Airplane Activity for E Week

INTRODUCTION

There are many planes flying daily. Some carry people, some carry products, and some are used for other things like farming. In this activity, groups will assemble a model airplane to test its flight ability.

Ask questions to get participants thinking about airplanes:

- Why do we use airplanes?
- What do we need to think of before building airplanes?
- How are large planes different from small planes?
- What about planning for how and where a plane takes off/lands?

ENGINEERING CONNECTIONS

There are so many decisions to make about an airplane's design. There also are a lot of decisions to make about the airports they take off or land at. Engineers must consider the specific needs of each airplane or airport project and understand the science behind air resistance. When they draw up detailed plans for design – including measurements, shapes, and materials –they consider the advantages and disadvantages for each.

SCIENCE CONNECTIONS

Airplanes are affected by several types of forces. Lift is the force created by the wings of the airplane, which push air down so the aircraft rises up. Weight, along with gravity, pulls down on the plane, opposite the lift. Thrust is the force that propels the plane forward, created by the aircraft's engines. Drag is the air resistance that acts opposite the thrust.

Airplane Activity for E Week

Airplane Wars: Design Challenge

Split class into two groups so each can make small-scale versions of airplanes.

MATERIALS:

Each group will get:

- Balsa wood airplane kits (Kits can be found on Amazon, Walmart, etc.)
- Color markers

For testing after, you will need:

- A tape measure
- A stopwatch
- Large (preferably outdoor) space to fly the planes
- A sheet of paper to record results

INSTRUCTIONS:

Time limit: 1 hour

1. Split the class into two groups, each with their own set of materials.
2. Each group will use their kit to construct an airplane.
3. The groups will have time to decorate their airplanes before they fly them.
4. Test your planes by each group flying them, timing how long they are in the air, and measuring the distance they travel. Repeat each plane's flight three times to get an accurate average. Make sure each team starts their flight from the same position.

OBSERVE

Which plane flew the farthest? Was it the same plane that stayed in the air the longest? Do the types of materials used to construct the planes have any effect on their flights? What materials do you think could have worked better?

LEARN

Construction of airplanes and airports often involves using the same set of materials; however, each design varies depending on the needs of that particular aircraft or space. Engineers use those factors to meet the needs of the airplane or the airport.