

Heat (Thermal Energy)

Grade 3

Big Idea

Thermal energy can be produced and transferred.

Questions to support inquiry with students:

What are the sources of thermal energy?

How is thermal energy transferred between objects?

Learning Standards: Content

- 1) sources of thermal energy
- 2) transfer of thermal energy

Content Elaborations

- 1) Thermal energy can be produced by chemical reactions (eg. hand warmers), friction between moving objects and the sun.
- 2) conduction – (touching - holding an ice cube)
convection – (current – why do we hold mittens over a heat source?)
radiation – (through space by a wave, such as heat from the sun)
thermal energy transfer – the cause of weather

Learning Standards: Curricular Competencies

Questioning and predicting

- ▶ Demonstrate curiosity about the natural world
- ▶ Observe objects and events in familiar contexts
- ▶ Identify questions about familiar objects and events that can be investigated scientifically
- ▶ Make predictions based on prior knowledge

Cause and effect is the basic principle that an action will result in a consequence. In science, this concept is closely related to the concepts of pattern and change. However, cause and effect may or may not have a predictable outcome

- Key questions about cause and effect:
 - What are some causes of biodiversity in BC's wetlands?
 - What is the effect of wind on mountains?

Planning and conducting

- ▶ Suggest ways to plan and conduct an inquiry to find answers to their questions
- ▶ Consider ethical responsibilities when deciding how to conduct an experiment
- ▶ Safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate
- ▶ Make observations about living and non-living things in the local environment
- ▶ Collect simple data

Processing and analyzing data and information

- ▶ Experience and interpret the local environment
- ▶ Sort and classify data and information using drawings or provided tables
- ▶ Use tables, simple bar graphs, or other formats to represent data and show simple patterns and trends
- ▶ Compare results with predictions, suggesting possible reasons for findings