Taking Action

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Abstract

During this lesson students will write a formal communication to a target audience suggesting regulations to improve air quality by restricting CO emissions. The purpose of the lesson is for the students to be able to apply knowledge of convection, inversion layers, CO emissions, and city growth to plan a possible solution.

Objectives

Students will be able to:

i. Synthesize information from the past week to write a persuasive letter regarding air quality regulation.

National Science Education Standard

Content Standard D - STRUCTURE OF THE EARTH SYSTEM

- The atmosphere is a mixture of nitrogen, oxygen, and trace gases that include water vapor. The atmosphere has different properties at different elevations.

Arizona Science Education Standards

Strand 6 - Earth Science

Concept 1 – Structure of the Earth

PO 1. Describe the properties and the composition of the layers of the atmosphere.

PO 5. Describe ways scientists explore the Earth's atmosphere.

Teacher Background

Related and Resource Websites

http://coep.pharmacy.arizona.edu/air/index.html
http://www.airinfonow.org/html/health.html
http://www.epa.gov/airnow/
http://www.epa.gov/air/urbanair/co/effrt1.html
http://books.nap.edu/books/0309084849/html/39.html#pagetop
http://www.nas.edu/nrc/

Time	1-2 class period (45 minutes)
Preparation Time	5 minutes reserving the computer lab
Materials	none
Teacher Preparation	5 minutes reserving the computer lab

Activity and Embedded Assessment

1. As students enter the room, have the following question and statement on the board. "Do you agree or disagree with the following? Why? - *There is no problem with the amount of pollutants released into the air by cars today*.
2. Tell students they will be writing a letter expressing their viewpoints about automotive pollution and the regulations governing that pollution, but that first you will visit the computer lab to do some research on CO emissions and current laws about air quality control.
3. Take the students to the lab to research emissions regulations and car emissions. Several good staring places are listed above.
4. Once students have conducted a fair bit of research they will begin writing a letter regarding possible new regulations to improve air quality. This letter can be directed to a city manager, state or national representative, a lobby group, a newspaper, or local family (perhaps even their own). The point of the letter is for students to communicate how air currents, cars, temperature, time of day, and city size affect CO emissions. A possible rubric is listed below

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Rubric for evaluating the letters	
SCORE	**CRITERIA**
5	Student suggests more than one way to regulate CO emissions to improve air quality. Letter addresses all of the following: air currents (convection and inversion), temperature, time of day, city size, and effects of varying types of cars/fuels. Voice of the letter is appropriate to the audience.
4	Student suggests one way to regulate CO emissions to improve air quality. Letter addresses all of the following: air currents (convection and inversion), temperature, time of day, city size, and effects of varying types of cars/fuels. Voice of the letter is appropriate to the audience.
3	Student suggests one way to regulate CO emissions to improve air quality. Letter addresses most of the following: air currents (convection and inversion), temperature, time of day, city size, and effects of varying types of cars/fuels. Voice of the letter is appropriate to the audience.
2	Student cannot suggest one way to regulate CO emissions to improve air quality. – OR - Letter addresses only a few of the following: air currents (convection and inversion), temperature, time of day, city size, and effects of varying types of cars/fuels. Voice of the letter is appropriate to the audience.
1	Student cannot suggest one way to regulate CO emissions to improve air quality. – AND - Letter addresses only a few of the following: air currents (convection and inversion), temperature, time of day, city size, and effects of varying types of cars/fuels. Voice of the letter is appropriate to the audience.

Extension

This lesson can be done after the Lung Attack and Ozone Learning Cycle to include the health information gathered in those four lessons. If that is done then the issue of Particulate Matter (PM), a pollutant of interest related to Asthma and other respiratory illness, should be included in the criteria for a complete letter and time should be allotted for research about Asthma and pollution.

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