Lesson Plan:
Plastic Bottles

Grade 5
Environmental Science
Lesson Plan: Teacher’s Notes

Plastic Bottles

Reading Content:
✓ Context Clues
✓ Story Elements
✓ Connections
✓ Main Idea/Details
✓ Questioning
✓ Visualizing
✓ Drawing Conclusions
✓ Drawing Inferences
✓ Cause and Effect
✓ Author’s Purpose
✓ Themes
✓ Determining Importance
✓ Figurative Language
✓ Making Predictions

Purpose of the Lesson:

BIG IDEA: Use a variety of reading strategies to improve comprehension.

STUDENTS: The purpose of this lesson is to use real world context as the foundation for students applying targeted reading strategies.

TEACHER: The purpose of this lesson is for you to facilitate a lesson focusing on students building background knowledge in science and applying targeted reading strategies.
Background:
Research has documented the pivotal role that prior knowledge plays in reading comprehension; yet the amount of class time devoted to topics such as science and social studies is practically negligible when compared to reading and writing. This activity explores plastic bottles and their impact on the environment.

Bottled water is the single largest growth area among all beverages, which includes alcohol, juices and soft drinks. Per capita consumption has more than doubled over the last decade, from 10.5 gallons in 1993 to 22.6 in 2003. The growth has been even more impressive in terms of water bottles sold: from 3.3 billion in 1997 to 15 billion in 2002.

Only about 12 percent of "custom" plastic bottles, a category dominated by water, were recycled in 2003. That's 40 million bottles a day that went into the trash or became litter. In contrast, the recycling rate for plastic soft drink bottles is around 30 percent.

In this lesson plan, students will gain background knowledge about plastic bottles and its subsequent impact on the world’s oceans.

Materials/Resources:
✓ Video: YouTube – World’s Biggest Garbage Dump – Plastic in the Ocean
   http://www.youtube.com/watch?v=XxNqzAHGXvs
✓ Website: YouTube – Plastic Bottles & Ocean Pollution
   http://www.youtube.com/watch?v=rf5iHqT1Rzc
✓ Website: Wordle
   http://www.wordle.net/
✓ Website: Hydrastation
   www.stayhydrated.net
✓ Practice Assessment: PowerPoint: Plastic Bottles
✓ PowerPoint: Plastic Bottles
5E Model - Engagement (Focus):

ESTIMATED TIME: 15 minutes

GUIDING QUESTION: What happens to disposed plastic?

PROPOSED PROCEDURE:

STEP 1: Show a video entitled, World’s Biggest Garbage Dump – Plastic in the Ocean discussing the presence of plastics in the ocean from Slide 3 in the Plastic Bottles PowerPoint.

STEP 2: Have students discuss the type and frequency of plastic bottles that they throw away each week. Prompt students to suggest what happens to the plastic that they discard. Where does it go? Where is the nearest landfill?

5E Model - Exploration:

ESTIMATED TIME: 20 minutes

GUIDING QUESTION: What do I know about plastic bottles?

PROPOSED PROCEDURE:

STEP 1: Have students take the Plastic Bottle Quiz on Slides 4-15. Have students go to the corner of the room that represents their answer to each question.

NOTE: You will need to create four placards labeled A, B, C, and D and tape one to each corner of the room so that if a student believed the answer was “C”, he/she would stand at that corner of the room displaying the “C” placard.

STEP 2: Discuss with students after each question the correct answer relating to their prior knowledge about plastic bottles and ocean pollution.
LESSON PLAN: PLASTIC BOTTLES • GRADE 5

5E Model - Explanation:

ESTIMATED TIME: 20 minutes

GUIDING QUESTION: What can be done about plastic bottles?

PROPOSED PROCEDURE:

**STEP 1:** Have students participate in a practice reading benchmark activity focusing on plastic bottles and the possible solutions to curtailing their impact on the ocean environment.

**STEP 2:** Use the word cloud in Slide 16 using Wordle as a pre-reading exercise to get students thinking about the content of the text passage focusing on plastic bottles.

