Dear Teachers,

The following pages have been designed with you in mind. Flip through this book to find exciting, hands-on ideas for teaching weather concepts with a pocket chart! (LER 2206)

Pocket Chart Science – Weather has been developed to provide creative teaching ideas and reproducible activities to support the use of a pocket chart. Suggested activities are designed to attract all types of learners. They encourage listening, speaking, observing and manipulating words and pictures to familiarize children with weather concepts. In addition, this book contains 152 ready-to-use cards to aid you in teaching weather. The cards display illustrated pictures and/or words to use within each lesson, and are color-coded for handy organization. A Cards-At-A-Glance chart shows what is pictured on each card, and is located in the back of the book for easy reference. Also included is a Reading List to help you build a classroom library to encourage an interest in weather, seasons, and meteorology.

This book quickly becomes a compact storage file! Tear out the sheets of cards along the perforated lines. Laminate the cards for extra durability, cut them, and store them in the pocket provided on the back cover of the book. As you use them, tear out the blackline master pages for photocopying, then use the folder pocket on the inside front cover for storage.

1. What is Weather?

Place the word Weather at the top of the pocket chart. Ask students what they think weather is. From their suggestions, lead them to understand that “weather is the condition of the air around us.” Explain that the air around us is called the atmosphere, and that most weather occurs in the atmosphere. Ask children if they know the name of someone who studies the weather. Take suggestions, and lead students to understand that a meteorologist is a person who studies, records, and forecasts the weather. Explain that they are going to become meteorologists as they start to learn more about the weather in this unit.

2. What We Know About the Weather

On a large piece of paper, chart what the children already know about weather and what they want to learn about the weather in this unit. Refer to the chart as you present different weather concepts to children.

3. Hands-On Weather Resources

Visit a weather station to see weather tools in action or do research on the Internet about weather facts and meteorologists. Invite children to list their weather questions before beginning the unit about weather, and refer to them at the end of the unit.
Teaching Notes: Types of Weather

Cards needed: (red ☀️)

<table>
<thead>
<tr>
<th>Things we do</th>
<th>when it is...</th>
<th>sunny</th>
<th>windy</th>
</tr>
</thead>
<tbody>
<tr>
<td>rainy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cloudy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stormy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>snowy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a hurricane</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a tornado</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>foggy</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Presenting the concept:
The weather really makes a difference in our day! We dress according to the weather, do different activities depending on the weather, and feel differently due to the weather. Invite students to name types of weather conditions. Place these words in a column down the left side of the pocket chart, as students say them. Then place the heading Things we do when it is... at the top of the pocket chart. Show the picture cards to students, and ask them to identify what is shown in the pictures and what type of weather allows for it to happen. Place the picture cards on the pocket chart next to each descriptive weather word. Some types of weather may have more than one picture.

Follow-up activity:
Have students recall a time when the weather affected their day. Invite them to share stories of how “things changed” because of the weather (mood, clothes, ability to do something). Have students write their stories and illustrate them for display on a weather bulletin board.
Activity 1

Things We Do In Weather

Directions: Look at the following pictures.
Match the activities to the appropriate type of weather.

Activity 1

sunny
rainy
snowy
windy
hurricane
tornado
Teaching Notes: Weather Tools

Cards needed: (orange ☀)

<table>
<thead>
<tr>
<th>Weather</th>
<th>Tools</th>
<th>A</th>
<th>measures</th>
<th>air pressure</th>
<th>anemometer</th>
</tr>
</thead>
<tbody>
<tr>
<td>wind direction</td>
<td>wind speed</td>
<td>precipitation</td>
<td>humidity</td>
<td>temperature</td>
<td>barometer</td>
</tr>
<tr>
<td>rainfall</td>
<td>wind sock</td>
<td>rain gauge</td>
<td>thermometer</td>
<td>hygrometer</td>
<td></td>
</tr>
</tbody>
</table>

Presenting the concept:

Ask children to name a tool that measures. Answers should include ideas like rulers (measure distance), measuring cups (measure solid and liquids), stopwatches and clocks (measure time), etc. Explain that there are also tools that measure the weather. Place the words Weather Tools at the top of the pocket chart. Ask children to brainstorm different aspects of the weather that can be measured (i.e., temperature, wind speed, etc.). As they guess, place the word cards in a column down the right side of the pocket chart. (Place the A under Weather Tools at top of the pocket chart.)

