

HOT WATER

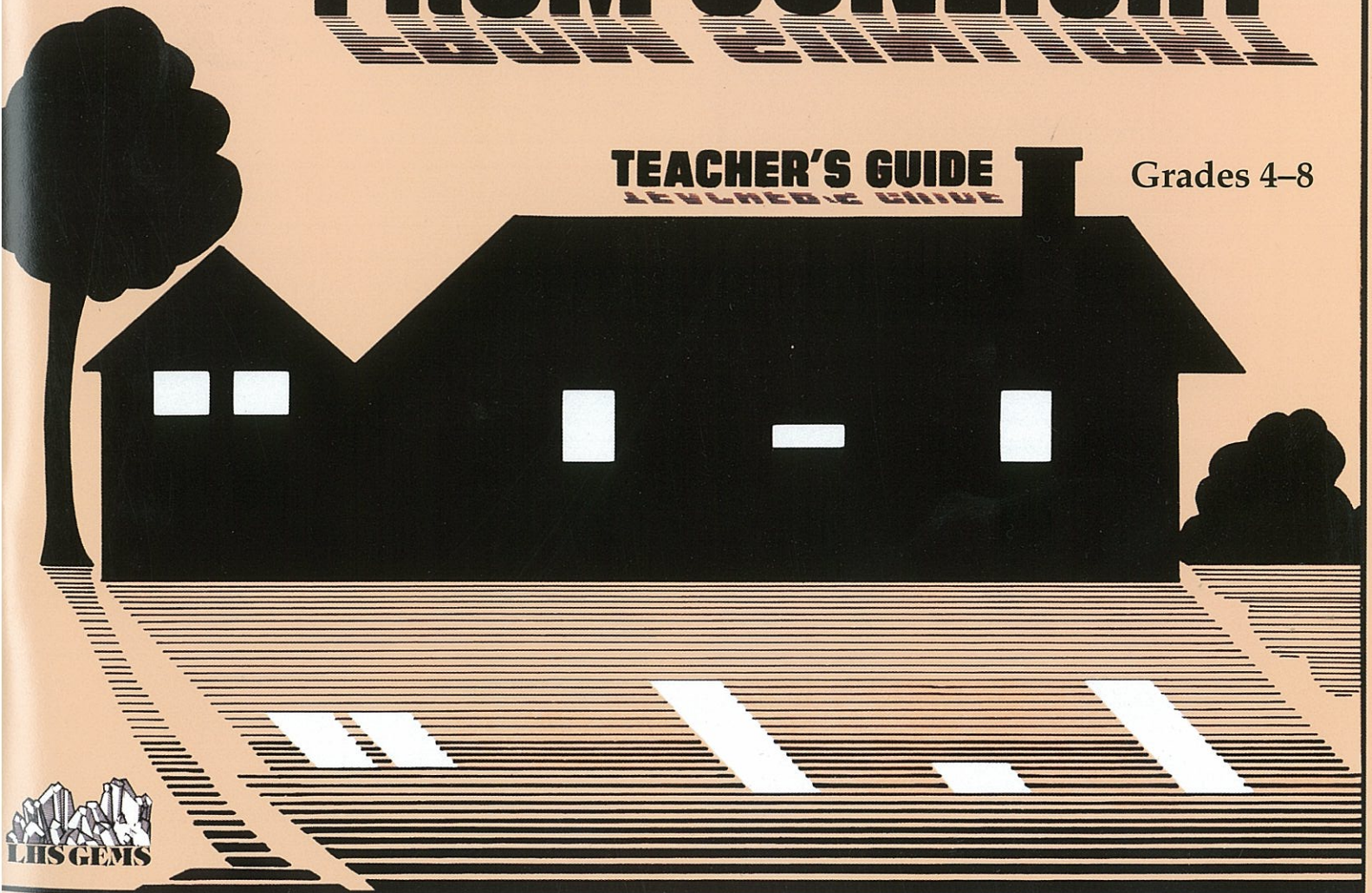
AND

WARM HOMES

FROM SUNLIGHT

TEACHER'S GUIDE

Grades 4-8



Introductory Activity: Controlled Experimentation

What You Need

For each student:

- 1 worksheet, "Growing Plants Experiment" (master included, page 5)
- 1 pencil

Session 1

What You Need

For a class of 32:

- 10 plastic bags, 1-qt. size (heavy duty ziplock type)
or
- 5 pieces of clear acetate, 8 ½" x 11" (22 cm x 28 cm)
- 16 rolls of clear tape
- 4 sheets of white paper (8 ½" x 11") to cover windows

For each student:

- 1 Celsius thermometer (see Technical Notes, page 51 for more information)
- 1 model house cut-out sheet (master included, page 11)
- 1 pair of scissors
- 1 ruler

Optional:

- overhead projector
- transparency of cut-out
- 16 glue sticks or small containers of glue

Session 2

What You Need

For the class:

- 1 minute timer or watch with second hand

For each group of 4:

- 1 roll of transparent tape

For each student:

- 1 model house with thermometer (constructed in Session 1)
- 1 piece of cardboard, 6" x 8" (16 cm x 20 cm), to be used as ground insulation for the house
- 1 data sheet, "The Solar House Experiment" (master included, page 16)
- 1 pencil

Optional:

- 1 manila file folder or clipboard for recording data

Session 3

What You Need

For the group:

- chalk and chalkboard
- or*
- marking pens and butcher paper
- photocopy of the three Greenhouse Effect overlays (masters included, pages 26–28)
- overhead projector

For each student:

- "Results and Conclusions" sheet for the Solar House Experiment (master included, page 29)
- their data sheet from Session 2
- a pencil

Session 4

What You Need

For a class of 32:

- 16 clear plastic bags (standard size for produce) with twist ties
- 1 1/2 gallons of water (6–8 liters) in two buckets or basins

Note: The temperature of the water should be the same as or less than the outdoor air temperature, but NOT warmer.

For each student:

- 1 paper cup (5 oz.)
- 1 aluminum pie pan
- 1 piece of cardboard 6" x 8" (16 cm x 20 cm)
- 1 data sheet "The Solar Water Heater Experiment" (master included, page 36)
- 1 thermometer (Celsius)
- 1 pencil

Optional:

- 1 manila file folder or clipboard for outside recording

Session 5

For the class:

- chalk and chalkboard
- or*
- marking pens and butcher paper

For each student:

- their data sheet, "The Solar Water Heater Experiment" from Session 4