**NOTE:** As you implement the reading benchmark intervention, it is suggested that the following sequence be used to accommodate the cross-spectrum of readers in your classroom ranging from dependent to independent readers:

1. Have the teacher read aloud the first section of the passage to the students. Afterwards, have students respond to specific questions embedded in the passage about different story elements of this section within a small collaborative group or large group focusing on one or more reading comprehension (e.g., cause and effect, main idea, drawing conclusions) and meta-cognitive (e.g., using context clues, looking for bolded words, doing think alouds) skills.

**NOTE:** It is strongly suggested that students use some form of digital responders/digital voters so that their collective responses can be viewed quickly by the entire class. This affords opportunity to discuss with students some of the major distracter answers embedded in the practice reading assessment.

2. Have students whisper or mumble read the next section as the teacher reads the text aloud. Afterwards, have students respond to specific questions embedded in the passage about different story elements of this section within a small collaborative group or large group focusing on
one or more reading comprehension and meta-cognitive skills.

3. Next, have students read silently the last section of the reading selection followed by prompted questions about the different story elements of this section within a small collaborative group or large group focusing on one or more reading comprehension and meta-cognitive skills.

**ANSWER KEY: Bye, Bye Bottled Water**

1. D  
2. A  
3. C  
4. B  
5. A  
6. B  
7. A  
8. C  
9. C  
10. B  
11. B  
12. D  
13. Answers will vary

**5E Model - Elaboration:**

**ESTIMATED TIME:** Open-ended  
**GUIDING QUESTION:** How can we reduce the amount of plastic bottles?  
**PROPOSED PROCEDURE:**

**STEP 1:** Show the video clip entitled, *Plastic Bottles & Ocean Pollution* to get students thinking about alternatives to plastic bottles from Slide 17 in the *Plastic Bottles* PowerPoint.

**STEP 2:** Have students use Handout 1 to create an action plan that addresses one or more strategies to reduce plastic bottle consumption in their community. Some of these strategies include:

- **Initiate a Company-Wide Ban on Single-Use Water Bottles:** Imagine a workplace free of plastic bottle waste filling up waste containers. Encourage your company to consider a ban on single-use water bottles thus becoming more green and sustainable.
• **Prominently Display Recycling Containers Throughout Your Campus:** Take the initiative to get a company-wide recycling program started by placing recycling containers throughout your office. Send co-workers memos noting the new containers and why recycling is important.

• **Install a Sustainable Water Dispenser:** Forget single-use bottled water and start using a sustainable water dispenser to fill up your sports bottle and meet the needs for hydration. The [HydrationStation](http://www.stayhydrated.net) water dispenser features a touch-free, hygienic interface with built-in filter technology to make tap water taste great.

• **Create a Sustainability Team:** A sustainability team essentially creates and implements projects that address company-wide environmental problems.

• **Give All Staff and Students a Refillable Sports Bottle:** Encourage your coworkers and employees to ban single-use plastic bottles by giving every employee a refillable sports bottle like ones made by [Nalgene](http://www.filterforgood.com). There are a wide variety of bottles available including BPA-free plastic bottles and stainless steel bottles.

• **Place a Filtered-Water Carafe in the Faculty Room Refrigerator:** Placing a filtered-water pitcher like a [Brita](http://www.filterforgood.com) into every refrigerator in your office is a quick and easy way to help lower plastic bottle waste. One Brita pitcher filter can effectively replace as much as 300 standard 16.9-ounce bottles.

• **Distribute Literature To Employees On the Harmful Effects of Water Bottle Waste:** In 2006, the average American used 167 disposable water bottles, but only recycled 38. Americans used about 50 billion plastic water bottles in 2006. However, the U.S.’s recycling rate for plastic is only 23 percent, which means 38 billion water bottles – more than $1 billion worth of plastic are wasted each year.
• **Provide Employee Incentives For Bringing In and Using Reusable Bottles:**
  Encourage using reusable bottles by providing an incentive or contest for students and staff. See which grade level can truly “ban the bottle” and provide the winners with a lunch party!

