Twisting Tornado
Teacher Resource

Grade Level **K-12**

Objectives

1. The student will understand the concept of a vortex and how it applies to a tornado.
2. The student will demonstrate the use of 21st century technology with a document camera.

National Standards

NS.K-4.1; NS.5-8.1; NS.9-12.1	Science as Inquiry
NS.K-4.4; NS.5-8.4; NS.9-12.4	Earth and Space Science
NS.K-4.5; NS.5-8.5; NS.9-12.5	Science & Technology
NT.K-12.1	Basic Operations and Concepts
NT.K-12.3	Technology Productivity Tools
NT.K-12.6	Technology Problem-Solving & Decision-Making Tools

Teacher Background Information

In this lab, the student will create an example of a vortex by applying the concept to a tornado in a jar. A vortex is a spiral motion of fluid that sucks everything near it toward its center. In terms of a tornado, the fluid for the vortex is air. A tornado develops when a thunderstorm draws up air from the ground, creating unstable conditions of warm and cool air. The warm air will be rising while the cool air is falling causing the rotation of a vortex, hence a tornado is formed.

MATERIALS

Document Camera	(2) 2-Liter Plastic Bottles
Personal Computer	Water & Food Coloring
Interactive White Board/Projector	Duct Tape

PROCEDURE

1. Fill one of the 2-liter plastic bottles with 2/3 water and food coloring of your choice.
2. Take the duct tape and secure the other 2-liter plastic bottle on top of the one filled with water.
3. Make sure you have enough tape where the plastic bottles meet so no water can escape.

   You may also purchase a tornado tube from scientific supply houses that can connect the bottles easily.
4. Turn the tornado producer, so the bottle with the water in it is on the top.
5. Swirl the tornado producer in a circular motion.
6. A tornado should form in the upper 2-liter bottle as the water rushes down into the bottom of the 2-liter bottle.

DISCUSSION

1. Explain how the Earth experiences different seasons in different hemispheres?
2. How does the Northern Hemisphere experience winter while the Southern Hemisphere experiences summer?
3. What tools do meteorologists use to make accurate predictions about weather?
4. Why does air pressure have to be regulated in airplanes?
5. How is a vacuum cleaner like a real tornado?
6. What causes a tornado to form and cause destruction on the ground?

PRESENTATION

Have students prepare a lab report including the data, images, and video to give a presentation on the interactive white board or projector for the class.

EXTENSION

- ✓ Add monopoly houses and hotels into the bottle to represent debris.
- ✓ Have students research about an actual tornado in history, describing the effects on the local geography.