

# JUST TURN IT OFF



*"A scrap-and-replace program can lease or sell super-efficient cars to low-income Americans—on terms and with fuel bills they can afford—while scrapping clunkers. This makes personal mobility affordable to all, creates a new million-car-a-year market for the new efficiency technologies, and helps clean our cities' air." Winning the Oil Endgame, 2005. www.oilendgame.com*

**Title:** Just Turn It Off

**Grade Level:** K-2

**Lesson Overview:** Students will learn the importance of turning off lights, toys, machines and appliances by investigating battery operated toys and flashlights.

**TEKS:**

**Math:** K.11(B), K.13(A,B,C), K.14(A), K.15, 1.8(B), 1.9(A), 1.11(A,B,C,D), 1.12(A), 1.13, 2.10(B), 2.12(A,B,C,D), 2.13(A,B), 2.14

**Science:** K.1(A,B), K.2(A,B,C,D,E), K.3(A,B,C), K.4(A), K.5(A), K.6(D,E), 1.1(A,B), 1.2(A,B,C,D,E), 1.3(A,B), 1.4(B), 1.6(C,D), 1.7(A), 2.1(A,B), 2.2(A,B,C,D,E), 2.3(A,B,C), 2.4(A), 2.6(A,B), 2.7(A), 2.10(B)

**Social Studies:** K.13(A,B), K.14(A,B), K.16(A), K.17(A), 1.6(B), 1.8(A,B,C), 1.16(A,B,C), 1.18(A), 1.19(A), 2.8(A,D), 2.16(A,B), 2.18(A), 2.19(A)

**ELA:** K.1(A,B,C,D), K.2(A), K.3(C), K.4(B), 1.1(A,B,C,D), 1.2(A), 1.3(C), 1.4(B), 2.1(A,B,C,D), 2.2(A), 2.3(C), 2.4(A)

**Time:** Activity One: 10-15 minutes. Activity Two: 20 minutes on day one then 5-10 minutes a day for the next several days. Activity Three: 20 minutes.

**Materials:** battery operated toy with an on/off switch (something like a moving dog or cat that will be easy for young students to associate with energy), two matching flashlights, batteries for the flashlights, one copy of the Just Turn It Off student worksheet per student

**Vocabulary:** energy, battery, conserve, electricity

**Background:** In this lesson, students will discover what happens to a battery-operated flashlight when it is not turned off. Students will then extend this context to other household items such as radios, lights, toys, and videogames. Video games in particular use little energy per hour when they are on, but many children do not turn them off when they are finished, or they play for long amounts of time and this adds up to lots of energy used. This activity is geared for

lower elementary, but can be modified very easily for upper elementary and Junior High.

Young children tend to associate the word energy with moving around too much ("You have too much energy today. Please sit still."). Therefore it is important to help them understand the greater scope of energy awareness. It is important for students to see energy transforming devices, like battery-operated toys, so they can begin to associate the word energy with power sources and the concept of conservation.

**Setting the Stage:**

Set out the battery-operated toy. Turn it on. Ask the students questions about the toy such as:

- What makes it go?
- How do we know that?
- What would happen if I were to remove the batteries?
- What do the batteries give the toy?
- What would happen if we just let the toy keep running?

Turn off the toy and show students the toy is switched off. Now ask them:

- Is it using energy now?
- How do you know?
- What is energy being used to do?

