Ice Cream in a Bag

**Materials:** plastic zip bags of two sizes, milk, sugar, ice, salt, spoons, gloves or socks, optional toppings or add-ins (vanilla, chocolate syrup/chips, sprinkles, etc.)

**Background Information:** There are three main states of matter on Earth: solids, liquids, and gases. Matter can change from one state to another when enough heat energy is transferred into or out of the matter. In order for milk or cream to become ice cream, heat energy must be transferred out of the milk or cream making it colder.

**STEM Career Connection:** Food technologists work in the food processing industry. Most food technologists work in the research and development departments of food processing companies but some work in processing plants as quality control inspectors or production supervisors. Food technologists study the chemical changes that take place in stored or processed foods, try to find ways to process food so that fewer nutrients are lost, study the effects of food additives, and work to ensure there is good flavor, appearance, and texture in processed foods.

**Literature Connections:** *Curious About Ice Cream* by Bonnie Bader, *From Milk to Ice Cream* by Stacy Taus-Bolstad, *Joe-Joe the Wizard Brews Up Solids, Liquids, and Gases* by Eric Marc Braun

**Challenge:**
1. Gather materials.
2. Pour 1 cup milk, 1 tablespoon sugar, and any other optional add-in into the smaller baggie and seal closed.
3. Fill the larger baggie about half full of ice and sprinkle in a couple tablespoons of salt.
4. Place the smaller baggie inside the larger baggie and seal the larger baggie.
5. Shake the bags until the liquid milk mixture freezes into ice cream. This could take a few minutes. Make sure to wear gloves or socks on your hands or hold a towel to the bag to prevent damage to your skin - the bags get really cold!
6. Remove the small baggie from the larger baggie, open, and enjoy!

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