Parachute Play: Discovering Drag

Grade Level: 2nd - 3rd Grade

Objective:

- Understand the force of drag and how it affects falling objects.
- Develop problem-solving skills through the engineering design process.

Standards:

- **NGSS 3-PS2-1:** Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- **NGSS 3-PS2-2:** Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

Materials:

- Plastic trash bags, coffee filters, plastic grocery bags
- String, pipe cleaners
- Toilet paper rolls
- Scissors, tape

Procedure:

1. **Introduction to Drag (10 minutes):** Watch a video explaining drag and discuss how it affects objects moving through the air. Parachute Video Link
2. **Design and Construction (20 minutes):** Students choose their materials and build their parachutes.
3. **Testing and Data Collection (15 minutes):** Drop parachutes from a height and measure the time of descent.
4. **Evaluation and Redesign (10 minutes):** Discuss the results and encourage students to think of ways to improve their parachute designs.
5. **Final Test and Reflection (10 minutes):** Test improved parachutes and discuss which designs were most successful and why.

Assessment:

- **Performance Observation:** Assess students on their ability to follow the design process and their engagement with testing and redesigning.

- **Reflection Journal:** Have students write about what they learned about drag and how different designs affected the descent of their parachutes.

Extension:

- **Design a Parachute for a Toy:** Challenge students to design a parachute for a small toy and explain how the design needs to change based on different weights.