Introduce the tools used for each weather condition in the order that children suggested. Place the picture of each tool with its written name in a column down the left side of the pocket chart. Place the word measures between the two columns to form statements about weather tools. For example, “A thermometer measures temperature” would be one statement on the pocket chart.

Lead students to create these other statements:

“An anemometer measures wind speed.”
“A windsock measures wind strength.”
“A barometer measures air pressure.”
“A rain gauge measures precipitation.”
“A hygrometer measures humidity.”
“A wind vane measures wind direction.”

Follow-up activity:

Remove all cards except for the written names of the weather tools. Ask students to describe a weather tools by how it works or what it measures, and have other students guess which tool they’re describing. For example, “This tool is made of two thermometers with a cloth dipped in water. It measures humidity, the moisture in the air,” (hygrometer). The person who guesses the answer can place the picture on the pocket chart next to the name of the tool.
# Weather Tools

**Activity 2**

Directions: Look at the pictures. Draw a line to match the picture to the name of the weather tool. Write what the tool measures on the line beside each name.

<table>
<thead>
<tr>
<th>Tool</th>
<th>measures . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>anemometer:</td>
<td></td>
</tr>
<tr>
<td>barometer:</td>
<td></td>
</tr>
<tr>
<td>hygrometer:</td>
<td></td>
</tr>
<tr>
<td>wind vane:</td>
<td></td>
</tr>
<tr>
<td>wind sock:</td>
<td></td>
</tr>
<tr>
<td>thermometer:</td>
<td></td>
</tr>
<tr>
<td>rain gauge:</td>
<td></td>
</tr>
</tbody>
</table>
**Teaching Notes: The Water Cycle**

**Cards needed:** (yellow ☀️)

<table>
<thead>
<tr>
<th>The Water Cycle</th>
<th>evaporation</th>
<th>precipitation</th>
<th>condensation</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Sun" /></td>
<td><img src="image2.png" alt="Water" /></td>
<td><img src="image3.png" alt="Evaporation" /></td>
<td><img src="image4.png" alt="Condensation" /></td>
</tr>
</tbody>
</table>

**Presenting the concept:**
Ask children to observe clouds outside. Spark their interest with questions like, “What are clouds made of? How do they form? What makes them differ in size and color?” These concepts are easily explained by the Water Cycle. Place the pictures and words bolded below in a circle on the pocket chart to help you present this concept. (See page 7 for an example.)

**The Water Cycle**

Sun ☀️ shines and warms the water in lakes, streams, rivers, and oceans on Earth.

When water warms up, it changes from a liquid to a gas called water vapor, and is released into the air. This is called evaporation. The water vapor rises high up into the sky. The higher it gets, the cooler the air temperature becomes. This causes the water molecules to hang in the air, gathering together with other water molecules to become water droplets again. This is called condensation.

When water molecules condense, they form a cloud. As warm air rises off the Earth, it pushes the water vapor in clouds upwards, creating taller, fluffier clouds.

Sometimes the water molecules within a cloud become too heavy, and the cloud releases the water as precipitation. Precipitation falls from clouds into lakes, streams, rivers, and oceans on Earth, and the cycle starts all over again. Precipitation takes on many different forms: rain, hail, snow, sleet, or ice.

The color of clouds is determined by the amount of water in them. When the white light of the sun hits the water droplets in a cloud, our eyes see its scattered colors as white. That is why most clouds are white. Darker storm clouds contain a lot of water, so the white light of the sun cannot pass through them.

