

Start Me Up!

Energy Revealed
Grab & Go Activity
Grade Level 4-12



Main Objectives

Learners will investigate the energy 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 energy 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

Materials List

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

Activity

Step 1:

- a. Propose the following question to the class “How much energy do you believe computers use?”

- i. Have learners take their best guess and write down their predictions.
- ii. 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:

- a. 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.
- b. Tell the learners you are going to be recording the energy use at four different points:
 - I. The first when the laptop is starting up
 - II. The second when it is on – but not in use
 - III. The third when it is in use
 - IV. And the fourth in sleep mode
- c. Have the class make predictions about the different type of energy use between those four data points.

Step 3:

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

Step 4:

- a. Look at the 4 recorded data points on energy use: starting up the laptop, on – but not in use, in use and in sleep mode. Did the energy use change between the 4 different data points?
- b. Discuss why the energy use did or did not change. Was there anything surprising?
- c. Junior and senior learners can extrapolate your findings to determine how much energy 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!

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