

Flight:



Boomerang

Audience: 3rd – 5th

Key Words: Flight, boomerang,

Key Concepts:

Lift is an upward force.

Learning Objectives:

Students will explore the forces of flight using boomerangs.

Materials:

1 Boomerang model (model attached to file)
Pre-cut plain cardboard boomerangs
(Run the copies of the boomerang on card stock, then glue each copy to another piece of card stock before it cutting out.)

Notes: From Ohio Statewide Science Workshop (OSSW) on Flight

Procedures:

Gather students in a large open area such as a gymnasium or a playground.

Distribute the cardboard boomerangs, but do not tell the students what they are called.

Have the students put their names on their models.

Ask the students how they could make this model fly? Let them experiment with various ideas. What do they notice about the flight of this model? Ask them if they have ever seen or heard of something that returns to the place from which it was thrown. Have they ever heard of boomerangs? Does this look like the boomerangs the students might have seen in stores, on television, or in books?

Allow students to freely experiment with the boomerangs. Ask for several to demonstrate their most successful way of throwing the models. Has anyone thrown their model so that it returns?

Demonstrate how to hold the boomerang straight up by one blade, and flick it forward and upward with a snap of the wrist. Encourage the students to practice until the boomerangs make a semicircle and return to the places from which they were

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thrown. Why does it fly in this path? What does shape have to do with it?

What Happened/What's Going On:

A boomerang is kind of like a wing spinning through the air. According to the United State Boomerang Association, as the boomerang spins forward, more lift is generated at the top of the spin than at the bottom because the top side is always moving faster through the air. If the boomerang were not spinning, more lift at the top would cause the boomerang to flip over. Why? Because of “gyroscopic precession”. Gyroscopic precession is a pretty complicated concept, but you’ve seen it in action if you’ve ever seen anyone ride a bike without using their hands. Spinning things have a certain stability to them, and it is that stability from spinning that gives the boomerang its ability to return to the thrower.

For further information about how boomerangs work and the history of boomerangs, go to www.usba.org/Resources/Science.html. Chet Snouffer, organizer and officer of the U. S. Boomerang Association and 12-time National, 3-time World Champion, lives in Delaware, Ohio. He began throwing and catching boomerangs when he was 10 years old, after his grandfather helped him make a one from a blueprint in a magazine.

Academic Content standards:

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Boomerang Model