**Follow-up activity:**
Invite children to come up to the pocket chart to reiterate what you’ve presented. For a review, remove all of the cards, and invite students to replicate the lesson using the pocket chart.
’Round and ’Round it Goes...

Directions: Look at the pictures below. Describe what is happening in each step of the Water Cycle. Choose from the Word Bank.

The Water Cycle

1. __________

Word Bank
- Precipitation
- Condensation
- Evaporation

2. __________

3. __________
**Teaching Notes: Clouds**

**Cards needed:** (green)

<table>
<thead>
<tr>
<th>Clouds</th>
<th>cirrus</th>
<th>cumulus</th>
<th>nimbus</th>
<th>stratus</th>
</tr>
</thead>
</table>

**Presenting the concept:**

After presenting the Water Cycle, children should be familiar with the process of how clouds are formed. The altitude at which clouds form, as well as the weather trends in which they are formed, make clouds appear in different ways. Take a look outside. Describe the clouds as you see them. Are they small and wispy like a horse's tail? Thick and clumpy like a cotton ball? Straight and gray like a winter blanket? Use words like these to help children describe the various types of clouds on different days.

Present clouds to children using a pocket chart! Place the title **Clouds** at the top of the pocket chart. Explain that different types of clouds have different names, based on where we see them in the sky and what they look like. Different clouds also predict various weather conditions.

- **Hold up a picture of a stratus cloud.** Ask students to describe the weather when they saw this type of cloud. Explain that this is a stratus (STRAY tus) cloud, which lies low to the ground, blanketing Earth in straight layers. This cloud type often brings drizzle or snow. Place the cloud next to its name on the pocket chart.

- **Hold up the picture of a cumulus cloud.** Ask how many students have seen or drawn a cloud like this before. Explain that this is a cumulus (KEW mew lus) cloud. It looks like a cotton ball or cauliflower, and is seen most often on sunny days. Cumulus clouds often billow in the center, as warm air pushes the water molecules up within a cloud. Place the cloud next to its name on the pocket chart.

- **Hold up a picture of a nimbus cloud.** In Latin, the word nimbus (NIM bus) means “rain,” and this cloud is very indicative of such weather. We see dark, nimbus clouds right before a rain or snowstorm. Cumulonimbus clouds are often called “anvil clouds,” as they can rise up to 11 miles in height, looking like an anvil in the sky. Place the cloud next to its name on the pocket chart.

- **Hold up a picture of a cirrus cloud.** Cirrus (SEER us) clouds are the light, wispy clouds that hang highest in the air. The farther away it is from Earth, the colder air gets. Warm air can hold more moisture than cold air. That explains why lower clouds in warmer temperature zones are fluffier and fuller than the light wispy clouds high up in the colder air. Cirrus clouds are situated in the coldest of air temperatures, so they are actually made of ice crystals. Place the cloud next to its name in the pocket chart.

**Follow-up activity:**

Review the names of clouds you’ve presented on the pocket chart. Explain that these four basic types of clouds can also be combined to form other clouds which have characteristics of both types. Create your own pocket chart word cards for other cloud types: cumulonimbus, nimbostratus, stratocumulus, altostratus, altocumulus, cirrocumulus, cirrostratus. Hold up each card and read it together with the class. Ask children, based on the name alone, what they think the cloud would look like, where it would be seen in the sky, and what type of weather it would bring. Use the books listed on page 32 for further research.
Activity 4

Clouds

Directions: Look at the pictures below. Name the cloud on each line by choosing a word from the Word Bank. Then draw a line to match the word to its description.

