



SfS Away from the Classroom!

E04: Engineering Redesign (Recommended for Grades 3-8)

Please use the following resources to learn about the engineering redesign process.

Watch this Video: <https://www.youtube.com/watch?v=0OtbV8-Mdr4>

Answer these questions:

- Why is it important for an engineer to spot a failure point?
- How can engineers test a plan?
- What happened to the Tacoma Narrows Bridge?

Activities: Follow these directions to make, test, and redesign a paper parachute.

You will need:

<ul style="list-style-type: none">• Paper, napkin, or tissue• Scissors	<ul style="list-style-type: none">• Ruler• Tape	<ul style="list-style-type: none">• String, yarn, or thread• Action figure
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1. Use the materials you've collected to make a parachute for your action figure.
2. Remember:
 - a. The bigger the action figure, the more weight the parachute has to carry
 - i. What can you change in your design so it works for a heavier load?
 - b. The tape can reinforce your paper's corners.
 - i. Why do the corners need to be reinforced?
 - ii. Is there another way to solve this problem?
 - c. Test until your design fails then think about why it failed.
3. Redesign after you understand the failure points of your first design.
 - a. Test your prototype (model) again.
 - b. Have you improved your design to stop the failure?
4. Continue until you feel you have a successful prototype.

Make observations & use Claims, Evidence, and Reasoning!

1. **Claim:** My first design wasn't as good as my final design.
 - **Evidence:**
 - **Reasoning:**
2. **Claim:** Failure helped me understand how to improve my design.
 - **Evidence:**
 - **Reasoning:**

