# Sky Saviors: Engineering Egg Parachutes

**Grade Level:** 4th-5th Grade

**Objective:**

- Apply understanding of drag to design a parachute that can safely land an egg.
- Engage in the engineering design process with a focus on iterative testing and optimization.

**Standards:**

- **NGSS 4-PS3-4:** Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
- **NGSS 5-PS2-1:** Support an argument that the gravitational force exerted by Earth on objects is directed down.

**Materials:**

- Variety of parachute materials (plastic trash bags, coffee filters, plastic grocery bags)
- String, pipe cleaners, tape, scissors
- Materials for providing cushion (cotton balls, tissue paper)
- Eggs, small containers or cups for egg-holding contraptions

**Procedure:**

1. **Introduction to Drag (10 minutes):** Watch a video on drag and discuss its implications in parachute design. Parachute Video Link
2. **Parachute and Container Design (25 minutes):** Design and build the parachute and egg container using selected materials.
3. **Initial Testing (15 minutes):** Drop the parachutes from a height to test their effectiveness.
4. **Evaluation and Optimization (15 minutes):** Analyze the results, discuss improvements, and apply changes.
5. **Final Presentation and Test (10 minutes):** Students present their final designs and conduct a final test drop.

**Assessment:**

- **Performance Tasks:** Evaluate parachutes based on design criteria and the egg's condition post-drop.
- **Engineering Journal:** Students document their design choices, challenges, and results, reflecting on their learning process.

**Extension:**

- **Historical Research Paper on Parachute Design** Students will explore the history and evolution of parachute design in a short research paper. They will investigate how technological advancements, material innovations, and different use-cases have shaped parachute design from its earliest conceptions to modern day applications. This activity encourages students to use various sources to understand the interplay between technology, science, and societal needs in the development of parachutes.