Word Bank

- stratus
- cumulus
- nimbus
- cirrus

lies low to the ground, blanketing Earth in straight layers

looks like a cotton ball or cauliflower, and is seen most often on sunny days

dark, full clouds seen right before a rain or snowstorm

light, wispy clouds that hang highest in the air
Teaching Notes: Rainbows

Cards needed: (blue ☀)

Presenting the concept:
Ask children, “What color is the Sun?” Explain that even though the Sun looks yellow, and we usually draw it yellow, it is actually made up of seven different colors: red, orange, yellow, green, blue, indigo and violet, all jumbled together! Place ☀ in the pocket chart. Explain that when the Sun shines through particles of dust in the air, certain colors shine through more vividly. For instance, sometimes the sky appears pink and purple. The red and purple colors of the sunlight are being caught by the dust particles in the air.

If the Sun is shining during a rainfall, the true colors of the Sun are seen in a rainbow. A rainbow is a circle of seven colors that we see on Earth as an arch. A rainbow can only be observed if the sun is behind you, shining through the raindrops in front of you. (Place ☂ to the right of the Sun, and place ☃ to the the right of that, like an equation.) Summarize by saying, “As the Sun shines through the drops, the white light of the Sun is bent into the seven colors of the rainbow, seen as a beautifully colored arch in the sky.”

Follow-up activity:
Experiment with rainbows. With the Sun behind you, spray water from a garden hose, and observe a rainbow being formed. If you can’t do an outside activity, use prisms or a cut piece of glass from a chandelier or figurine at a sunny window, and reflect tiny rainbows inside the room! Encourage children to illustrate rainbows, or bring in pictures of rainbows they’ve photographed or seen in magazines.
**Activity 5**

**In Search of Rainbows**

Directions: Look at the Word Bank below. Highlight or circle all of the words in the word search.

### Word Bank

<table>
<thead>
<tr>
<th>sun</th>
<th>reflect</th>
<th>green</th>
</tr>
</thead>
<tbody>
<tr>
<td>rain</td>
<td>red</td>
<td>blue</td>
</tr>
<tr>
<td>drops</td>
<td>orange</td>
<td>purple</td>
</tr>
<tr>
<td>white light</td>
<td>yellow</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A</th>
<th>G</th>
<th>D</th>
<th>R</th>
<th>O</th>
<th>P</th>
<th>S</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>R</td>
<td>A</td>
<td>I</td>
<td>N</td>
<td>A</td>
<td>V</td>
<td>H</td>
</tr>
<tr>
<td>R</td>
<td>E</td>
<td>D</td>
<td>R</td>
<td>Y</td>
<td>V</td>
<td>U</td>
<td>I</td>
</tr>
<tr>
<td>C</td>
<td>E</td>
<td>Q</td>
<td>P</td>
<td>E</td>
<td>S</td>
<td>W</td>
<td>T</td>
</tr>
<tr>
<td>D</td>
<td>N</td>
<td>O</td>
<td>O</td>
<td>L</td>
<td>P</td>
<td>X</td>
<td>E</td>
</tr>
<tr>
<td>E</td>
<td>I</td>
<td>R</td>
<td>B</td>
<td>L</td>
<td>U</td>
<td>E</td>
<td>L</td>
</tr>
<tr>
<td>F</td>
<td>H</td>
<td>A</td>
<td>N</td>
<td>O</td>
<td>R</td>
<td>Y</td>
<td>I</td>
</tr>
<tr>
<td>S</td>
<td>U</td>
<td>N</td>
<td>M</td>
<td>W</td>
<td>P</td>
<td>Z</td>
<td>G</td>
</tr>
<tr>
<td>G</td>
<td>J</td>
<td>G</td>
<td>L</td>
<td>B</td>
<td>L</td>
<td>A</td>
<td>H</td>
</tr>
<tr>
<td>K</td>
<td>R</td>
<td>E</td>
<td>F</td>
<td>L</td>
<td>E</td>
<td>C</td>
<td>T</td>
</tr>
</tbody>
</table>
**Teaching Notes: Seasons**

**Cards needed: (purple ☀️)**

<table>
<thead>
<tr>
<th>The</th>
<th>Seasons</th>
<th>summer</th>
<th>fall</th>
<th>spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>winter</td>
<td>northern</td>
<td>southern</td>
<td>hemisphere</td>
<td></td>
</tr>
</tbody>
</table>

**Presenting the concept:**

Place the title *The Seasons* in the Pocket Chart. Ask students, “What is a season?” Invite them to give examples. Ask them to share their thoughts on the seasons, a fond seasonal memory or why a particular season is their favorite. Ask students, “What makes the seasons occur?”

