

BIRDEE Unit 1 Lesson Plans

1.4.3. Thermal Regulation Experiment Part 1: Introduction & Set Up

Students will explore the concept of Thermal Regulation by conducting an experiment using a jar filled with ice and a temperature sensor to record data. Teachers will model the lesson by preparing the “control” jar.

Prior to the lesson: Teachers should become familiar with the experiment and Set-Up Instructions outlined here: [1.4.3. Thermal Regulation Experiment TEACHER DIRECTIONS PPT](#)

Teachers should also obtain the experiment supplies:

- 8 oz. Wide mouth plastic jars
- Govee Temperature sensors
- Velcro tape
- Ice
- Cotton
- Bubble wrap
- aluminum foil
- Tape
- Scissors

Engage: 15 min (Presentation)

Now, we are going to go back a step in the EDP to Understand. We've already worked on understanding existing solutions, understanding our client's needs, and understanding our problem requirements. We are going to do an experiment to help us understand the science behind our problem, specifically how good different materials are at keeping something at a constant, stable temperature aka thermal regulation (which we have talked about before) and the scientific concept of thermal regulation: heat transfer.

View: [1.4.3. Thermal Regulation Experiment Part 1: Introduction & Set Up](#)

Teacher Note: All items are included in the PPT with instructions in speaker notes.

Explore: 20 min (Group)

Experiment Set-up

Materials (per group): plastic Jar, ice, Govee sensor, 1 insulator (student's choice)

- **Step 1:** Prepare your workstation with one jar and one insulator.
- **Step 2:** Attach the Govee sensor to the inside of the jar lid using Velcro
- **Step 3:** Place 3 ice cubes in your jar (avoid broken ice cubes to ensure consistency). It should be ½ full and not touching the sensor.

Student Handouts:

N/A

Student Materials:

8 oz. Wide mouth plastic jars
Govee Temperature sensors
Velcro tape
Ice
Cotton
Bubble wrap
aluminum foil
Tape
Scissors

Instructional PPT's & Materials:

[1.4.3. Thermal Regulation Experiment Part 1: Student Intro & Set Up](#)

Teacher Resources:

[1.4.3. Thermal Regulation Experiment TEACHER DIRECTIONS PPT](#)

Web Resources:

N/A

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- **Step 4:** Cover your group's jar in your choice of insulator.
- **Step 5:** Allow time for the ice to melt. We will analyze the data tomorrow.

Teacher Note: *Make sure that students use only one layer of one material for each jar.*

Wrap Up: 5 min

We will export our data and visualize it in our next class.