

THUNDERSTORMS ON THE PLAINS

Dear Presenter,

This activity is 20 to 25 minute HANDS-ON presentation with approximately 24 ten year olds. You must do this activity at home BEFORE you attempt to lead the activity during the water festival.

As each new group of students arrive, introduce yourself, and let the teacher know this is a hands-on activity and you will need assistance from him/her. If you do not ask for assistance, the teacher will assume that YOU are the expert and they are the observer. Plan when you will ask the teacher for assistance. Do not hesitate to call the teacher by name and get him/her involved.

As each session begins, introduce yourself to the students. “Good morning, my name is.....and I work for.., I am a, or simply I am happy to be here today.” Then introduce the topic of the presentation. Each step of this presentation is explained in this packet. These are recommended guidelines and do not have to be followed exactly word for word. However, you may present this material just as written. Feel free to personalize the presentation to suit you.

Thank you for volunteering to present “Thunderstorms On The Plains.” Have fun, enjoy yourself and we hope you will consider volunteering again next year.

Big Sioux Water Festival

THUNDERSTORMS ON THE PLAINS

MATERIALS LIST (FOR 6 SESSIONS WITH 24 STUDENTS PER SESSION)

CONSUMABLES

- Student handouts
- Water

NON-CONSUMABLES

- Video of "Twister"
- TV and VCR
- 1 squirt gun

THUNDERSTORMS ON THE PLAINS

This activity is a hands-on activity. To best explain and supervise this activity you must do it at home BEFORE the actual presentation.

Background information is provided as a basic overview with both general and specific information. Share this information with the students throughout the activity.

BACKGROUND

This activity is a combination of “follow the leader” and an aerobic exercise. Prepare the students for this activity by stating that a thunderstorm is approaching the water festival. Ask students to try and create a mental picture of an approaching thunderstorm and try to imagine its sights and sounds.

Thunderstorms are one of nature’s most spectacular phenomena. Nationally, the thunderstorm season is from early spring through mid to late fall with the majority of thunderstorms occurring in June and July.

The sights and sounds that accompany a thunderstorm are impressive - bolts of lightning light up the sky, the rumbling sound of thunder - rain, wind and hail. For onlookers, there is usually much nervous anticipation when watching a thunderstorm approach. Will the storm be destructive? Does it have high winds? Will it hail?

In most places, rain is the most common type of precipitation. It usually falls from nimbostratus, altostratus, and cumulonimbus clouds. Contrary to what most people think, raindrops are not tear-shaped blobs of water. Large drops actually look more like tiny round pillows flattened on their bottoms and tops as they fall through the air. Smaller drops are spherical.

Hailstones form in violent thunderstorms. They begin in clouds as small clusters of ice crystals. As the crystals fall through areas of super-cooled cloud droplets, they form “onion-like” layers of ice. Some hailstones can get as big as softballs before they crash into the ground.

As lightning travels, it heats the air in its path very quickly. This quick heating causes air to expand suddenly. As the air expands along the path of the lightning bolt, it vibrates, sending out sound waves that we hear as thunder. Since lightning follows a zigzag path, the sound from a lightning stroke may reach us at different times. That why it sounds like thunder “rumbles.” Some facts about lightning are:

- ▶ Lightning tries to find the shortest path to the earth and that means it will usually strike the highest grounded object in the area. Lightning rods protect buildings by providing a safe path for the lightning to travel.
- ▶ Lightning strikes the earth about 100 times each second

- ▶ A flash of lightning can sometimes be over 5 miles long
- ▶ Lightning temperatures can sometimes reach over 50,000 degrees (F) - that's over five times hotter than the sun's surface
- ▶ More people are killed by lightning each year than by hurricanes, blizzards, or tornadoes
- ▶ By counting the seconds between a lightning flash and the thunder that follows, you can estimate the distance between you and the lightning: about every five seconds equals one mile

Flash floods from even nonviolent thunderstorms can cause dangerous conditions. Rivers, streams, and drainage ditches can turn into raging currents in a very short time - ripping up trees, knocking out bridges, and washing away homes.