**Activity One:**

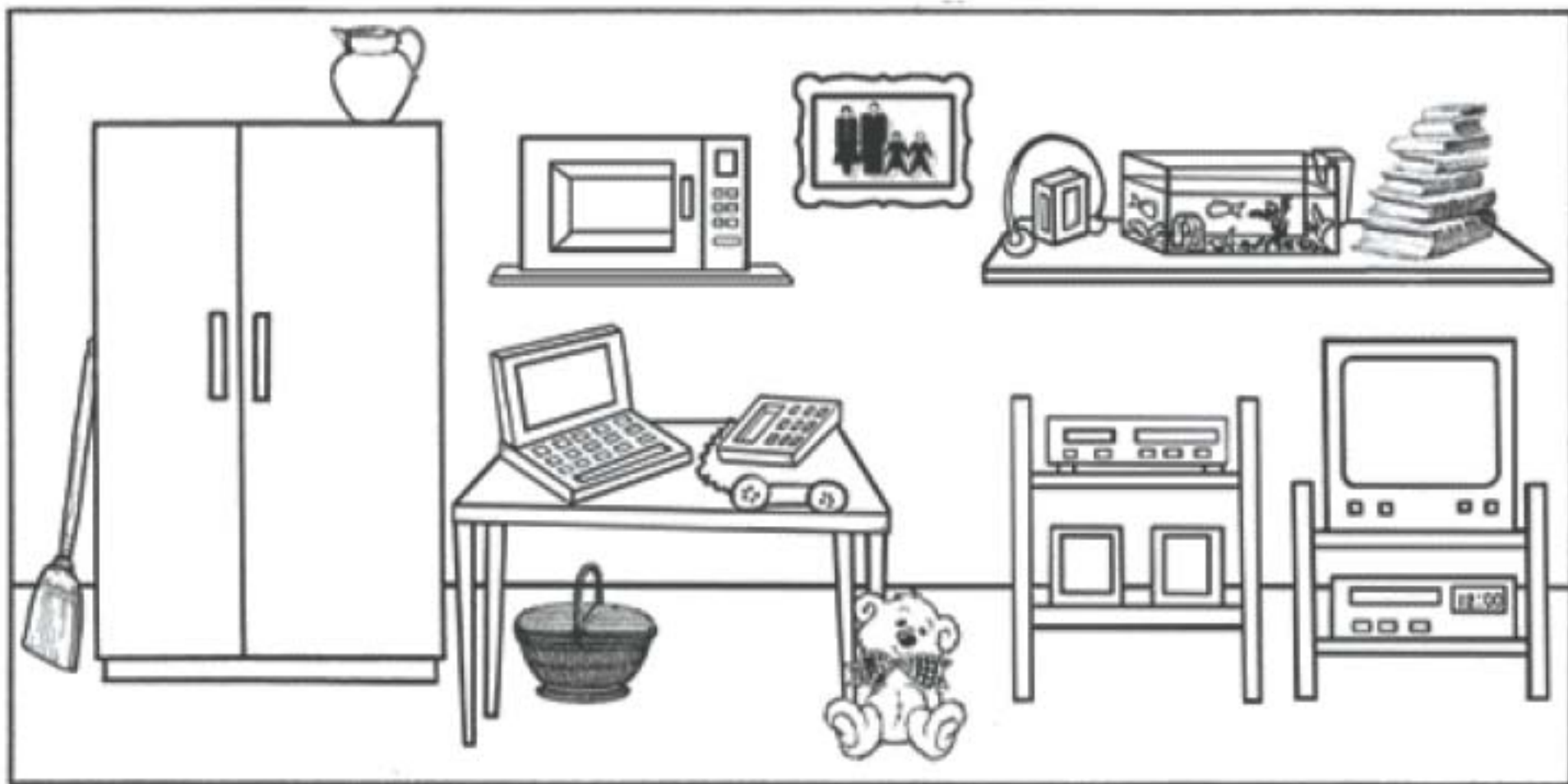
Have your students answer the following questions. Go through each question as a class and discuss the opposing answers without giving a right or wrong correction.

- Where do batteries come from?
- Do your parents ever have to ask you to turn off your toys? Why?

Name: \_\_\_\_\_

Color the things that use energy.

Circle the things that you would turn off to save energy.



Science NetLinks Activity Sheet — Just Turn it Off

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## JUST TURN IT OFF...

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- Do your parents ever get upset when you leave your toys on? Why?
- What would happen if a flashlight were left on all night?
- Do you think that the batteries would last longer if you used the flashlight only for a few minutes and then turned it off or if you left it on all the time?

### Activity Two:

Take two of the same type of flashlight. Label one as ON. Label the other as FIVE MINUTES. Turn on both flashlights. After five minutes, turn the five-minute flashlight off, while leaving the other running. Three times during the day (morning, afternoon, end of school day), have the class make detailed descriptions of each flashlight (brightness, flickering, etc). Record how long it takes before the ON flashlight no longer produces light.

Ask students:

- Which batteries needed to be replaced first? Why?
- Why is it important to turn off the flashlight?
- Which would cost more, leaving a flashlight on or turning it off?

### Activity Three:

Distribute copies of the student sheet entitled Just Turn It Off, Which depicts a room with many appliances. Have students name and point to objects in the picture to familiarize students with names. Tell the students that we all forget and leave things running that we should turn off. Remind them that if we turn them off we will save energy in the form of batteries or electricity just like they learned in the flashlight experiment.

Have the students color all of the things in the picture that use energy. When they are finished coloring, have them

circle the items that they could turn off to save energy. Have students share their different items and the reason for choosing them. Allow students to voice differing opinions as many homes differ in what is essential and what is not. Make sure the students know that while machines may be turned off to save energy, sometimes they must operate all the time due to practical considerations for example, refrigerators, exit signs, electric clocks, traffic signals, etc.).

### Discussion:

Go through some of the following questions with your students to reinforce the idea that by turning an item off they are saving energy.

- What happens when the television or computer is left on?
- What kind of energy does it use?
- Who has to pay for that energy?
- What happens if you leave a lamp on?
- What does energy cause the lamp to do?
- Who has to pay for the electricity to run the lamp?
- Are there some things that can't be turned off to save energy? What are they? Why?

### Extension:

Start a Watt Watchers patrol at your school to help conserve energy. See the Watt Watchers of Texas program manual for further instructions on starting and maintaining this great program.

### Resources:

Adapted from: Science NetLinks  
[www.sciencenetlinks.com/matrix.cfm](http://www.sciencenetlinks.com/matrix.cfm)

[www.wattwatchers.org](http://www.wattwatchers.org)



**Q:** How many aerobics instructors does it take to change a light bulb?

**A:** Five. Four to do it in perfect synchrony and one to stand there going "To the left, and to the left, and to the left, and to the left, and take it out, and put it down, and pick it up, and put it in, and to the right, and to the right, and to the right, and to the right..."

