

Return To [Primary Lesson Plans](#)

Title: Coal Combustion

Level: Elementary - Middle (1 - 6)

Time: 45 minutes for demonstration and discussion

KERA Goals: 1.3, 2.1, 2.3, 5.1, and 6.3

Objective:

Understand that coal can burn to produce heat. Deducing, problem solving, observing, and drawing conclusions.

Background Information:

Materials:

Paper mobile (see following page)

Mortar and Pestle

Coal (small chunks)

Matches

Spatula

Candle

Rubber gloves

Activity:

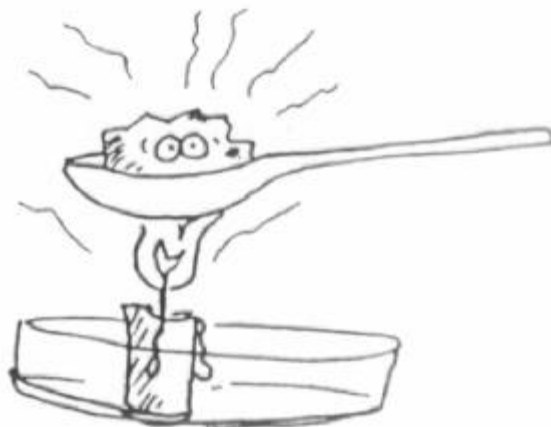
1. Divide the class into small groups of three to four students to discuss the different ways that we get and use heat. (Students may respond with: charcoal grill for cooking, wood for campfire, gas for stove, sun for warmth, hair dryer, television,)

2. Brainstorm a list on the board of their responses.

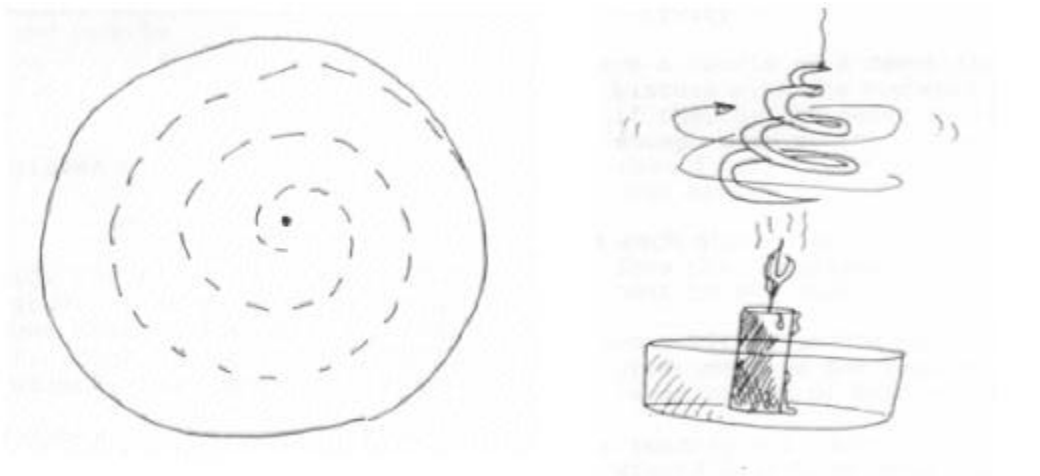
3. Allow each student to grind a small chunk of coal with a mortar and pestle. Use rubber gloves and have a dustpan and brush ready. (NOTE: This may be a dirty activity.)

4. Place a candle on a demonstration desk and light it. Discuss with the students what they think would happen if they held a paper mobile above a lit candle - far enough away so that it would not burn. (Students should reason that heat rises and causes the mobile to spin around.) (NOTE: Move the candle to the mobile.)

5. Construct papermobile as per diagram.



Coal Combustion - Primary



Cut a helix from thick paper and knot a thread through the center.

6. Let each student hold the paper mobile above the candle to show that they were correct. (NOTE: We are converting heat to motion.)

7. Let each student hold the paper mobile above the candle to show that they were correct. (NOTE: Move the candle to the mobile.)

8. The teacher will demonstrate the combustion of finely ground coal to release heat. Place a candle in a glass container or candleholder and light it. Sprinkle a small metal spatula of finely ground coal (the consistency of sugar or finer) into the flame. Notice the sparks.

Lesson Evaluation:

1. Why do we burn things?
2. What did you burn to get to school today?
3. What happened when we burned the coal?
4. Is there energy in the mobile? If so, in what form is it?

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Return To [Primary Lesson Plans](#)