

Types of Heat Transfer

Summary

Students will complete one mini lab on each type of heat transfer. You may have students complete all three mini labs in one class period or complete one at a time.

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Materials

- colored hot water
- ice
- cold water
- 4 small glass or clear bottles
- 16 small marbles or rocks to weigh down the small bottles of hot water
- three 1000 mL beakers
- paper towels
- hot pads
- hot plate
- three 100 mL beakers
- 4 thermometers
- 4 dark cloths
- 4 heat (or incandescent lamps) lamps
- pan
- ladle
- cold water container
- [student worksheet](#)
(attached)

Background for Teachers

You may explain conduction, convection, and radiation to your students beforehand or use these mini labs to introduce and explain the concepts.

Instructional Procedures

Go over the introduction material with students.

Instruct each group as to which experiment they should start and end with. For example: 1,2,3, 2,3,1, 3,1,2. If I have 12 groups then I have 4 groups start with each experiment so that they don't all need the same materials at once.

Ask students to record their work on a piece of paper for each experiment.

Assessment Plan

Example Paragraph Answers

: (answers will vary, occasionally students may not get expected results)

Experiment 1: The temperature of the thermometer increased because heat was transferred from the

lamp to the dark cloth/thermometer by radiation.

Experiment 2: The hot water rose out of the bottle and layered above the cold water in the beaker because it is less dense than the cold water. Some of the cold water went into the bottle to replace the water that had moved out. This is an example of convection.

Experiment 3: The temperature of the beaker increased when I poured hot water in it because heat was transferred from the water to the beaker by conduction.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)