

## Core Skills Analysis

### Science

Rosalie set up a vortex tube, filled it with coloured water, and turned the tube upside down to watch the water spin in a tight spiral. She observed how the water formed a miniature tornado, noting the central low-pressure area and the rapid rotation around it. By comparing the motion of the water to a real tornado, Rosalie learned that rotating columns of fluid (or air) are created by differences in pressure and that the shape of a vortex is consistent whether it is water or air.

### Mathematics

Rosalie measured the volume of coloured water she added to the tube using a graduated cylinder, recording the amount in millilitres. She then timed how many seconds it took for the water to complete ten full rotations, calculating an average rotation speed. Through these actions, Rosalie practiced measuring volume, using basic units of time, and performing simple division to find rotations per second.

### Language Arts

After the experiment, Rosalie described what she saw in clear, complete sentences, using words like "spiral," "vortex," and "swirl." She labeled a drawing of the tube with a short caption that explained the steps she followed and the science behind the motion. This helped her practice sequencing, scientific vocabulary, and writing explanatory text appropriate for a six-year-old.

### Geography

Rosalie linked the swirling water to real-world tornadoes and hurricanes, recognizing that both are powerful rotating weather systems. She learned that tornadoes form over land while hurricanes develop over warm ocean water, but both share the same basic vortex shape. This connection gave her an early understanding of how local weather phenomena fit into larger climate patterns.

### Tips

To deepen Rosalie's learning, try keeping a Weather Observation Journal where she records daily cloud types and wind direction alongside simple sketches. Next, build a larger clear-bottle vortex using a straw and dish soap to compare how viscosity changes the swirl. Then, explore wind speed by placing a fan near a sheet of paper and measuring how far the paper travels in a set time. Finally, map recent local storms on a simple map and discuss why some areas experience tornadoes while others see hurricanes.

### Book Recommendations

- [The Magic School Bus Gets a Bright Idea: Inside a Tornado](#) by Joanna Cole: Ms. Frizzle takes her class on a whirlwind adventure inside a tornado, explaining how wind, pressure, and rotation create the spectacular vortex.
- [Weather Wizards: The Amazing Science of Storms](#) by Emily Goodman: A picture-book that introduces young readers to tornadoes, hurricanes, and other weather wonders with bright illustrations and simple explanations.
- [My First Book of Storms](#) by Megan Coe: An engaging introduction to storms for early readers, featuring tactile pages that let children feel wind and rain while learning key vocabulary.

## Learning Standards

- Science – ACSSU048 (Year 2): Investigate weather phenomena, focusing on the causes and effects of rotating storms.
- Mathematics – ACMMG095 (Year 2): Measure and compare volumes of liquids using appropriate units.
- Mathematics – ACMMG112 (Year 2): Interpret simple data sets, such as rotation counts over time.
- English – ACELA149 (Year 2): Use scientific vocabulary accurately in spoken and written explanations.
- Geography – ACHASSK062 (Year 2): Describe how local weather events fit into broader Earth-system processes.

## Try This Next

- Worksheet: Draw a cross-section of the vortex tube and label the water inlet, spin zone, and exit, then write one sentence describing each part.
- Quiz: Multiple-choice questions about why water spirals (e.g., “What creates the low-pressure centre?”).
- Experiment Prompt: Add a drop of food colouring to the water before the spin and record how the colour spreads through the vortex.
- Writing Prompt: In three sentences, explain how a tornado forms in the sky using the same ideas Rosalie saw in the water.