**STEM Lesson**

**Title:** The Great Ice Cube Melt

**Grade Level:** 6

**Description:** Design and build a container which will prevent an ice cube from melting for at least 3 hours.

**Standards:**

Science – Standard 6, Objective 1

Scientific Method (write a hypothesis, controls, variables, testing and

evaluating data, forming a conclusion)

Math – Tables, Data Analysis, Graphing Data Values

Engineering – Construction on container based on knowledge attained about

insulators.

**Time Needed:**

* Introduction – 5 minutes
* Literacy – 10 minutes
* Launch – 40 to 45 minutes (approx. 10 minutes of active time)
* Challenge – Varies, see plan for details
* Assessment – 10-15 minutes

**Materials needed:**

* Introduction – Ice Melt Discs or You Tube Video https://www.youtube.com/watch?v=pyfM\_fKSICE
* Literacy – Shell Education, Physical Science “Heat” (copies included)
* Launch – Insulators VS. Conductors Worksheet

water, thermometers for each container, several containers (aluminum can, ceramic mug, insulated cup, plastic cup, Styrofoam cup, glass, paper cup, etc.)

measuring cup, timer

* Challenge – Building materials for container, ice cubes

**Instructions:**

1. Literacy: Standard 6 Shared Reading (TRB), Shell Education “Heat”
2. Hook: Before introducing the topic of conductors/insulator pass around the ice melt discs. Let students touch them and then ask which disk will keep an ice cube solid the longest. Discuss answers and student explanations/predictions for their answers. Demonstrate and discuss. Explicitly teach what an insulator is.
3. Launch: Follow format on the provided worksheet (each student should have their own copy of the worksheet). Make sure you have a timer set to read temperature for each given interval.
4. Challenge: Design and build a container which will keep an ice cube from melting for 3 hours. (We chose to have the students each build their own container at home and bring to school on an assigned day.)

On the assigned day:

* Discuss the variables and controls for the test.
* Have each student show their individual boxes explaining what materials were used etc. Have class make predictions as to which containers will be successful.
* Place ice cubes in containers at the same time and close. Move containers to a common location, common height etc. away from direct heating/cooling sources.
* Wait 3 hrs. , open boxes and make observations.

**Assessment:** Have a class discussion referring back to the student’s original predictions. Discuss the actual results and formulate conclusions.

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