



I'm Creating a CO₂ "Monster" (Part One)

60 - 90 minutes

In this lesson, students learn about the effects of car exhaust resulting from the millions of miles driven by Americans each year. Students calculate weekly figures to understand the amount of carbon dioxide their vehicles put into the atmosphere and write creative stories about the "monster" effects of these emissions.

Objectives

- Students will discuss the correlation between automobile use and climate change.
- Students will calculate their individual contribution to the CO₂ emissions stream.
- Students will compose a creative story about the harmful effects of CO₂ emissions.

Materials

- *Creating a CO₂ "Monster" Classroom Presentation*
- Art paper and supplies
- Calculators (one for every two students)

Background

Nowadays, most Americans are accustomed to moving around our towns and cities at will – usually by jumping in cars and driving. Most of us know this isn't the best idea, either for our environment or our health. Yet many Americans continue driving their cars many times a day, often to go to places they might do so by walking, biking, or taking public transportation. Educating students about their contribution to the CO₂ emissions is a good starting point in helping them make more sustainable transportation choices. In the first part of this lesson, students will learn about the harmful effects of these emissions. In the second part of this lesson, students discuss possible steps they can take, with the understanding that any level of action is both positive and encouraging. (**Note:** These lessons focus on the relationship between transportation and CO₂ emissions. You may want to discuss the role of other major contributors, such as energy use in homes.)

Do Now

Ask each of your students how many of them were or will be driven somewhere in a car or school bus that day. Use the class total to calculate a percentage of car and school bus use by the total class.



Mini-Lesson

1. Share the class percentage calculated in the Do Now with the class. Then ask the class the following questions: *Do you think this percentage is an average representation for our community? for our region? for our country?*
2. Tell students that Americans traveled over 4 million miles in cars in 2009, according to the U.S. Bureau of Transportation Statistics. Then ask students this question: *What do you know about the environmental impacts of driving?*
- Explain to students that they are going to learn more about the environmental impacts of driving. Project *Creating a CO₂ “Monster” Classroom Presentation*. Guide students through each of the slides. Encourage students to ask questions and share comments on the information in the slides.

Activity

1. Tell students that they are going to calculate the number of miles they ride in cars or school buses on a weekly basis. They will use this figure and the information they learned in the presentation to write a creative story about the harmful effects of the CO₂ emissions created by their trips.
2. Have students write a list of all the trips they have taken in a car or school bus in the past seven days in their notebooks. For each trip, they should write down the origin, the destination, and estimate the round-trip mileage. (**Note:** Consider having students use an online mapping program to find accurate data.)
3. Place students in pairs and have them share their lists with their partners. Then, have pairs sum up the total number of miles they rode in cars or school buses over the past seven days. Invite volunteers to share their totals with the class.
4. Tell students that they are going to work with their partners to compose a creative story about their mileage totals. The title of their story should be, “I’m Creating a CO₂ “Monster,” and it should discuss the harmful environmental effects of carbon dioxide emissions. Pairs can make their story a mystery, a comedy, a horror story, or another form of fiction, but it must have a clear beginning, middle, and end. They should include their mileage total somewhere in their story, and end their story on a positive note in which they propose a solution to eliminating CO₂ emissions. (**Note:** Depending on time and student interest, consider having pairs make covers, illustrate their stories, and add any other creative touches to make their stories more personal and engaging.)
5. Distribute art paper and supplies to pairs. Monitor pairs as they work on their stories. Allow adequate time – about 30 minutes – for pairs to compose their stories.
6. If time allows, facilitate a class read-aloud of the stories. Alternatively, place the stories at stations around the classroom and allow pairs to circulate through the stations to read the stories. Explain to students that the next lesson will focus on ways they can work to shrink the CO₂ “monster.”

Assessment

Have students create a class list of the environmental impacts of CO₂ emissions discussed in their stories.



Modifications

- Pre-teach unfamiliar vocabulary concepts to **English Language Learners**. Give them a list of important words from the lesson and have them work with a partner to create an illustrated glossary of terms. Each term should include a definition and a simple visual. Consider the following terms for this lesson: climate change, emissions, greenhouse gases.
- Provide an outline or template to help **Students with Special Needs** plan and write their stories.

Extensions

- Extend this lesson by having students compare the different modes of transportation that people in their community use to get to work. After gathering data on the modes used, students can calculate the CO₂ emissions on a weekly, monthly, and/or yearly basis.
- Extend this lesson by having students research the average transportation miles logged in their state (or town or city, if available) and compare their miles to those of the average. They might also examine historical data, or projection data, if available.