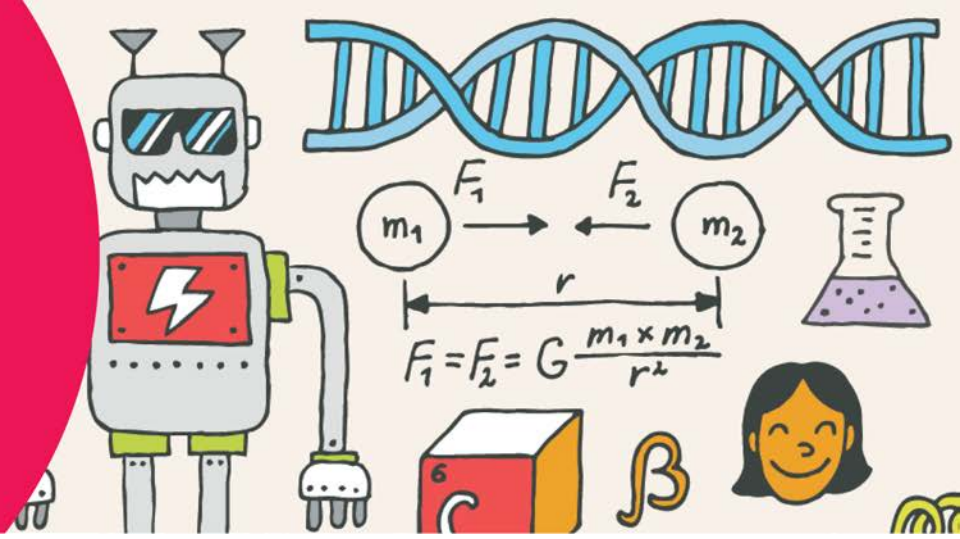
Everyday Energy

Activities to spark curiosity before and after the museum visit



BEFORE YOUR VISIT

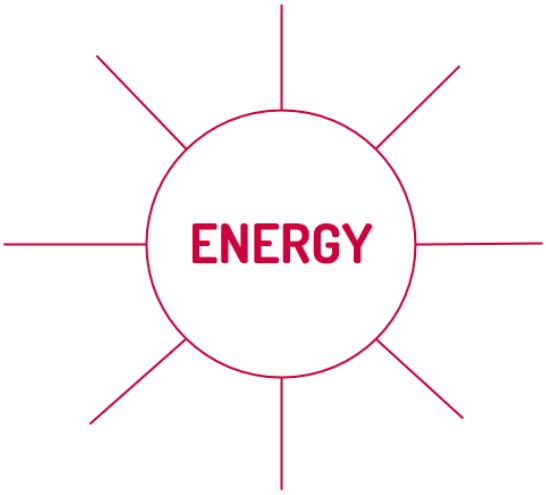
Activity 1: Energy At Home – Morning, Noon, and Night

Learning objective

Students will describe ways in which they use energy at home, and suggest ways they could help conserve energy.

Introduction

Draw a quick brainstorm diagram on the board about ENERGY. Ask students to name different sources of energy: electricity, sun (solar), batteries (chemical), gas/oil.



Materials

- "Energy at home" activity sheet (page 3)
- Pencils

Instructions

1. Ask students to name activities that use energy in their home. Accept all, but only write the correct ones on the board (e.g., watching TV, using an oven, taking a bath, etc). Ask leading questions to help them think of different kinds of energy used. How does your house get heated/cooled? How does your parent's cell phone work?
2. Discuss how each activity uses energy. For example, taking a bath requires you to heat water up, or using the pool requires running a pump and/or a heater.
3. Look at the list that you have written on the board, and ask students what type of energy each activity uses. Electricity (microwave, washing machine), sun (plants, pool solar blanket), batteries (cell phone, smoke detectors, remote control), gas/oil (furnace, car, BBQ), etc.
4. Discuss some of the ways that we can conserve or use less energy at home. This may be difficult for young students to think of on their own. Discuss ideas such such as: turn off lights when not in use, hang clothing to dry, air dry dishes instead of letting the dishwasher dry them, lower the temperature of the house in the winter and raise the temperature in the summer, use the microwave instead of the

oven, take showers instead of baths, unplug battery chargers when they aren't being used, use energy-efficient appliances and light bulbs, wash clothes in cold water, etc.

