
FEATURE

Help children learn about snow

If you live in an area where it snows often or at least occasionally, you can take children outdoors and make snow angels, build a snowman, or have a snowball fight. Too cold to go outdoors? Bring in a bucketful of snow and dump it into the sand and water table.

But what if you live in a sunny state like Texas, or snow in your area is sparse this year? Some teachers use curriculum units that commonly include activities such as making snowmen out of cotton and cutting snowflakes out of paper. Images of snow and ice appear in commercials and store displays as well as animated films like *Ice Age* and *Frozen*.

As a result, children can get confused. “Winter is when it snows,” one might say, “It doesn’t snow here, so we don’t have winter.” Some children may doubt their own perceptions of reality. They may feel they are missing something or there is something wrong with themselves or their community because it doesn’t snow.

Some may argue that it doesn’t really matter how we teach children about snow and winter. After all, most of the country has snow and ice, and children will sort it out eventually. But teachers who hold to high standards know

that conveying incorrect information betrays the principles of the profession. They also understand that preschool and primary school children learn best through hands-on activities with real objects and materials.

What to do?

First, observe and point out the day-to-day changes on the playground and in the neighborhood. Many trees have shed their leaves

and are standing bare, for example. Some trees have produced acorns or pecans, and some shrubs are bursting with red berries. In southern parts of Texas, lemon and orange trees are bearing fruit. The bird feeder has new visitors, and butterflies and insects are mostly gone.

In addition, people wear sweaters, coats, and caps when they go outside. Often when children play outdoors, their noses and ears get



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cold. We close windows to keep out the cold and wind, and put an extra blanket on the bed at night. Some families have fireplaces in their homes and burn wood or gas for extra heat.

Second, plan activities that allow children to experience winter first-hand. Ice is not only cold and wet but also provides an opportunity to learn the scientific concept of *freezing*. Go on a nature walk around the playground or the neighborhood and take pictures of seasonal scenes that you can compare with scenes in spring and summer.

Extend the unit by finding photos of snow and ice on the Internet and adding books about winter to the library center. Two classics are *The Snowy Day* by (1962) Ezra Jack Keats and *Owl Moon* (1987) by Jane Yolen.

Make fake snow using the recipe below—not the best option for giving children the experience of real snow, but they can use it in sensory, pretend, and art activities. And it’s better than cotton.

Background information for the teacher

Frost and snow are solid forms of water vapor created at or below the freezing point, which is a temperature of 32 degrees Fahrenheit and lower. **Snow** forms on tiny particles of dust in a cloud and gradually clumps together as crystals, while **frost** forms directly on objects on the ground. In both, the water vapor changes to solid form without becoming a liquid first. **Sleet** forms when water vapor in warm air turns to liquid, or **rain**, and then falls through a

layer of freezing air.

Dew is another example of how water vapor changes form. Here water vapor near the ground settles on cool grass and leaves in warm air and turns to liquid. To help children understand changes in water vapor, try the condensation activity below.

Ideas for teaching winter

The focus of several activities below is science and discovery. Reflect on your own attitude toward science and if it’s negative, avoid passing that on to children. Instead, adopt a “Let’s see what we can learn together” attitude.

Condensation

(Age 4 and older)

The purpose of this activity is to show the action of water vapor, which can later be linked to how it changes into snow and ice.

Here’s what you need:

- glass of warm water
 - glass of iced water
 - food coloring
 - paper towels
1. Display the two glasses of water and allow them to sit for a few minutes at room temperature. Meanwhile talk with children about their experiences with iced drinks and using a coaster or napkin underneath to soak up the moisture.
 2. When the glass of iced water develops moisture on the outside, encourage children to feel the glass to confirm the presence of water. Ask: “Where did the water come from?” Usually they will suggest that it came

CREATIVE COMMONS: JULIAN COLTON



from inside the glass. Invite them to feel the outside of the glass with warm water to confirm the absence of moisture.

3. Invite a child to wipe the moisture off the sides of the glass with warm water. Place a few drops of food coloring into the iced water. Meanwhile, ask children to predict what color the moisture on the sides will be.
4. Test their prediction by wiping off the moisture with a paper towel. Lo! The water on the paper towel is colorless. Ask: "What is there around the outside of the glass that the water could have come from?" (Air)
5. Explain that the process of water coming out of the air onto objects is **condensation**. Water in the warm air condenses on the outside of the cold glass.

