

Title:

Hoop Gliders

Workshop Overview

Description: Participants will learn about balance and air resistance while making their own hoop glider

Topic Area(s): Engineering/ Aerodynamics

Grade Level: P-4

Duration: 45 minutes

Learning Outcomes:

- Understand the engineering design process and apply it in a hands-on activity
- Learn about balance and air resistance in relation to flight

Hook

Participants will use their knowledge of flight to create their own hoop glider!

Background Information

The two sizes of hoops help to keep the straw balanced as it flies. The big hoop creates "drag" (or air resistance, the action of friction that slows something moving through air) which helps keep the straw level while the smaller hoop in at the front keeps your super hoop glider from turning off course. Some have asked why the plane does not turn over since the hoops are heavier than the straw. Since objects of different weight generally fall at the same speed, the hoop will keep its "upright" position.

Materials

Per Camper:

- ½ piece of Cardstock (cut lengthwise so the piece is longer with smaller width)
- 1 Straw (straight, not bendy)
- Scissors
- Tape

Safety Considerations

Be careful handling scissors

Procedure

- Cut two strips out of the cardstock, about 1 inch (2.5) wide, with one being about 13 cm long and one being about 26 cm long
- Create a circle with each strip of cardstock and secure it using tape
- Tape the paper loops to the ends of the straw (ensure that the straw is lined up on the inside of the loops)
- Throw the hoop glider, making sure the smaller hoop is in the front



Wrap-Up/Debrief

- What happens if you make the straw a different size?
- What happens if you change the size of the hoops?
- Add a third hoop, does that make it fly better?
- Do the hoops have to be lined up in order for the glider to fly?

Additional Resources

<https://sciencebob.com/the-incredible-hoop-glider/>