**A “Cool” Heat Challenge**

**Curriculum Links:**

LS2.1 Investigate properties (e.g., colour, taste, smell, shape, and texture) of familiar liquids and solids. [SI]

AW2.1 Investigate properties of air and water (in all three states of matter) within their environment. [SI, TPS]

MC5.1 Investigate the characteristics and physical properties of materials in solid, liquid, and gaseous states of matter. [CP, SI]

MC5.2 Investigate how reversible and non-reversible changes, including changes of state, alter materials. [SI]

HT7.1 Assess the impact of past and current heating and cooling technologies related to food, clothing, and shelter on self, society, and the environment. [TPS, DM, CP]

HT7.2 Explain how understanding differences between states of matter and the effect of heat on changes in state provide evidence for the particle theory. [SI]

HT7.3 Investigate principles and applications of heat transfer via the processes of conduction, convection, and radiation. [SI]

**Science Background:**

Encourage students to be creative in their problem-solving strategies, within the scope of the rules. Students will discover that any strategy that increases the amount of heat or increases the surface area of the ice will result in a faster melt. You might ask students how they would change their strategies if the ice cube were doubled in size, if they were melting a large block of ice, or if they were melting an equal mass of ice chips.

**Materials:** one ice cube for each student

**Directions:**

Melt an ice cube as fast as you can, using the following three rules:

1. You cannot put the ice cube in your mouth
2. You must collect as much of the melted water as possible (decide how you will collect the water)
3. You can only use what is at your desk right now

**Inquiry Questions:**

1. What strategies did you use?
2. How did you decide on the strategies?
3. What strategies worked best? Why?
4. What would you do differently next time?
5. If the rules changed and you could use anything, what would you use?
6. Suggest “real-life” situations that might apply to this activity (e.g., making orange juice from frozen concentrate).

**Source:** Pearson Saskatchewan Science 7 page 180