Save the Cube!

For this activity, learn how heat energy transfers. You will use materials found at home to create an insulation layer to prevent an ice cube from melting outside.

Suggested Ages - 6th - 8th grades

Materials -

- Clear plastic jar with a lid
- An assortment of insulating materials (feathers, foam, cotton balls, newspaper, cardboard, styrofoam, plastic bags, etc.)
- Ice cubes

Activity Instructions -

- Your challenge: design a way to insulate your jar well enough so an ice cube can be kept in it for 5 minutes without melting.
- Take about 5 minutes to plan and prepare your jar. You may create multiple jars if you wish to experiment with different designs.
- When ready, quickly add one ice cube in the jar and close the lid.
- Head outside and place your jar somewhere.
- Set a timer for 5 minutes. After the timer goes off, check your jar to see if the ice cube has melted.
- Repeat this experiment as many times as you would like, changing variables (environment, jar size, insulation) to observe the different outcomes.

Guiding Questions -

- What is **heat energy?** What are some sources of **heat energy**?
- What prevents an item from losing **heat energy** (helps it stay warm)? What helps an item stay cold?
- Does one material or a combination of materials work better to insulate the ice cube? Do some materials work better than others? What did you try that worked best?
- Does the environment around the jar affect the ice melting? What does a sunny location versus a shady location do? How would the outcome be different on a warmer or cooler day?
- Does the size of the jar matter? Would a larger or smaller jar affect the melting of ice?
- Does anything happen on the outside of the jar? What is **condensation**? With better insulation, is there more or less **condensation**?

Extra Information -

- Humans are **endothermic,** meaning we generate our own heat. When it is cold outside, what do we do to stay warm? How is this similar or different from insulating an ice cube?
- Reptiles and some other animals are **ectothermic**, meaning they use their environment to regulate their body temperature. What are some ways they stay warm or keep cool? How is this similar or different from this ice cube experiment?