It room?
7. What type of flooring has the World of Coca-Cola used and why is this undertaking important?
8. What is different about many products available in The Coca-Cola Store?
9. Name a few of the measures taken by The Coca-Cola Company to reduce their carbon footprint.
10. Why are all of these efforts important to your life?

Answers:

1. To reduce the heat island effect, the World of Coca-Cola planted trees and drought tolerant plants around the attraction. They also used light colors on the building and in paving materials to reflect the heat of the sun.
2. Because of the drought in Georgia, the World of Coca-Cola replaced all outdoor water features with landscaping using drought resistant plants.
3. To encourage alternative transportation, the World of Coca-Cola has provided bike racks for guests and employees to use. They provide showers in the employee lounge area for those employees who ride their bike to work. The attraction is also located near public transportation.
4. To improve air quality, the World of Coca-Cola has used low VOC paint as well as low-emitting adhesives, sealants, and carpet.
5. To improve water conservation, the World of Coca-Cola has used low-flow faucets as well as waterless urinals in the attraction. The Coca-Cola Company has partnered with the World Wildlife Fund to help conserve & protect fresh water resources around the world. They are also participating in The Global Water Challenge.
6. In the Taste It room, all cups are made of 100% compostable cornstarch.
7. The company has used bamboo in the Pop Culture gallery & in The Coca-Cola Store. Bamboo is a more sustainable material than wood for flooring. They have also used recycled tires for parts of the floor in The Coca-Cola Store. This is important because through the use of recycled tires, waste material is used instead of new materials.
8. Many of the products in the retail store are recycled from Coca-Cola packaging and give work to small businesses throughout the world.
9. Changing the coolant used in vending machines to CO₂, reducing the amount of plastic used in bottles and caps, recycling, etc.
10. Answers will vary.