

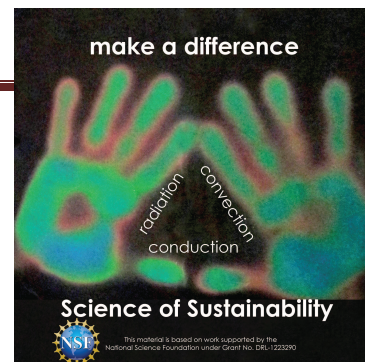
Materials for “Exploring Heat Energy”  
(based on a on a group of 24 divided into 4 teams of 6)

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Materials for first demonstration:

- 2 paper cups
- 1 cup “cozy”
- 2 thermometers

Animation videos (see Project SOS link at [www.palousescience.org](http://www.palousescience.org) )



Materials for demonstrating Conduction:

- Camping pad
- Tables or desks and chairs with plastic or wood tops and metal legs
- 4 sets of **Ice Melting Blocks** (one for each team) (Educational Innovations or Amazon) - \$17.00 each
- Ice cubes, rags

Materials for demonstrating Convection:

- Down jacket or sleeping bag
- Materials to make **Hot Air Balloon Demo** (very thin plastic bag, sticks, tape, and a toaster, or use video from Project SOS link at [www.palousescience.org](http://www.palousescience.org) )
- Materials to make **Full of Hot Air Demo** (paper bags, rod, razor blade, stand, heater or heat lamp or use video from Project SOS link at [www.palousescience.org](http://www.palousescience.org) )

Materials for demonstrating Radiation:

- Hat, shirt or gloves with Omni-heat reflective lining (\$18-\$40 Amazon or Columbia)
- 12 Hotspot Hand warmers (three for each team) (Emergency Essentials) - \$2.95 each
- Space blankets (\$2-\$5 each - can be cut in half or fourths for each team)

Materials for “**Keep the Hot Cocoa Hot**” Challenge:

- One or two thermos bottles with hot cocoa (about 60-65 °C) (150 °F)
- 5 paper cups (one for control, one for each team)
- 5 larger plastic containers (one for control, one for each team)
- cotton balls, bubble wrap, foil, newspaper, fleece etc. to use to slow conduction, convection or radiation
- Scissors, tape
- 5 digital thermometers (aquarium ones from Entirely Pets) - \$7 each
- 5 stopwatches (Amazon) - \$3.75 each (These are not necessary if everyone starts at same time)
- 4 Data Tables for Hot Cocoa Challenge (one for each team)
- 4 pencils (one for each team)
- ROLES for team members (4 copies, cut up and put in cups to draw from)

Additional materials that are fun to use, but not essential:

- \* A digital infrared thermometer to compare surface temperatures (Educational Innovations) - \$32.95
- \* Thermocolor sheets that can be used for lots of experiments showing temperature changes - \$25/sheet (Edmund Scientific) (1/4 sheet/pair) so 3 sheets/class = \$75