

# BIRDEE Unit 1 Lesson Plans

## 1.4.2. Conceptual Design 1

*Students will use the brainwriting technique to ideate ideas for the design challenge. They will share their ideas with their group and create their first conceptual design for this design challenge.*

### Engage: 5 min

#### View: [1.4.2. BID Ideation](#)

- You are trying to design and build a laboratory-treehouse in the rainforest. What in nature could you draw inspiration from for your treehouse?
- What functions would your treehouse need to have to be successful? List at least three functions. Brainstorm 2-3 organisms that could inspire each function your treehouse needs to have.
- **Class Discussion** on what students brainstormed

### Engage: 5 min

**Teacher Note:** Teachers will engage students in a brief refresher about the design challenge and everything the students learned in Module 3 and 1.4.1 before having them complete the conceptual design worksheet.

- What is our design problem? Who is the client?
  - Creating a food delivery system for EatEZ.
- What are some of the requirements that we came up with for our design problem?
  - Must keep food hot/cold for a certain amount of time
  - Must be easy to carry
  - Etc.
- What are some of the thermal regulation systems we learned about? These can be from nature or examples in the human world.
  - Air conditioning, car engine coolant, insulation for a house, etc.
  - Termite mound, polar bear fur, blubber, honeybee, etc.

### Explain: 5 min

Now, we will ideate more solution ideas for our design challenge using the Brainwriting Technique that we used for our dirty shoes problem.

Remember to consider what you know about the client's problem, existing solutions, and BID when ideating ideas. The sketches don't have to be perfect, just sketch what comes to mind no matter how out-there it may seem. A sketch can be a complete solution or part of a solution.

#### **Teacher Note:**

- Encourage students to review all the activity materials they have worked on this Module to get ideas for their design. Also, remind students of the good sketching practices they learned with the dirty shoes design challenge.

### Student Handouts:

N/A

### Student Materials:

\*notebook paper or sticky notes for brainwriting

### Instructional PPT's & Materials:

[1.4.2. BID Ideation](#)

### Teacher Resources:

N/A

### Web Resources:

[BIDI Graphic](#)

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- *Additionally, teachers should emphasize the iterative nature of the EDP. Sometimes throughout the EDP you get new information that results in different design ideas. Since we've done a conceptual design, we've learned about thermoregulation in nature. Let's revisit our design ideas and see if we can come up with more given our new knowledge.*

**View:** [BIDI Graphic](#)

Remember, if you choose to incorporate some of the biology we explored yesterday in your design, follow the BIDI steps. Select the biology concept you want to incorporate into your design and then integrate it into your design.

**Explore: 15 min** (*Guided Brainwriting*)

**Teacher Note:** *Teachers will guide students through the brainwriting technique by putting timers up on the board and reminding students what the steps of the technique are.*

**Brainstorming: Brainwriting:** (*individual*)

- **2-Minute Write/Sketch:** You will have 2 min to write down ideas for how to solve the design problem or sketch a solution to the problem. You can do this on sticky notes or notebook paper. (Do not include your name.)
- **3-Minute Talk:** Share your ideas with your group by posting your sticky notes on a wall or sharing your paper on the table. Select the top ideas.

Repeat 1.5x. Sketch, talk, sketch.

**View:** [2 Minute Video Timer](#)

**Extend: 15 min** (*Group*)

## **Conceptual Design 1**

Look at your ideas from the brainwriting activity and your idea from 1.3.5. Work together with your group to create conceptual design 1. A conceptual design is a complete design, where ideas can be either a complete design or a partial design.

**EDPL:** Upload your conceptual design 1 to the EDPL "Ideate" tab. Add any Research Notes, if needed.