

Solar Cookers:

Mother Nature cooperated Friday and gave us a perfect day for solar cookers. Here are the top five cooker temperatures (during H period with me using same infrared thermometer for all):

- 214 degrees F
- 189 degrees F
- 178 degrees F
- 164 degrees F
- 159 degrees F

Impressive!

Sound & Light:

The temperatures obtained by cookers did not in any way figure into student scores--instead it was simply bragging rights. Here is what students **were** assessed on:

Content:

1. Explain the energy transformation that occurs in a solar cooker. [What energy goes in and what does this energy change into?]
2. Describe materials that **reflect** light waves really well and why this would be desirable in some parts of a solar cooker.
3. Describe materials that **absorb** light waves really well and why this would be desirable in some parts of a solar cooker.
4. Describe materials that **transmit** light waves really well and why this would be desirable in some parts of a solar cooker.

Skills:

1. Analyze **data** you collect to show which cooker design (initial or re-design) is the more effective cooker.

Scores on Aspen:

You will see these tasks in Aspen during the time we were studying ***Sound & Light***.

POP:

Sound & Light POP Week 1, 2, 3...: These weekly scores describe how well students did their jobs in class (followed directions, handled equipment properly, brought materials to class, remained on task) during our unit.

Socratic Sound & Light Assessment on time and directions followed: [13 students did not complete this on time.] As you know, the Socratic Assessment serves as ***one*** summative assessment for the unit.

Initial Design Logs, Re-Design Logs, and Solar Cookers completed on time:

Three separate tasks. Self-explanatory.

Academics--Under Properties of Energy:

Energy transformation in solar cooker. [Both product and interview.]

Reflectors in solar cooker: [Both product and interview.]

Absorbers in solar cooker: [Both product and interview.]

Transmitters in solar cooker: [Both product and interview.]

Sound & Light Socratic Assessment:

Academics--Under Process Skills:

Analysis of data collected to judge quality of cooker. [Both product and interview.]

Family Science:

Bad news: Only 8 students attempted the **Energy Transfer Contraption**. **Good news:** The 8 who did participate created some excellent projects! See the project video on the Family Science page of my website.

Final Graded Activity:

We will end the year on an engaging activity called the Martian Core Sample Problem. Students work in groups and compete against all other groups on the team to solve the problem. In order to solve it, students must apply principles they learned in Properties of Matter, Properties of Energy, Cells & Genetics, Magnetism, Electricity, and Sound & Light. (You may see the introductory video that sets the stage for this activity on the Acting Like A Scientist page of my website.)

So How Did My Child Do “Overall” in Science?:

We are used to answering this question by looking at **one final grade** for a course. My argument (based on much international research) is too many things are averaged together to give meaningful feedback. “My child received an 82 in Math or English.” What does that mean? Where are his or her specific strengths and weaknesses?

In Science the question above is really **six questions**.

- How well developed are my child’s work habits (POP)?
- How well does my child understand properties of matter (POM)?
- How well does my child understand properties of energy (POE)?
- How well does my child understand properties cells & genetics?
- How well does my child understand properties of forces & motion?
- How well does my child understand how to **do** science (SPS)?

So How Did My Child Do “Overall” in Science? Continued:

The answer to one question has little bearing on the answer to another. So why average them together? To answer each of these questions, go to science in Aspen. Click on assignments (the first science screen doesn't give you useful information). Near the upper right are two drop down menus. One is for **trimester**. Click on **“all”**.

The other drop down is for **standard**. In this way you can see how your child performed on multiple tasks within each standard. It may be too much to expect consistent 3s (shows consistent understanding independently), but 1s are red flags (shows little or no understanding). We truly must see science (and all classes) as progressions. As students move through middle school, they should gain stronger and stronger skills.

Summer Science Puzzlers:

As I do every summer, I present Puzzlers to students each week throughout the summer. These Summer Science Puzzlers are meant to be engaging, but also instructive. There is not a student on the team who could not benefit from more experience doing and thinking about science. See the first one, Seesaw Slides, on the Summer Science Puzzler page of my website. www.stithsonianscience.com.

I've enjoyed my time with the current Monsoons. Perhaps our paths will cross again if your child has younger siblings.