

SIGNAL LAB

Visual Signal Design

Inspired by Butterfly Wing Structures

Challenge Card 2



Natural model

OBSERVE

DESIGN

TEST

IMPROVE

Design mission

Design a visual signal that uses reflection, color, surface design, or pattern to make information easier to notice or interpret.

Signal or cue

- light
- reflection
- pattern
- color

Physics connection

- light
- reflection
- surface structure
- color
- visibility

What is detected?

- visibility
- recognition
- warning or attention

Student thinking prompt

How can surface design make a signal more visible?

Butterfly Wing Structures Challenge Card

Back of Challenge Card: Plan, Test, and Explain

Use this card with your Team Design Mat.

1. Define your system

- Sender:** What sends the signal?
Signal: What carries the information?
Receiver: Who or what detects it?
Meaning: What should be understood?

2. Choose your signal or cue

- light
- reflection
- color
- pattern
- texture
- contrast

Pick one main visual cue, or combine two if it helps.

3. Plan before you build

Sketch the visual signal. Label the sender, signal, receiver, meaning, and surface feature. Decide what counts as success before you test.

4. Test it

Another team should try to notice and interpret your visual signal before you explain your answer.

5. Troubleshoot

What did you expect? What happened? Was the signal too dim, too busy, hard to see, or misread? Change one thing and test again.

Use this explanation frame

Our design is inspired by butterfly wing structures because ____.
The sender is ____.
The visual signal is ____.
The receiver notices ____.
We improved visibility by ____.

Your challenge

Make a visual signal easier to notice and interpret.