Twisting and Turning

**Specific Expectations:**

2.2 Use scientific inquiry/experimentation skills to investigate the properties of air.

2.3 Investigate characteristics and adaptations that enable living things to fly.

2.4 Use technological problem-solving skills to design, build and test a flying device.

3.1 Identify the properties of air that make flight possible.

**Big Idea (for lesson):**

Students will investigate how plants interact with their environment, and specifically will explore how plants transport seeds by taking advantage of properties of air and flight.

**Accommodations:**

- Increase time
- Visual Aids
- Manipulatives
- Chunking
- Step-by-Step
- Scaffolding
- Copy of Notes
- Student Grouping

**Differentiated Instruction:**

- Content: Use demo to show the content as you offer verbal descriptions.
- Process: Have students work in pairs and support each other if physical impediments exist.
- Product: Students may show their final product in pairs, and communicate their findings either verbally, visually, or through written means.
- Other: ________________

**Bloom’s Taxonomy:**

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

**Multiple Intelligence:**

- Verbal/Linguistic
- Logical/Mathematical
- Visual/Spatial
- Bodily/Kinesthetic
- Naturalist
- Musical/Rhythmic
- Interpersonal
- Intrapersonal

**Delivering The Lesson:**

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<tr>
<th>Portion &amp; Timing</th>
<th>Grouping:</th>
<th>Introduction:</th>
<th>Materials</th>
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<td>Minds On:</td>
<td>W S I</td>
<td>Teacher begins by doing a Predict, Observe, Explain demo with students showing Bernoulli’s Principle: -Hold a strip of paper close to their lips</td>
<td>-Narrow strip of light paper</td>
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and blow across the top.
- Paper responds by moving up, towards the stream of moving air, which is often unexpected.

Ask students the following questions:
- Where is air moving faster, above or below the paper? (Answer: above.)
- Based on your observations, does slower-moving or faster-moving air exert more pressure? (Answer: slower-moving air, so it was able to push the sheet up.)
- How does this relate to aircraft design? (Answer: Engineers use this property to give lift to airplanes and other crafts.)

### Action: 15 mins

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Have students build their own Twisting & Turning widgets according to the instructions on the handout. Teacher can circulate and ask questions of the different groups:
- Why do you think some seeds have longer tails or double seeds? (Answer: Perhaps to get a longer flight path so that the seeds get further from the parent plant; some seeds may be doubled to better the chances of one being successfully deposited and planted.)
- Do you see any similarities between a flying seed and a kite? What are some similarities and differences?

### Consolidate: 20 mins

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Explore the properties of air discussed in the hand-out with three different activities:
- See Activities 1, 2, and 3 on [http://www.sciencenorth.ca/schoolenews/Flight.pdf](http://www.sciencenorth.ca/schoolenews/Flight.pdf)

Spend 5 minutes on each activity as a large group, then 5 minutes at the end discussing how these properties contribute to flight.