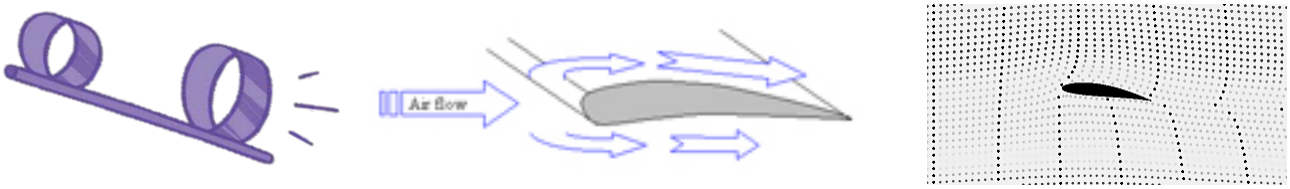
Exploring Hoop Glider Science Name Per

http://legacy.mos.org/discoverycenter/aotm/2013/02

Background Information:

Air flowing over a curved surface (like the top of an airplane wing) moves faster than air flowing over a flat surface (like the bottom of an airplane wing). As the air goes past the wing, the shape of the wing also turns the air downwards.



View: http://en.wikipedia.org/wiki/Lift_(force)#mediaviewer/File:Karman_trefftz.gif

The difference in the speed of the air, combined with the turning of the air downward mean that there is a pressure difference between the top and bottom surface of the wing: there is low pressure on the top of the wing and high pressure underneath the wing. **Since objects naturally move toward areas of low pressure, this causes the wing to be 'sucked up' into the air, in an effect called lift.**

Forces to know about:

1. **Lift** is also what helps your hoop glider stay up in the air. The curved surface of the hoop glider's loops create a difference in pressure above and below the loops.
2. **Gravity**: downward pull toward the Earth
3. **Drag**: also called **air resistance**- the more "stuff" there is, the harder it is to move that stuff through the air
4. **Thrust**: the force you exert when you throw it

We cannot change gravity, but by maximizing lift, minimizing drag and with just the right amount and direction of thrust, hoop gliders can fly quite far!

Questions to think about while you experiment:

1. **How far does your hoop glider fly?**_____
2. **Can you design a hoop glider that flies farther?**
3. **What happens when you change:**
   a. **Loop Shape?**_____
   b. **Attach Loops Inside Out side? Paper Clips or Clear Tape?**_____
   c. **Straw Diameter and Length?**_____
   d. **Glider Weight?**_____
   e. **Loop Size? Width and Diameter?**_____
   f. **Number of Loops? Placement?**_____