

how long will it last

**Title:** How Long Will It Last

**Time:** 2-5 class periods

**KERA Goals:** 2.1, 2.2, 2.3

**Objective:**

All energy resources have limits to their usefulness. The students will observe the depletion or limits of several common energy sources.

**Materials:**

Flashlight with new general purpose D-cell batteries  
Small birthday candles  
Matches  
Sugar cubes  
Raisins

**Activity:**

1. **Flashlight energy:** Turn the flashlight on and leave it on until the energy is used up (12-36) hours. Have the students estimate or predict how long they think the energy in the batteries will last. Relate this investigation to the idea that the electrical energy in the batteries will last only a certain amount of time. The energy is limited
2. **Candle energy:** Using a small birthday candle, have the students estimate how long the candle will burn, giving off heat and light energy. Again, relate this investigation to the idea that energy stored in the candle will last only a certain amount of time. The energy is limited. The energy in the candle is chemical energy from oil.
3. **Food energy:** Distribute sugar cubes to the class, one per student. Tell them they can eat them, but to conserve their sugar cubes as much as possible so they can last for a couple of days. At certain times during the day, have the students lick or nibble their cubes. Relate the activity to the fact that food energy of the sugar is limited. It will last only so long.
4. Display a bowl of raisins in front of the room. Tell the students that they are going to experiment with the raisins by eating them, and that they must see if they can make the raisins last for several days. Explain to the students that the supply is limited. When the raisins are gone, they will not be replaced. When the raisins are gone, they will not be replaced. Instruct the students by telling them that at any time they want a raisin to feel free to eat one. When the raisins have been depleted, discuss with the students what factors determine how long the supply lasts: size of class (population), use, alternative sources, amount of resource available.
5. **Summary:** Discuss the meaning of the word "limited," using the experiences the

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students have had with the activities. Relate "limited" to energy resources, such as coal, oil, and natural gas. Also discuss what a renewable resource is, e.g., wood, water, sun, wind. In what ways aren't they limited like nonrenewable resources? In what ways are they limited like nonrenewable resources?

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