Extended activity 1: Take chil-

dren outdoors in the early morning to find objects that have moisture on them, such as playground equipment and windows. Invite them to touch the objects to observe whether they are warm or cold. Discuss how the object may have gotten cold overnight and, as the sun warmed the air, condensation occurred.

Extended activity 2: Pour a small amount of water in a transparent container, and mark the water level. After a few days, compare the level of water to the mark. It will be lower because the water has evaporated into the air.

Evaporation is the opposite of condensation.

Frost

(Age 4 and older)

This activity requires little or no equipment or materials. The

weather, however, needs to cooperate by dropping the temperature to freezing in early morning.

1. On a cold morning when frost has formed on objects outside, take children to the playground. Invite them to find frost on objects such as playground equipment, windows, and grass.
2. Discuss what caused the frost, referring to the condensation activity above. (The water vapor in the air has turned into a solid rather than a liquid because of the freezing temperature.) Show what happens when a warm hand touches the frost.
3. Check the objects later in the day. Ask: "Is the frost still here?" Look at shaded areas for frost. Discuss again how frost forms from water vapor.
4. Try producing a frost by rinsing a clear plastic glass with warm water. Shake or wipe the glass fairly dry. Place it in the freezer. Check it after 20 to 30 minutes. Where did the frost come from?

Overnight freeze

(Age 2 and older)

If school is canceled because of the ice, you might do this activity at home, take pictures the next morning, and show children the pictures and leaves when school resumes.

Here's what you need:

- child-sized wagon
- water
- old towel
- leaves, taken from an indoor plant, if necessary

1. When you expect an overnight



freeze, partially fill the wagon with water. Invite children to place the leaves in the water. Place the towel in the water with one end sticking out.

2. Explain to children that there will be a freeze overnight. Ask them to predict what will happen to the water.
3. Early next morning, take the children out to see the water. Use the towel to pull the ice out of the wagon. Invite the children to touch the ice, the towel, and the leaves.
4. Point out any changes in surrounding vegetation, such as brown leaves and limp plant stems. Talk with children about other changes brought about by the freeze in the community, such as frozen water pipes and icy streets treated with salt.

Snow is frozen water

(Age 3 and older)

Shaved ice is technically not snow, but it gives children the experience of its cold and wet qualities. Check around your community for a snow cone or *raspado* vendor who may be willing to bring a bucketful of shaved ice to use with your children. Or make shaved ice yourself with a snow cone machine, perhaps borrowed from a parent or friend, or bought from a home appliance store for about \$30. (Use it to make snow cones in the summer.)

Lay newspapers or towels on the floor for easier cleanup. Encourage children to wear smocks to protect their clothing.

Here's what you need:

- snow cone machine
- water

- cups, spoons, and other props

1. Make the shaved ice ahead of time, and place in an empty water table or sandbox just before children will use it. An old sheet or newspaper on the floor will make cleanup easier.
2. Invite children to explore the shaved ice as they would with wet sand or mud. Talk about how the shaved ice feels (cold, wet) and what happens to it (melts into water). Explain how this snow was made by freezing water into ice and then shaving it into tiny particles. Discuss how real snow is made in the sky in freezing air and then falls to the ground.
3. Some children may want to form the shaved ice into balls or make a mini-snowman. Others may want to pat it flat on a surface and make a face, using pebbles or large wooden beads for features and sticks or grass for hair.

Fake snow

If you can't find or make shaved ice, consider offering fake snow as a substitute for sensory exploration, art activities, and pretend play. Make it clear, however, that this snow is fake.

Baking soda and shaving cream. Pour a one-pound box of baking soda into a large bowl. Spray a handful (about $\frac{1}{2}$ cup) of shaving cream on the baking soda and mix. Add more soda or shaving cream until you get the desired consistency. Variation: Mix $2\frac{1}{2}$ cups of baking soda and $\frac{1}{2}$ cup of white hair conditioner.

Chances are you will use all of the fake snow with the children. If not, store the remainder in a plas-

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tic container with a tight lid. Use leftover snow to clean a shower curtain, tile floor, plastic wastebasket, or car tires. Baking soda is a great cleanser and environmentally friendly.

Baking soda. Forget about mixing baking soda with anything. Pour the soda into a large shallow cardboard box, and invite children to make roads in it for playing with tiny toy vehicles.

Dishwashing snow. Pour about a third cup of water into a food processor, and add a few squirts of dishwashing liquid. Process for a few minutes until the foam appears. Pour the foam into an empty baking pan or water table. Invite children to play in the snow with toy vehicles. This foam won't last long, but children will have fun, and the vehicles and food processor will get clean.

