Skills Compétences Canada

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WE ALL SCREAM FOR ICE CREAM

TRADE LINK: COOKING/CHEF

RATIONALE:

You will explore properties of fluids and use the particle theory to explain their observations. You will also learn about chemical reactions and try to relate them to your own experiences. Cooks take advantage of this knowledge in their preparation of foods. Kitchen chemistry can involve a range of scientific principles from the simplest to the most complex.

METHOD:

In this activity, you will cool down milk, sugar and vanilla by putting the solution in a test tube and placing it in a container filled with an ice and salt mixture. It will cool down enough to freeze. In essence, the salt and ice takes heat away from the milk solution.

MATERIALS:

1. Soup can, coffee can or small metal container.
2. A test tube or baby food jar.
3. 10ml of salt.
4. Crushed ice.
5. Celsius thermometer.
6. 15 ml homo milk (or half and half cream).
7. Pinch of sugar.
8. Vanilla.
9. Swizzle stick, popsicle stick or thin stick (for stirring), about 15cm long.

GETTING STARTED:

Chemical reactions have become a part of our everyday life. They are all around us. You may have learned how we can affect the properties of some objects by adding new substances to them. In some places, in the wintertime, people add salt to roads to lower the freezing point of water. This helps to keep roads free of snow and ice. In this activity, you will take advantage of this scientific principle and get a "tasty" result.

This activity is based on a resource called "Making Connections: Linking Science and Math with Trades and Occupations," developed by the NWT Apprenticeship and Occupational Certification.

THE ACTIVITY:

1. Put crushed ice in the metal container so that it is about 1/2 full.
2. Add 10 ml of salt to the ice and stir until the temperature is between -8 degrees Celsius and -10 degrees Celsius.
3. If the temperature is not low enough, add more salt and keep stirring.
4. Put 15 ml of milk (or half and half), a pinch of sugar and one drop of vanilla into a CLEAN test tube (or baby food jar).
5. Place the test tube in the metal container and pack the ice around it.
6. Stir your mixture for the next 15 to 20 minutes until your ice cream is ready to eat.
7. Describe all the reactions (physical and chemical) which took place during this experiment.

BRANCHING OUT (EXTENSIONS AND VARIATIONS:

Challenge yourself to lift an ice cube floating in water out of a container without touching it. All you are allowed to use is a string and some salt. Explain what happens.