Waste to Power

Lesson 8: What Is The Greenhouse Effect?

Lesson Logistics

Watch Teacher-Author Walkthrough Video of this Lesson

Handouts & Reference Links

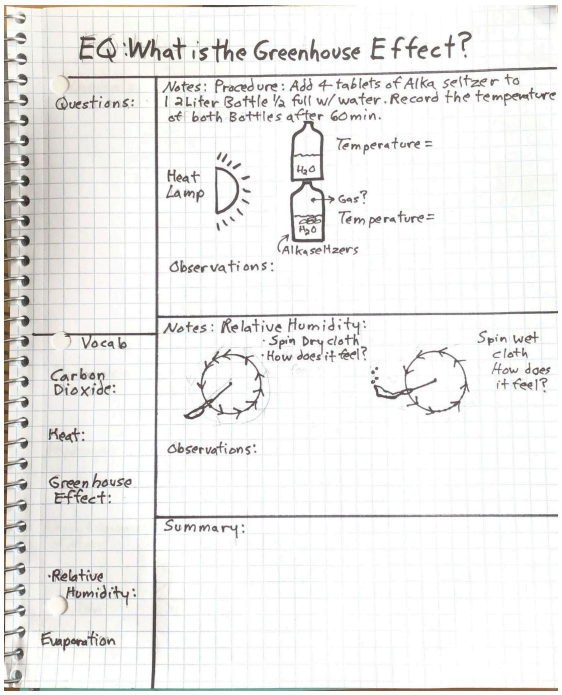
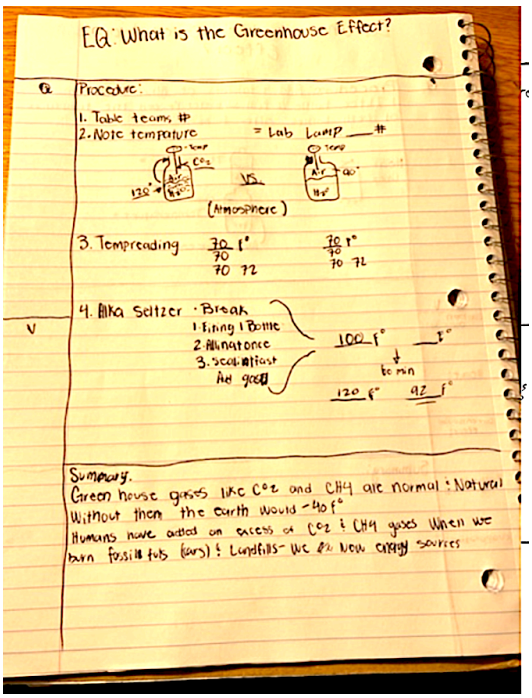
- Greenhouse Gas Demo Video for Teacher Background
- Climate 101 With Bill Nye Video
- Greenhouse Effect Reading
- Additional Greenhouse Effect Student Reading

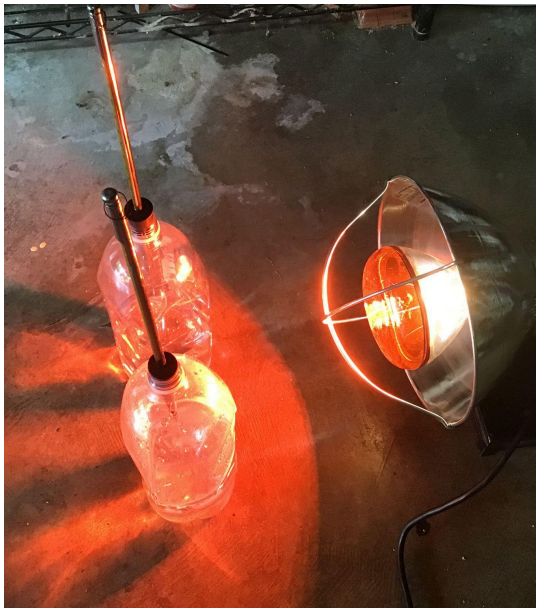
Detailed Description

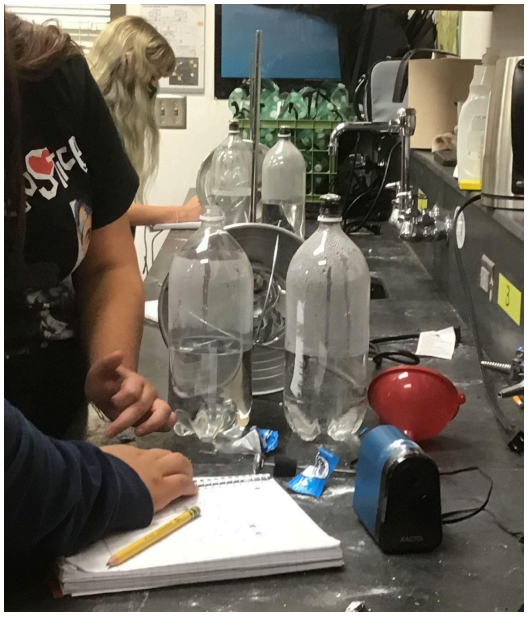
Lesson 8: What is the greenhouse effect?

Essential Question: What is the greenhouse effect?

Day 8: What is the Greenhouse Effect?	
Lesson Preparation	• Set up Cornell Notes • Prepare materials for Greenhouse Effect lab:

	○ Alka Seltzer Tablets, 30 2-liter bottles, thermometers, #3 bottle stoppers, Heat Lamps ○ Teacher background video
Lesson Sequence	1. Introduce the essential question: “What is the greenhouse effect?” and allow students to share what they know about this term and its connection to CO2. Tell students that they are going to create a model of the greenhouse effect in order to understand it. 2. Students prepare Cornell Notes   3. Introduce phenomenon: Modeling the greenhouse effect to understand the effect of greenhouse gasses on global temperatures. 4. Students prepare Greenhouse Gas Lab: ● Each group prepares two 2-Liter bottles by filling them halfway with water. ● Groups add 4 tablets of Alka Seltzer to 1 bottle. ● Both bottles are fitted with thermometers and stoppers. ● Students record the initial temperature of each bottle (plain water and water + Alka Seltzer) in notes. ● Students place both bottles in front of their assigned heat lamp and leave them for 45-60 minutes.





5. While waiting for bottles to heat, watch Climate 101 with Bill Nye video and explore this reading on the Greenhouse Effect
6. After 30-60 minutes have students record final temperature in the bottles (bottle with CO2 will have increased more). Ask students to share their understanding of how greenhouse gases affect global climate.
7. Have students share their noticings and wonderings about the greenhouse effect and how it is affecting the temperature now and how it could affect them in the future.
8. Complete summary of lab as a class: "Greenhouse gases like carbon dioxide and Methane are normal and natural. Without them the Earth would be negative 40 degrees F, the same as our freezing moon. But humans have added an excess of greenhouse gases which heats the earth unnaturally. When we burn fossil fuels or dispose of our organic waste in landfills, we add extra greenhouse gases to the atmosphere. Hotter temperatures create more evaporation of water in the atmosphere which creates more intense storms."
9. Allow students time to reflect and discuss immediate and future actions they could explore toward reducing greenhouse gases and slowing climate change.
10. Optional follow up: Students may read this additional information on the greenhouse effect.