

Start Me Up!

Energy Revealed
Grab & Go Activity
Grade Level 4-12



Main Objective

Learners will investigate the power use of laptops within their school.

Note: If your school has a portable laptop station you may want to have that available for this activity.

Learning Outcomes

By the end of this activity, learners will:

- Identify and estimate power inputs and outputs for example devices and systems and evaluate the efficiency of energy conversions.
- Describe and discuss the societal and environmental implications of the use of electrical energy.

Length of Activity: 1.5-2 hours

Step 1+2: Introduce activity and predict laptop power use

Step 3: Record power readings

Step 4: Discuss the laptop power use

Step 5: Create an action plan

Materials Required

- Circuit level energy metering technology or plug in energy meters
- Laptop
- Copies of the Start Me Up Worksheet

Activity

Step 1: Introduce Activity

- Propose the following question to the class “How much power do you believe computers use?”
 - Have learners take their best guess and write down their predictions.
 - Junior learners could try to guess if computers use more energy than other things (E.g., compare it to the lights, a microwave in use, etc.)

Step 2: Explain the Goals of the Activity

- If you are using the circuit level energy metering technology, choose an area that is being monitored by the technology to plug a laptop in. If you are using a plug-in energy meter, plug the meter into the desired electrical outlet.
- Tell the learners you are going to be recording the energy use at four different points:
 - The first when the laptop is starting up
 - The second when it is on – but not in use
 - The third when it is in use
 - And the fourth in sleep mode
- Have the class make predictions about the different type of power use between those four data points.

Step 3: Set Up the Different Laptop Points and Record Power Usage

- Plug the laptop in and start it up, have learners record the amount of power being used as it is starting up in the worksheet.
- Once the laptop is on and ready to use, record the amount of power used without a learner using it in the handout.
- Now, have learners do some work on the laptop and record the power use while they are working.
- Lastly, put the laptop in sleep mode and record the power use.

Step 4: Research and Record Data

- Look at the 4 recorded data points on power use: starting up the laptop, on – but not in use, in use and in sleep mode. Did the power use change between the 4 different data points?
- Discuss why the power use did or did not change. Was there anything surprising?
- Junior and senior learners can extrapolate your findings to determine how much power is being used by all the laptops in the school. Or, in a given area of the school (i.e., library or computer lab).

Step 5: Take Action!

- Create an action plan for learners/educators to reduce the power usage within the computer labs and library to save power.
- Create posters reminding learners/educators to turn off the computers when not in use.