Name: _____ Class: _____ Date: _____

Baffle Your Skin

Learner Outcomes:

- Describe the nature of thermal energy and its effects on different forms of matter, using informal observations, experimental evidence and models

Key Terms:

Heat Temperature Thermal energy

Background Information: There are specialized cells within our skin that can detect changes in temperature, but sometimes, these sensors can be fooled!

Question: How does our skin detect thermal energy?

Hypothesis: Write an hypothesis of what you experience when you place one hand in hot water and then in room temperature water and the other in cold water and then in room temperature water.

Materials:
Buckets
Hot water
Cold water
Room temperature water
Thermometer

This investigation / activity has been adapted from:
Bullard J, Krupa G, Krupa M, et al. *Science Focus 7*. Toronto, ON: McGraw-Hill Ryerson.

Procedure:

1. Half fill one bucket with warm water, one bucket with cold water and one bucket with room temperature water. Record the temperatures in each bucket.
2. Put one hand in the cold water bucket and the other in the warm water bucket for 1 minute. Record what you experience.
3. Quickly put both hands in the bucket of room temperature water. Record how each hand feels.
4. Repeat steps 2 and 3 but switch hands. Record your observations.

Observations:

Analysis:

1. What was the manipulated variable in this experiment?

2. What was the responding variable?

3. Were your hands able to detect the actual temperature of the water? Explain.

4. What do you think your hands were able to detect?

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5. What is the difference between heat and temperature?

6. Why do you think your senses were fooled in this investigation?

Conclusion: Answer the question.

Extension:

1. Use your observations in this activity to explain how the same air temperature can seem warm in the winter and cool in the summer.

2. They say that if you put a frog into a pot of boiling water, it will leap out right away to escape the danger. However, if you put a frog in a pot of water that is cool and pleasant, and then gradually heat the kettle until it starts boiling, the frog will not jump out. Explain this phenomenon in terms of our perception of heat and temperature.

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