Winter wonderland

(Age 3 and older)

Consider setting up this activity in the sensory or art center. In addition to exploring freezing and ice, children can learn about mixing colors. Lay newspapers or towels on the floor for easier cleanup. Encourage children to wear smocks to protect their clothing.

Here's what you need:

- water
- pitcher
- variety of plastic and paper containers such as cups, bowls, cones, popsicle molds, and ice cube trays
- watercolor paints or food coloring
- paintbrush
- metal, rectangular baking pan
- animal figures

1. Fill the pitcher with water and pour the water into the containers.
2. Dip the paintbrush into watercolor and add to the containers, a different color for each container. Or add drops of food coloring to the containers.
3. Place the containers in the freezer and leave overnight.
4. To loosen the ice, tug at the sides of the containers. Gently overturn each container onto the tray.
5. Encourage the children to arrange the frozen shapes into a landscape. Add animal figures, and invite the children to play with them in the winter wonderland.

Ice sculpture

(Age 3 and older)

This activity doubles as an art and science activity. Lay newspapers or towels on the floor for easier cleanup. Encourage children to wear smocks to protect their clothing.

Here's what you need:

- water
- empty pint-sized milk or creamer cartons, one for each child
- salt
- watercolor paints
- metal rectangular baking pans, one for each child
- eyedropper

1. Invite children to fill a milk carton with water. Freeze overnight.
2. Tear or cut off the carton, and place the ice block in a baking pan in the science or art center.
3. Encourage children to sprinkle or pour salt on the ice block. Discuss how salt, which has a lower melting point than water,

makes the ice melt.

4. Invite children to fill an eyedropper with watercolor and squirt on the ice block. The direction and intensity of the squirts determine the shape of the sculpture. Discuss how the color makes holes and tunnels more visible.

Frosty the Snowman

This popular holiday song, first recorded in the 1950s, has been recorded by dozens of artists and made into a book, a film, and a TV special. Teach this song to children as you transition from one activity to the next.

Frosty the Snowman
Was a jolly happy soul
With a corn-cob pipe and a button nose
And two eyes made out of coal.

Frosty the Snowman
Is a fairy tale, they say.
He was made of snow but the children know
How he came to life one day.

There must have been some magic
In that old silk hat they found.
For when they placed it on his head
He began to dance around.

Frosty the Snowman
Was alive as he could be.
All the children say he could laugh
and play
Just the same as you and me.

Thumpety thump thump
Thumpety thump thump
Look at Frosty go.

Thumpety thump thump
Thumpety thump thump
Over the hills of snow.

Sun catchers

(Age 3 and older)

Because the ice will melt in the sun, this activity will provide only temporary enjoyment at school. Consider giving the instructions to parents so children can make sun catchers at home.

Here's what you need:

- water
- shallow, round plastic containers
- nature walk items such as leaves, acorns, berries, tiny sticks, grass
- 6-inch lengths of ribbon or string

1. Invite children to fill each container with water and then place three or four nature items in the water.

2. Show children how to fold the ribbon in half and place the cut ends in the water, leaving a loop outside the container.

3. Freeze overnight.

4. The next day, tug the containers to pop out the sun catcher. Use the ribbon loop to hang on a tree outside the window.

5. After the sun catcher melts, pick up the ribbon loops to avoid littering the playground.

Frozen fruit cups

(Age 5 and older)

Invite children to make their own nutritious snack using seasonal citrus and frozen fruits. Make sure any canned or frozen fruit has no sugar added. Remind children to wash their hands thoroughly before handling food.

Discuss how freezing makes perishable fruits last a long time.

Here's what you need:

- 3 medium bananas
- 6 mandarin oranges
- 1 large apple, cored and diced
- 1 20-ounce can crushed pineapple
- 1 6-ounce can frozen pineapple-orange juice, thawed

1. Peel and slice the bananas. Peel the oranges and separate into sections.
2. Combine all the fruit and juice in a large bowl.
3. Spoon the mixture into plastic cups and cover with plastic wrap or aluminum foil.
4. Freeze until firm.
5. Remove from the freezer about an hour before serving to allow the fruit to thaw slightly. Yield: 20-22 cups.

Variation: Try other frozen fruits such as blueberries, strawberries, and peaches. ■

CREATIVE COMMONS: TWIG AND TOADSTOOL

