

Solar in the Classroom

CARBONDALE, COLORADO

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Summer 2011, Ana Rodriguez from the Road to Alaska TIIP Team participated in a class about teaching solar energy. This is her report.

How can we engage our students?

Following our question of practice; “How can we engage our students?” I decided to attend a “Solar in the Classroom” class in Carbondale, Colorado.

We started the class with an ice breaker activity in which students were given hidden energy sources written on an index cards that they had to tape to their back. This can be a great activity to engage students in academic discourse

as they are given hints by other students in the form of questions and answers. The students try to guess what energy source they have attached to their back.



What is the best way to introduce a new topic to our students? One of the best ways to introduce a topic is through a hands on activity, posing a real world problem that students can attempt to solve, or engaging the students through inquiry. When it comes to environmental issues it is not recommended to scare or overwhelm students as an introduction to the topic. It is better to give them a hands on activity, or present the topic in a the form of a story that allows the student to see the relation between their life and the environment, their community, and the power they have to help that community and environment.

Solar Energy and Home Design: We continued the class by talking about some of the technical aspects of solar energy. Solar energy can be introduced by talking about home building designs. The students are given a

set of wooden blocks and they are asked to design a house and write an explanation about the different features of the house. After this activity, an introduction to solar



home design is given, the students learn about insulation,. geometrical orientation of the windows, etc., thermal mass, shading, and ventilation. After the discussion, students redesign their home and they present it through a gallery walk . Students can also build their designs out of cardboard and connect their homes to the energy grid.

Solar Cells

How do they work?

Solar cells convert solar energy to electrical power.

Voltage

Solar Cells come in different sizes and you can think of them as batteries with different voltages. If you connect the solar cells in series their voltages add up. If you had solar cells of 3 volts and you wanted to power up an 9V toy. You would have to connect 3 solar cells in series to reach a total of 9 volts.

Current

To increase the current, solar cells should be connected in parallel. This would allow a toy to run faster.

Solar Ovens

Solar ovens use sunlight to trap heat and cook food.

How can we build them?

There are many designs that use a wide range of materials and students can come up with their own improvements to the design. Students can build a solar oven by using a pizza box, black paper, aluminum foil, masking tape, and clear turkey bags.



Solar Car Competition



Students of Solar in Schools class racing their solar cars.

Solar Car

A really fun activity is to allow students to design a solar car that runs on a solar panel. You can find many of these kits online. The students can change their design by using different materials for the body of the car, changing the shape or mass to fight air resistance and increase speed. Classroom or whole school competitions can be conducted. Families and friends can be invited to see the winners race against each other. Pictures of the competition can be posted on the school newspaper and website.



Solar Fountain

After learning about solar cells, voltage, and current, the students try to connect a given number of solar cells in series/parallel to make a water fountain run. The materials for this activity include a bucket, solar cells, and a small water pump.

