Understanding Energy

Lesson 7: Observing and Keeping Records

AUTHOR: Eric Gronseth

DESCRIPTION: Students will review basic scientific observation methods and the importance of keeping and reporting accurate observations. Teacher will discuss with students the different types of variables that they can use in order to gather data and make conclusions. They will additionally discuss some of the problems that can arise from comparing unrelated variables. This lesson is largely an area for the teacher to formulate a preferred strategy for collecting data and ensure that there is a formalized process that students understand, as well as review previously discussed components of the scientific method and data collection during experiments.

GRADE LEVEL(S): 4th, 5th

SUBJECT AREA(S): Energy, solar energy generation, renewable and nonrenewable energy, electricity, light, energy transformation, electricity, photovoltaic, observations, conclusions

ACTIVITY LENGTH: 40 minutes

LEARNING GOAL(S): Students will review scientific observations methods learned earlier and the application of those methods for the solar energy unit. Students will practice observations and data recording. Students will explain the importance of selecting useful variables from which they can collect data. Students will be prepared to implement an experiment in the classroom that they can draw conclusions from.

NEXT GENERATION SCIENCE STANDARDS:

- 4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
- 4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

UNIT CONTENT:

- Lesson 1: Energy Sort
- Lesson 2: Brainstorm Energy Sources
- Lesson 3: Energy Basics
- Lesson 4: Home Energy Survey
- Lesson 5: Solar Energy Basics
- Lesson 6: Home Energy Use

- **Lesson 7: How to Observe and Keep Records**
- Lesson 8: Setting Up an Experiment
- Lesson 9: Collecting and Reporting Data, Making Recommendations
- Ongoing Activities: Daily Observations and Record Keeping

……

Materials List

- Solar energy spiral notebook (1 per student)

Vocabulary

- No new vocabulary is introduced in this lesson.

Student Background

- Students will have previous knowledge of the different types of observation techniques used in science.
- My students had experience tracking and recorded outside and room temperatures earlier in the year during a unit on scientific observation and other tools used by scientists.
- Make sure to review the scientific method if they have not yet covered it or it has been a while since their last discussion of it.

Educator Background

- Teacher will need to have knowledge of scientific observation methods.

……

Lesson Details

Activity – Understanding Scientific Observation and Recording

- Class will review basic observation techniques such as observing change of temperature, energy use, etc.
- Teacher will lead a discussion of the importance of observing and reporting accurate information.
- Teacher will demonstrate the recording of temperature and other scientific variables.
- Students will practice observing and recording different variables and compare their observations with other students. This can be done in a variety of ways, and setting up different stations for them to rotate through where they are making predictions and measuring temperature from gives them the chance to get a feel for using the tools and measuring efficiently.