Explain that Earth is a sphere that rotates, or moves in a circular direction, on a tilted axis every 24 hours, (one day). (Display 🌞 in the pocket chart.)

As it spins on its axis, it also revolves in an orbit around the Sun. (Display ☀️ in the pocket chart.) It takes the earth 365 days (one year) to make one complete revolution around the Sun. The position of Earth at a given time of year is different due to its revolution and rotation on its axis.

Through the center of Earth is an imaginary line called the equator. The equator separates Earth into two halves, or hemispheres. The top half is named the northern hemisphere and the bottom half is called the southern hemisphere. (Label the picture of Earth with northern and southern to illustrate.) Because Earth is on a tilt, the part of Earth that is positioned closer to the Sun experiences warmer seasons, like summer and fall, and the opposite hemisphere, tilted away from the Sun, experiences colder seasons, like winter and spring. This explains why it is summer in Australia when it is winter in North America. Place the season names in the pocket chart for reinforcement. Read them together aloud.

**Follow-up activity:**

Mix up the season names and the pictures of trees from different seasons in the pocket chart. Invite students to come up to the pocket chart and arrange the pairs appropriately. Review the concepts of how seasons change and what the weather is like during each time.
Activity 6
Seasons

Directions: Look at the picture below. Write the name of the season that is occurring on the line next to each hemisphere. Some have been given for you!

- spring
- summer
- fall

When it is summer in the northern hemisphere, it is winter in the southern hemisphere.

Look at the pictures below.
Write a letter (W, Sp, S, F,) on the line for the season that is occurring.
# Teaching Notes: Be a Meteorologist

## Cards needed: (pink)

<table>
<thead>
<tr>
<th>Mon.- Fri.</th>
<th>The</th>
<th>is...</th>
<th>makes me</th>
<th>feel...</th>
<th>Fahrenheit</th>
</tr>
</thead>
<tbody>
<tr>
<td>The weekend</td>
<td>Today</td>
<td>Weather</td>
<td>This Week</td>
<td>Celcius</td>
<td></td>
</tr>
</tbody>
</table>

| Trends | degrees | meteorologist | weather | we |

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### Presenting the concept:

Use the pocket chart to graph the weather for a week! Place the title *Weather This Week*, the thermometer picture, and the words *Fahrenheit* and *Celcius* at the top, with the days in a column down the left side of the pocket chart. Place the rest of the cards in a bag or box near the pocket chart. Each day, have a discussion about the weather, and invite a volunteer to place a picture describing the weather next to the day. Encourage students to describe the clouds they see, or any other weather conditions they observe. Report the temperature in numbers under the thermometer symbol each day. Introduce calculating Fahrenheit and Celcius degrees from a thermometer, if age level allows. To the right of the temperature, place a card depicting how this type of weather makes the children feel. Predict what tomorrow’s weather will be, and invite a student to place a picture next to the following day. Check your predictions throughout the week. Review the weather at the end of the week, discussing any seasonal trends that students observe.

### Follow-up activity:

Encourage kids to be a classroom meteorologist for a day! A meteorologist is a person who studies and reports the weather. Watch television weather reports or listen to a meteorologist on the radio together. Invite a local meteorologist to your classroom for a day. Enlist volunteers to present the weather to the class. Encourage students to use the pocket chart to display weather concepts during their presentation.
Activity 7
Weekly Weather Chart
Directions: Fill in the blanks to record the weather for the week.
(Ask your teacher to make copies of this page.)

