MSOSW Curriculum
Lesson Seven: Analyzing Data
What can we learn from our Data?

Overview: In this lesson, the student will examine the data collected using the Belkin device and compare with data from other students to make conclusions.

Objectives:

The student will:

- Read a graph – x-axis vs y-axis, etc
- Analyze basic standby power data for trends
- Calculate kilowatt-hours (kWh) spent on standby power, daily, yearly, in the home, country, etc

Standards Addressed:

Science as Inquiry: Identify Questions That Can Be Answered Through Scientific Investigations;
Use Appropriate Tools and Techniques to Gather, Analyze, and Interpret Data;
Understandings About Scientific Inquiry
Physical Science (Content Standard B): Transfer of Energy

Suggested Grade Levels: Middle School (6^{th}-8^{th})

Timeline: 2 class periods

Materials:

Day 1: Completed Measurement Worksheets
Belkin Analysis Excel Spreadsheet Template
(as you change numbers in this file, it will change the resulting averages, graph, and charts for you)

Day 2: Returned homework assignment to discuss

Procedure:

Day 1: **Analyzing Data**

- Each student needs their completed Belkin Energy Monitoring worksheets on hand to answer questions.
- Briefly discuss what the students have learned after doing this section of the project. What were they surprised by? What new questions do they have? Encourage students to include data in their comments whenever possible. Get a basic discussion going on the raw data that the students currently have in front of them.
- Use the provided Excel spreadsheet template to compare class data.

    - Enter each student's data into the spreadsheet template (this could be done also as students turn in their worksheets rather than take class time. The only benefit to taking class time is for the students to get a chance to really see how different their numbers are, discuss outliers and the reasons they may exist, and to cement that feeling of working together as a class to answer the question.)
    - Discuss the benefits of seeing data in a simple chart – then lead discussion to the importance of graphs.
    - Generate graph of data and discuss the axis (The graph is already generated when you enter the data. It is on the *What If (WI)* Graph tab in the spreadsheet. Tabs are accessible at the bottom of the spreadsheet.)
- Give each student a copy of the class data and graph, if possible.
- Homework: Write a conclusion statement (1 paragraph) about the trends discovered in class. They can also include a reflection paragraph about any new questions they have.

Day 2: Reflection on Data Analysis

- Discuss the paragraph written for homework as a class. Answer the following questions as a class to include on the Going Green! Wiki. Post answers to your class page on the Wiki.
- Using your combined class data, answer the following questions to share with other students in the project.

1. What were the biggest vampires you found?

2. How much money could your class save each month by unplugging vampires?

3. How much CO_2 would be reduced if your class unplugged the vampires each month?

4. What was the most surprising thing you found while studying this standby power unit?

Assessment Options for this Lesson:

- Conclusion statements rubric:

100	90	80	70
Answer demonstrates a thorough understanding of the trends in the data and uses clear evidence from the investigation to support.	Answer demonstrates a good understanding of the trends and uses evidence from the investigation to support.	Answer demonstrates a limited understanding with some evidence OR a better understanding, but little to evidence used to support.	Answer is incomplete, but shows some attempt to understand trends OR use evidence.
*Below those guidelines, it is recommended that the student rewrite the assignment to be sure learning is taking place.			