Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
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Alternative Energies: Student Designed, Renewable Resource Driven "Power Plants"

Guide for Curriculum Unit 18.02.01
by Nicholas Farrell

Global temperatures continue to be affected by the combustion of fossil fuels and the subsequent release of carbon dioxide. This 3-week unit is designed to give 9th grade physical science or environmental science student an introduction to climate change, how humans are influencing it, and what efforts we can make to help limit or prevent it. Topics necessary for this unit include electricity, circuits, greenhouse gases, alternative energies, embodied energy, payback period, and life cycle assessments. This unit functions as a culminating project incorporating all of the topics listed above and challenges students to conduct research, engineer their own alternative energy solutions and prove their efficiency through calculation. Individually or in pairs students must pick an alternative energy, spend a day or more researching it, a day drawing a blueprint for it and creating a materials list, two or three days building model “power plants” to light 3 LEDs, and two to three days writing summary research papers. The quantitative analysis of their models (included in their research papers) and student’s ability to prove their models environmental superiority over fossil fuels will be weighted heavily.

(Developed for Phy-Chem, grade 9; recommended for Environmental Science, grades 9-12)