• **Give New Life to Old Plastic Bottles:** Bring new life to them! Here are a few things you can make with your old single-use bottles
  - water bottle plant waterer
  - water bottle hampster tunnel
  - water bottle cannon
  - water bottle iPod speaker
  - water bottle rocket
  - water bottle tripod

**5E Model - Evaluation:**

**ESTIMATED TIME:** 5 minutes

**GUIDING QUESTION:** What did I learn about plastic bottles and pollution?

**PROPOSED PROCEDURE:**

**STEP 1:** Have students complete the Exit Card in Handout 2.
Handout 1: Action Plan

Name: ____________________

Create an action plan that addresses one or more strategies to reduce plastic bottle consumption in your community.

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Handout 2: Exit Card

Name: _______________________

Complete the questions below:
1. What area gave you the most difficulty today?

2. Something that really helped me in my learning today was...

3. Something I still don’t understand is...?

4. What connection did you make today that made you think, “AHA, I get it!”
Bye, Bye Bottled Water

Residents of a rural Australian town have made history. They voted to ban the sale of bottled water. It is the first community in the country, and possibly the world, to take such a drastic step.

Residents of Bundanoon, Australia, cheered after their approval of the ban at a town meeting on July 8, 2009.

"I have never seen 350 Australians in the same room all agreeing to something. It’s time for people to realize they’re being conned by the bottled water industry," said Jon Dee. Dee helped lead the campaign against bottled water.

Bundanoon’s concern about bottled water had been developing for years. It started when a company wanted to build a plant for water extraction in the town. Residents were furious. They could not believe that an outsider would take their water, truck it to Sydney for processing, and then sell it back to them. The outrage sparked the campaign to ban the sale of bottled water in Bundanoon.
1. In this passage, the word, “ban” means
   A to give permission to do something.
   B to reduce tap water use some of the time.
   C to allow bottled water use all of the time.
   D to forbid from using something.

2. To find the meaning of the word, “ban” you should
   A use context clues
   B look at the entire passage.
   C find a dictionary.
   D just know what the word means.

3. This article is an example of
   A realistic fiction.
   B historical fiction.
   C non-fiction.
   D science fiction.

4. What caused Bundanoon’s concern about bottled water?
   A The community was upset at the rising cost of bottled water.
   B The community was furious about the idea of having to buy back their own water.
   C The community did not want any new construction plant in their small town.
   D The community was upset that company representatives did not offer them ownership in the company.
Such anger over bottled water is relatively recent. Bottled water was first popularized in the 1980s. It was thought of as a convenient, healthy alternative to sugary drinks. Today, however, many feel it is an environmental menace. Opponents say that bottled water requires large amounts of energy to produce and transport. In addition, some of the bottles end up in landfills.

There are also concerns about the contents of bottled water. Opponents say that not all bottled water is pure. Some of it is the same tap water that comes out of a kitchen faucet. Both municipal tap water and bottled water must meet quality standards. However, in some nations, including the U.S., standards are stricter for municipal water than for bottled water. In the U.S., two organizations want the federal government to make new rules for labels on bottled water. These organizations say the labels are unclear. As a result, some consumers may be getting the wrong information.

"Consumers often [wrongly] believe that bottled water is safer or healthier than tap water," one organization said.
5. One of the concerns posed by the author was that
   A  not all bottled water is as pure as tap water.
   B  only bottled water has to meet strict water quality standards.
   C  bottled water is safer than tap water at home.
   D  bottled water is too expensive for the average consumer.

6. The intent of this passage is to
   A  persuade.
   B  inform.
   C  entertain.
   D  frighten.

7. According to the passage, one of the original reasons bottled water became popular was because
   A  it provided an alternative to sugary drinks.
   B  it was easy to serve at sporting events.
   C  the lid made it harder to spill the water in the car.
   D  it was considered cleaner than most tap water.

8. Why do you think consumers believe that bottled water is safer and healthier than tap water?
   A  Tap water does not get tested for health benefits before it is consumed.
   B  Bottled water labels are always specific about the contents inside the bottles.
   C  Advertising for bottled water gives the impression that it has undergone more testing than tap water.
   D  The use of plastic bottles makes bottled water seem sterile and healthier.
Apparently, the residents of Bundanoon did their research on bottled water. At the July meeting, only two people voted against the bottled water ban. One said he was worried that banning bottled water would encourage people to drink sugary beverages. The other was Geoff Parker, director of the Australasian Bottled Water Institute, who represents the bottled water industry.

