

BIRDEE Unit 1 Lesson Plans

1.6.3. Elaborate to Prototype 2

Students will export and plot their data to understand how their design performs against their requirements. They will use this data to make changes to their design and plan a second prototype.

Prior to the lesson: Teachers should export student data according to the directions linked here: [1.4.4 Thermal Regulation Part 2: Analyze Data TEACHER DIRECTIONS](#). Teachers should share the individual .csv data files with each student team using the teacher's preferred communication tool.

Engage: 5 min

View: [1.6.3. BID WOW!](#)

- What from nature could have inspired the Eiffel Tower?
- Think about things that have similar structures. What in nature has a lattice structure?
- **Class Discussion** on what students think
- **Play video:** [Eiffel Tower and Bones](#) (in ppt)

Evaluate: 20 min (Group)

Now we are going to analyze our data from our test yesterday to see how our first prototype was at fulfilling our thermal insulation requirement. You will follow similar steps for data analysis as you did when we completed the thermoregulation experiment.

Teacher Notes:

- *The teacher will share the Google sheet with students, so that students can simply copy and paste their data to the sheet and get plots.*
- *The students will plot their data on the Google sheet.*
- *Walk around the discuss with each group how well their prototype thermally insulated based on their design requirements.*

Elaborate: 20 min (Group)

With information from data collected from our thermal insulation test of prototype 1, make changes to your conceptual design for prototype 1. You will build your second prototype from this conceptual design. Make sure to think about how well your first prototype fulfilled the thermal insulation requirement.

Make a plan for building your second prototype. Don't forget, you will need to bring in the materials you will make your second prototype from tomorrow.

Student Handouts:

N/A

Student Materials:

Microsoft Excel or Google Docs

Instructional PPT's & Materials:

[1.6.3. BID WOW!](#)

Teacher Resources:

[1.4.4 Thermal Regulation Part 2: Analyze Data TEACHER DIRECTIONS](#)

Web Resources:

N/A

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Extend/Wrap Up: 10 min (Group)

EDPL:

- Update the EDPL test with your Govee sensor test results for prototype 1.
- Upload your conceptual design for prototype 2 to the “Ideate” tab in the EDPL. Include what you changed from your conceptual design for prototype 1 in the description of the conceptual design for prototype 2.

Teacher Note: Encourage students to be mindful about things they change from their first prototype. They need to document what they change in their solution and why they think that change was needed.

You will be completing your second prototype in our next class and need to **bring in any materials needed.**