5. Ask students to complete the activity sheet noting one way they use energy at home, one way they already try to save energy, and another way they think they could save energy. Students can draw a picture and/or write it down.
6. Extension: As a class, discuss some of the ways that people use and conserve energy in the space station, the school, or in your city.

Activity 2: Electricity – How Could We Live Without It?

Learning objective

Students will reflect upon all the activities they do throughout the day that require electricity, and how life would be different without it.

Introduction

Ask students to think about what life would be like without electricity; they could reflect on an experience where the power went out and what they did. You can differentiate between things that need to be plugged in to function and those that can be used for a time before they need to be recharged. An iPad or cell phone doesn't have to be plugged in to be used, as they are converting chemical energy from the battery (they have to be plugged in when the battery needs to be charged); a hand crank flashlight still uses electricity but instead of plugging it in to recharge, you use mechanical energy to charge it back up. For simplicity, it might be better to limit the activity to things that need to be plugged in.

Review some of the energy uses that were discussed in the first activity, reinforcing that while we have a list of many ways that we use energy, they do no all use electricity. Recap some of the ways that we use electricity in the house: lights, microwave, toaster, washing machine, dryer, modem and router for Wi-Fi, etc.

Materials

- Activity sheets
- Pencils

Instructions

1. Review ways that we use electricity in the home
2. Ask students to fill in the "My Day Without Electricity" activity sheets, by drawing three different ways that they would have to do things if they couldn't use any electricity for an entire day. To draw the 'story' of their typical day, students will need to remember what they do in a day and imagine how things would be different without electricity.
3. Discuss how their day would be very different. Students can be encouraged to share their drawings with the class.

ENERGY AT HOME

Write or draw the answer in each box below.

How I use energy at home
How I save energy at home
Another way I would like to save energy

MY DAY WITHOUT ELECTRICITY

How would your day be different if you didn't have electricity? Write or draw your answers in each box below.

When I wake up
During the day when I am at school
In the evening when I am at home

AFTER YOUR VISIT

Activity 3: Drying Challenge

Learning objective

Students will compare the energy required to dry wet clothing using different methods.

Introduction

1. Discuss whether or not students know how their clothes get washed and dried at home (dryer vs clothesline).
2. Ask students how they would be able to dry their clothes if the dryer was broken.
3. Ask students if they can think of a way to dry wet clothes using the materials you have set out.
4. Help students understand that energy from the **wind** and the **Sun** (heat) help dry our clothes outside.

Materials

- A clothesline or rope
- Two to three chairs
- Clothespins (Two per group)
- Fabric swatch or a t-shirt (One per group)
- A spray bottle filled with water
- A fairly large, sturdy object (plastic binder, cafeteria tray, container lid) that the kids can use to create wind to dry the fabric.

Instructions

Hang the clothesline across the room, using clothespins and chairs at either end. You may need a third chair as a centre support. With two clothespins, hang each shirt on the line giving a few feet of separation between each one.

1. Divide the class into four groups of five to six students *(depending on the total number of students)*.
2. Have each group line up in front of a t-shirt.
3. Dampen the t-shirts by spraying three or four sprays of water on each (you want to avoid soaking the shirt or it will not dry). Leave the last dampened t-shirt at the end of the clothesline as a test.
4. Give the first person of each line a tray, which they will use to create wind and dry the t-shirt.
5. At the signal, the first person in each line moves the tray up and down to create wind and dry the shirt
6. After 30 seconds, the signal is sounded again and the next person in line takes over.
7. Complete three relay races and ask the students to compare the difference between each team's shirt, and the one that stayed wet.

We want the students to realize that they are using their body's energy to create wind energy to dry the clothes.

Discussion

Ask students to think about their speed. If they fan really fast, will the clothes dry faster? Are they using more energy? Are they tired? What if they fan slowly, is it creating a lot of wind? Would they use as much energy if they slowed down?

Ventilation/wind (moving the cafeteria tray) speeds up evaporation by replacing the damp air near the shirt with drier air.

Evaporation/heat guiding questions:

- How did your actions allow the t-shirt to dry? (explain ventilation)
- Which t-shirt dried the fastest? Why do you think that happened?
- Are there other ways you can think of that would have worked better (blow dryer)? Why? (heat and wind both help to dry)
- Think about the energy that was used. Fanning the shirts seemed like a lot of work. A hair dryer would use even more energy (electrical), but would dry the shirt faster!

Discuss how hanging clothes to dry is a way to conserve energy vs using an electric dryer.