Build a Better Solar Greenhouse

**Introductory Research:** Explain how a greenhouse works. Make sure to include vocabulary words related to solar energy. Including; Radiation, Thermal energy, and Convection.

**Question:**  What is the best design for a solar greenhouse? How does the H2O effect the greenhouse?

**Materials**:

Cardboard Clear plastic 3 or 4 mil

Black Spray Paint White Spray Paint

Thermometers Plastic Wrap

Tape String

Tin Cans Rubber Bands

Insulation of your choice

**Set up:**  Create 2 identical greenhouse structures of your choice. Have your teacher spray the outside of your greenhouses white. Add insulation to the top, back, and sides of the solar greenhouse. Fill cans (already sprayed black) with water and cover with plastic wrap and rubber bands. Stack them in rear of solar greenhouse.

**Procedures**:

1. Face both greenhouses directly into the sun.
2. Measure and record the temperatures in each one as the day progresses. (Every hour/class period)
3. After they have both reached a high temperature (you may choice a time to remove them from the sun, such as lunch time) remove both and place in the shade.
4. Measure the temperature of each every 30 minutes and record the temperatures as they cool.
5. Record your data on a separate sheet of paper.

**Data**: Graph your data using a double line graph.



TIME (MINUTES)

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**Conclusion:**

1. Using data from your experiment, explain which greenhouse stayed the warmest longest and why.
2. What conclusion should you present to the high school Ag student’s about the best greenhouse design?
3. What would happen if you added more insulation material? What if you added 2 layers of plastic to the front?
4. What are other ways of maintain and storing heat when there is no sunlight?
5. Would you save energy in our area by using a solar greenhouse?
6. Could you heat your house using solar energy?