Parker blasted the ban as unfair. He said the bottled water industry is a leader in researching ways to lessen the effect of bottled beverages on the environment. Plus, he said, the ban leaves consumers with fewer choices.

"To take away someone's right to choose possibly the healthiest option [of what to drink] ... doesn't [make] sense," Parker said.

But tap water is just as good as the water in plastic bottles, said campaign organizer Dee.

"We're hoping [the ban] will [help people] to remember the days when we did not have bottled water," Dee said.
9. What action below would improve the overall quality of the environment?
   - A. increasing bottled water use in homes
   - B. telling people that bottled water is better than tap water
   - C. creating stricter regulations on the use of bottled water
   - D. digging deeper landfills to store empty plastic bottles

10. To find the answer to Question 10, you should first
   - A. re-read the entire passage.
   - B. carefully read each possible answer.
   - C. look up the answer in a dictionary.
   - D. ask your teacher for the answer.

11. What can you conclude about the people or organizations that support the ban on bottled water?
   - A. They want to get rid of bottled water because tap water is cheaper and healthier.
   - B. They do not want people to get the wrong information about the contents of bottled water.
   - C. They want companies who package bottle water to close down.
   - D. They think everyone should drink tap water instead of bottled water because they drink it.

12. To find the main idea of this passage, you would need to
   - A. understand that bottled water is better than tap water for your health.
   - B. understand that tap water is from a faucet in your house.
   - C. re-read the part that deals with tap water versus bottled water.
   - D. read the passage and think about what the author wants readers to know.
13. The issue of bottled water has created much controversy among environmentalists, government officials, plastic water bottle companies, and consumers.

- Explain your position about bottled water. Should there be a ban or no ban on bottled water in your community.

- Describe how your lifestyle might change if plastic bottles and containers were no longer available.

Use specific information from the story and any additional insight to support your response.

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Plastic Bottles
Plastic Bottle Quiz

Which of the following cannot be recycled?
A. Plastic water bottles
B. Glass containers
C. Milk cartons
D. None of the above
Plastic Bottle Quiz

Which of the following cannot be recycled?

A. Plastic water bottles  
B. Glass containers  
C. Milk cartons  

*D. None of the above*
Plastic Bottle Quiz

How many times can glass be recycled?
A. None, glass can’t be recycled!
B. Once
C. About four times
D. Forever
Plastic Bottle Quiz

How many times can glass be recycled?
A. None, glass can’t be recycled!
B. Once
C. About four times
D. Forever
Plastic Bottle Quiz

How many plastic bottles do Americans go through every year?
A. 1.8 million  
B. 2.5 million  
C. 5.3 million  
D. 9.4 million
Plastic Bottle Quiz

How many plastic bottles do Americans go through every year?
A. 1.8 million  
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Plastic Bottle Quiz

Annually, how much plastic wrap does America produce?
A. Enough to wrap up Alaska
B. Enough to stretch around the world twice
C. Enough to shrink wrap Texas
D. Enough to go to the moon and back
Plastic Bottle Quiz

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A. Enough to wrap up Alaska
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C. Enough to shrink wrap Texas
D. Enough to go to the moon and back
Plastic Bottle Quiz

How long would it take a plastic bottle to biodegrade in a landfill?
A. 200 years
B. 1,000 years
C. 25 years
D. 88 days
Plastic Bottle Quiz

How long would it take a plastic bottle to biodegrade in a landfill?
A. 200 years
B. 1,000 years
C. 25 years
D. 88 days
Plastic Bottle Quiz

How much trash do individuals such as yourselves produce each day?
A. 2.5 pounds
B. 18 tons
C. 4.6 pounds
D. 5.4 ounces
Plastic Bottle Quiz

How much trash do individuals such as yourselves produce each day?
A. 2.5 pounds
B. 18 tons
C. 4.6 pounds
D. 5.4 ounces
bottled water
Oceans feed us and sustain us

http://www.youtube.com/watch?v=rf5iHqT1Rzc