Moving Air: 1.B.III

Pinwheels

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>1</th>
</tr>
</thead>
</table>
| Sessions    | Session I: Introduction to Pinwheels – 20 minutes  
Session II: Build a Pinwheel – 30 minutes |
| Seasonality | N/A |
| Instructional Mode(s) | Whole class |
| Team Size | N/A |

**MA Frameworks**

Skills of Inquiry
1. Ask questions about objects, organisms, and events in the environment.
2. Tell about why and what would happen if?
3. Make predictions based on observed patterns
6. Discuss observations with others

Earth and Space Science
2. Understand that air is a mixture of gases that is all around us and that wind is moving air

Technology/Engineering
1. Materials and Tools
1.3 Identify and describe the safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct simple structures.

**WPS Benchmarks**

01.SC.IS.01
01.SC.IS.02
01.SC.IS.03
01.SC.IS.06
01.SC.ES.01
01.SC.TE.03

**Key Words**
Pinwheel, wind

**Summary**

This lesson will continue to teach students about moving air. Students will make their own pinwheels and then test them to see if they work and how air moves the wheels.

**Learning Objectives**

*Massachusetts Frameworks for Grades Pre K-2*

**Skills of Inquiry**
1. Ask questions about objects, organisms, and events in the environment.
2. Tell about why and what would happen if?
3. Make predictions based on observed patterns
6. Discuss observations with others

**Earth and Space Science**
2. Understand that air is a mixture of gases that is all around us and that wind is moving air
Technology/Engineering

1. Materials and Tools

1.3 Identify and describe the safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct simple structures.

2002 Worcester Public Schools (WPS) Benchmarks for Grade 1

01.SC.IS.01 Ask questions about objects, organisms, and events in the environment.
01.SC.IS.02 Tell about why and what would happen if?
01.SC.IS.03 Make predictions based on observed patterns.
01.SC.IS.06 Discuss observations with others.
01.SC.ES.01 Understand that air is a mixture of gases that is all around us and that wind is moving air.
01.SC.TE.03 Identify and describe the safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct simple structure.

Additional Learning Objectives

1. Understand what wind is.
2. Understand the movement of an object is in relation to the wind direction.
3. Be able to decide if an object will move due to wind.

Required Background Knowledge

1. Moving Air – Wind Socks 1.B.I or Sailboats 1.B.II

Essential Questions

1. What is wind?
2. What is something the wind moves?
3. What is a pinwheel?
4. Why does a pinwheel move?

Introduction / Motivation

Have the students recall what they learned about wind. Ask questions about what moves in the wind.
Procedure

**Session I: Introduction to Pinwheels – 20 minutes**

**Instructor preparation:**
1. Photocopy Wind and Air Experiments (one/student).
2. Obtain a straw, cotton ball, and 1 piece of scrap paper for each student.

**The instructor will:**
1. Ask students to recall what wind is.
2. Distribute straws, cotton balls, and piece of scrap paper for Wind and Air Experiments.
3. Allow students to work on the attached handout.

**Session II: Build a Pinwheel – 30 minutes**

**Instructor preparation:**
1. Photocopy pinwheel template found in the attachment section (one/student).
2. Obtain a thumb tack, 1 piece of construction paper, and a pencil with eraser for each student.

**The instructor will:**
4. Distribute pinwheel template and have students glue this to the construction paper (glue sticks work better than glue).
5. Have students cut out the square to make the pinwheel.
6. Allow students to decorate both sides of their pinwheels with crayons, markers, etc.

7. Instruct students to cut the four lines from the corners until they stop near the center. Make sure students do not cut past where the line ends.

8. Instruct students to put the thumb tack through the first circle, making sure the whole is big enough for the tack to move around freely in the hole. Continue for the second, third, and fourth holes.
9. Once the four corners are held in place by the tack, push the thumb tack through the hole in the center of the paper. Now push the tack into the eraser on the end of the pencil. Your pinwheel is complete!

10. Have students test their pinwheels with either a fan or by going outside and using the wind.
Materials List

<table>
<thead>
<tr>
<th>Materials per student</th>
<th>Amount</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinwheel template</td>
<td>1 sheet per student</td>
<td>Attachment section</td>
</tr>
<tr>
<td>Construction paper</td>
<td>1 sheet per student</td>
<td>Craft store</td>
</tr>
<tr>
<td>Wind and Air Experiments Handout</td>
<td>1 per student</td>
<td>Attachment section</td>
</tr>
<tr>
<td>Glue stick</td>
<td>1 per student</td>
<td>Craft store</td>
</tr>
<tr>
<td>Cotton ball</td>
<td>1 per student</td>
<td>Drug store</td>
</tr>
<tr>
<td>Straw</td>
<td>1 per student</td>
<td>Drug store</td>
</tr>
<tr>
<td>Scrap of paper</td>
<td>1 per student</td>
<td>In classroom</td>
</tr>
<tr>
<td>Thumb tack</td>
<td>1 per student</td>
<td>Office supply store</td>
</tr>
<tr>
<td>Pencil with eraser end</td>
<td>1 per student</td>
<td>Office supply store</td>
</tr>
</tbody>
</table>

Vocabulary with Definitions
1. **Pinwheel** – A toy that spins around when the wind blows.
2. **Wind** – moving air.

Assessment / Evaluation of Students
The instructor may assess the students in any/all of the following manners:
1. Check worksheets.
2. Ask questions: make sure students know what a pinwheel is and that if the wind blows faster, the pinwheel will spin faster.

Lesson Extensions
N/A

Attachments
1. Pinwheel template
2. Wind and Air Experiments handout

Troubleshooting Tips
None

Safety Issues
Students should be supervised at all times. Make sure that students are safe with thumb tacks.
Additional Resources
N/A

References for Pictures
None

References for Lesson Ideas
Creative Teaching Press; “MORE Alternative to Worksheets,” Pinwheel Pattern, pg. 94

Key Words
Pinwheel, wind
Pinwheel Template
Wind and Air Experiments

Directions:

Using a straw, a cotton ball, and a scrap of paper, complete the following exercises.

Put a check mark in the “yes” or “no” circle for each exercise.

1) Blow through your straw against your hand. Can you “feel” air?

   □ YES
   □ NO

2) Can you make a cotton ball move without touching it? How?

   □ YES
   □ NO

3) Can you pick up a small piece of paper with your straw? How?

   □ YES
   □ NO