

Designing a Parachute

Description:

Students will employ the Engineering Design Process to create a parachute.

Objective(s):

Students will design and test parachutes using a variety of materials.

ISTE/NGSS Standards:

4a: Students know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.

4c: Students develop, test and refine prototypes as part of a cyclical design process.

MS-ETS-1.1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS-1.2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

Teq Lesson Plan Activity

Essential Question(s):

How do engineers and scientists approach challenges with extreme limitations?

Materials:

- tissue paper
- napkins
- construction paper
- newspaper
- paper towels
- string
- tape
- weights (such as washers)
- measuring tape (to measure drop height)
- ruler (for measuring circle radius)
- stopwatch (for recording drop time)
- EDP Graphic Organizer

<https://docs.google.com/document/d/1UYqqzT3aMgdNVb6-zog02Q4mY686WuM-2iHSEfsyLps/edit>

Do Now:

1. Have students discuss why parachutes are needed and how they think they work.
2. Have class generate a list about what a parachute needs to be effective (slow down, large, able to fit in a small compartment, reusable).

Lesson:

1. Using their EDP Graphic Organizers, students will organize their materials and sketch a prototype of their parachute.
2. Once given teacher approval, students will construct their parachutes using their selected materials.
3. Students will test their parachutes with a weight attached, timing the descent and seeing how quickly the object slowed down.

If time, students will redesign and retest their parachutes in their EDP graphic organizers and reflect on which material seemed to work best.

Teq™ Lesson Plan Activity

Closure:

Students will complete the reflection in the EDP graphic organizer.

Extension:

Lead the class in a discussion on the impact forces can have on falling objects. [Here](#) is a useful handout.