Global Climate Change: From Fossil Fuel Emissions to Ocean Acidification
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This spring chemistry students at Aiea High School were engaged learners in a global climate change project. The goal of the project was to have students understand how the consumption of everyday commodities (ex. fossil fuels) has a global impact (ex. ocean acidification). Students learned about the carbon cycle and greenhouse effect through project based activities.

This project was initially inspired by the CMORE Ocean Acidification kit, which I had used to introduce pH. Students became concerned with the problem of ocean acidification as they learned how it could affect their beaches and supply of poke. Due to their high level of interest, I continued on with the global climate change theme. Students built models of various alkanes, learned about the role of marine microbes in oil formation, and made biodiesel. This all led to the culminating lab of testing fossil fuel emissions.

Students made a hypothesis on which fuel (biodiesel, gasoline, or diesel) has the least carbon dioxide emissions. With guidance and a list of materials, students designed the procedures for capturing exhaust emissions. Students created graphs, which they used to support or reject their hypothesis based on data collected. Small groups created and solved their own post-lab discussion questions which were presented to the class. The unit project ended with writing a reflective paper that addresses the following points: the impact of carbon dioxide emissions on the environment, what they believe to be the most viable energy source for the future, and how their energy source will contribute to mitigating global climate change.

By measuring CO2 from the source and comparing emissions from different vehicles using the same equipment in the ocean acidification experiment, these meaningful learning experiences contributed to students' understanding of the true impact of global climate change.