

BIRDEE Unit 1 Lesson Plans

1.5.5. Evaluate to Prototype 1

Students will evaluate their three conceptual designs in the EDPL and create a final conceptual design that the group will prototype. Students in each group will work together to create a plan for gathering prototype materials.

Engage: 5 min

View: [1.5.5. BID WOW!](#)

- What could have inspired the change from the ice climbing ax on the left to the ice climbing ax on the right (see images on slide 2)?
- What organisms in nature do similar things to an ice climbing axe?
- **Class Discussion** on what students think
- **Play video:** [Ice Climbing](#) from 1:40-2:30 (in ppt)

Explain: 5 min

You will complete the [1.5.5. Conceptual Design 4: Initial Prototype](#) handout, which has 4 parts - Evaluate conceptual designs in EDPL, Sketch Initial Prototype, Plan for materials, and a check to make sure you have integrated what you have learned into your design.

Teacher Note: *It may be helpful to show this video on how to make a cardboard prototype to students.*

View: [How to make a cardboard prototype](#)

Explore: 25 min (Group)

Part 0: Review the information you have learned throughout the unit, along with your previous conceptual designs. Work in your group to evaluate your conceptual designs in the **EDPL** “evaluate” tab. Choose if a design is likely/unlikely to fulfill a requirement and give a reflection (or explanation) on your choice.

Part 1: Sketch the plan for your initial prototype. This sketch will be detailed, and include dimensions (Width x Length x Height) and labels for each portion of their system. If needed, add specific details of “zoomed in” subsystems.

Part 2: Work together to identify materials needed to complete your prototype, and create a plan for gathering the materials needed to build your design.

Teacher Note: *Remind students that they should use simple, readily available materials (paper, cardboard, old fabric samples, tape, glue, etc.) They will need to bring in these materials to the next class.*

Student Handouts:

[1.5.5. Conceptual Design 4: Initial Prototype](#)

Student Materials:

N/A

Instructional PPT's & Materials:

[1.5.5. BID WOW!](#)

[How to make a cardboard prototype](#)

Teacher Resources:

N/A

Web Resources:

N/A

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Evaluate: 5 min *(Group)*

Part 3: Check

Did your group integrate what you have learned about existing solutions, inspiration from biological systems, and heat transfer to this prototype?

Extend: 5 min *(Group)*

EDPL: Upload images of your prototype 1 and conceptual design into the “Ideate” section of the EDPL, if your group made changes to your design from conceptual design 3.