Day:

Today, the weather is...

It looks...

This weather makes me feel...

Things I like to do in this weather:

Clouds I observe:
### Reading List

**Can You See the Wind?**
Allan Fowler  
Children’s Press, Chicago: 1999

**The Cloud Book**
Tommie dePaola  
Holiday House, NY: 1985

**Curious George in the Snow**
Margaret Rey  
Houghton Mifflin, Boston: 1998

**Down Comes the Rain**
James Graham Hail  

**First Comes Spring**
Anne Rockwell  

**The Magic School Bus: Wet All Over**
Scholastic Trade, NY: 1996

**Pink Snow and Other Weird Weather**
Jennifer Dussling  
Grosset and Dunlap, NY: 1998

**Rain**
Peter Spier  

**Snowtime**
Dave and Julie Saunders  

**Storm’s Coming**
Dave and Julie Saunders  

**Sun Jack and Rain Jack**
Ursel Scheffler  
Gareth Stevens Publications, Milwaukee: 1994

**Sun Up, Sun Down**
Gail Gibbons  

**Weather Words and What They Mean**
Gail Gibbons  
Holiday House, NY: 1990

**What Will It Rain?**
Jane Belk Moncure  
Children’s Press, Chicago: 1977

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### Cards-At-A-Glance

<table>
<thead>
<tr>
<th>Weather</th>
<th>Clouds</th>
<th>The</th>
<th>Monday</th>
<th>Tools</th>
<th>Nimbus</th>
<th>Spring</th>
<th>Wind Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bike ride</td>
<td>Summer</td>
<td>Cold</td>
<td>Fall</td>
<td>Sun</td>
<td>Hygrometer</td>
<td>Windy</td>
<td>Temperature</td>
</tr>
<tr>
<td>Snowman</td>
<td>Globe</td>
<td>Tornado</td>
<td>Hurricane</td>
<td>Windy</td>
<td>Thermometer</td>
<td>Rain Gauge</td>
<td>Rain</td>
</tr>
<tr>
<td>Rainbow</td>
<td>Snowflake</td>
<td>Hurricane</td>
<td>Prevention</td>
<td>Rainy</td>
<td>Degrees</td>
<td>Fahrenheit</td>
<td>Snow</td>
</tr>
<tr>
<td>Stormy</td>
<td>Windy</td>
<td>Spring</td>
<td>Tornado Safety</td>
<td>Cloudy</td>
<td>Seasons</td>
<td>Hemisphere</td>
<td>Snowy</td>
</tr>
<tr>
<td>Rainy</td>
<td>Spring</td>
<td>Leaves</td>
<td>Barometer</td>
<td>Foggy</td>
<td>Stormy</td>
<td>Daytime</td>
<td>Cumulus</td>
</tr>
<tr>
<td>Stormy</td>
<td>Windy</td>
<td>Leaves</td>
<td>Rain Gauge</td>
<td>Stormy</td>
<td>Globe</td>
<td>Wind Speed</td>
<td>Snowflake</td>
</tr>
<tr>
<td>At the beach</td>
<td>Nimbus</td>
<td>Hurricane</td>
<td>Windy</td>
<td>Wind</td>
<td>Snowflake</td>
<td>Evaporation</td>
<td>Snowflake</td>
</tr>
<tr>
<td>Windy</td>
<td>Anemometer</td>
<td>Hat</td>
<td>Stormy</td>
<td>Wind</td>
<td>Cloudy</td>
<td>Wind</td>
<td>Globe</td>
</tr>
<tr>
<td>Windy</td>
<td>Globe</td>
<td>Stormy</td>
<td>Daytime</td>
<td>Wind</td>
<td>Measures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windy</td>
<td>Snow</td>
<td>Stormy</td>
<td>Measures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cards are shown as front-to-back pairs.