Tornados are the most violent of all thunderstorms with spiraling winds that can whirl faster than 200 miles per hour. It's hard to measure the actual speeds of the winds inside a tornado because the instruments can't survive such strong winds! Tornados are dark, funnel-shaped clouds that reach down to the earth's surface from cumulonimbus clouds. Most tornadoes (twisters) don't last more than a few minutes; a few last as long as an hour. But during their short lifetimes they can do millions of dollars worth of damage and take many lives. The most violent winds in a tornado can blow down trees and rip apart buildings, as well as send bricks, nails, pieces of wood, and other debris sailing through the air like missiles at over 100 miles per hour!

Some things to do to be safe during thunderstorms are:

- If you are outside and a thunderstorm develops, go into a house, large building, or enclosed car (not a convertible!)
- If you are stuck outside and can't make it to a building or car remember to stay away from:
 - Metal pipes, wire clotheslines, and metal fences
 - Lakes, ponds, oceans, or any other body of water - if you are in the water get out immediately and go to a shelter
 - Tractors and all farm equipment
 - Railroad tracks
 - Sheds in open areas
 - Bicycles, scooters, golf carts, and motorcycles
 - Tall trees that stand alone in a field or yard
- If you're in a forest or prairie and can't get to a building or car, crouch in a huddled position but don't lie down - you want to make yourself as short as possible
- If you're in a building, don't use a phone unless there is an emergency. Also stay away from electrical appliances, plumbing and computers.
- If you know that a tornado has been spotted in your area and you are inside, you should go to the basement and get under a stairwell or a heavy work bench, table, or desk. If you don't have a basement, then you should get into the center of your house, away from windows and doors leading outside. Your best spot is in a closet or bathroom. Always cover your face with your hands or with a towel.

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ROOM REQUIREMENTS

- A large room without any tables or chairs (if the room is a set up classroom, move all furniture to the perimeter)
- TV and VCR placed so that all students can see the film

PRE-PREPARATION

Pre-preparation can include any or all of the following

- Make 150 copies of “Billy, Maria, and the Thunderstorm” student coloring book
- Line up TV and VCR for your room
- View copy of “Twister” and determine where you’d like to stop the film to best show a thunderstorm. Your film “clip” should not be more than 5 minutes in length.

PREPARATION - Approximately 15 minutes to set up

- Insert “Twister” into VCR and forward to section that you’d like to show. Make sure to make a mental note of the time on the VCR so that at the end of the session you can rewind to the exact spot on the video that you’d like to show again
- Fill up your squirt gun

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INTENDED STUDENT OUTCOMES

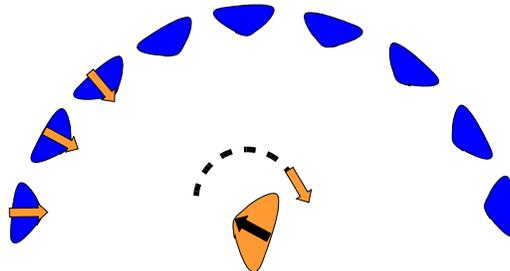
By completing this activity the students should be able to:

- Simulate the sounds of a thunderstorm
- Identify the sounds created by a thunderstorm
- Relate their own experiences with thunderstorms

PROCEDURE

1. Introduce yourself with enthusiasm to your students
2. Seat your students on the floor around you and lead a discussion about thunderstorms. Have students relate their experiences, thoughts, and feelings about storms.
3. Tell students that they are going to be watching a short part of the movie “Twister.” In the video they will see shows a thunderstorm and what it can do.
4. After showing the movie clip, have students stand up and form a half circle in front of you. Make sure that all students can see you.
5. Begin by telling the students that they will need to duplicate all the motions that you are about to make. Lead your students through the following motions:
 - a. Rub your hands together
 - b. Snap your fingers
 - c. Slap your hands on your legs
 - d. Stomp your feet
 - e. Slap your hands on your legs and stomp your feet
 - f. Stomp your feet
 - g. Slap your hands on your legs
 - h. Snap your fingers
 - i. Rub your hands together
 - j. Quiet

students stand in a semi-circle, facing the leader at the center



the leader rotates left to right, leading the students through the motions

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6. Start on the left side of the half circle and slowly rotate to the last person on the right side. As you rotate from left to right, members of the half circle should begin to duplicate the leader's motion, either as he/she points in their direction or makes eye contact with them. This will cause a crescendo effect as you rotate from left to right. It will also cause a fade-in, fade-out of one type of sound to another.
7. When the last person is done rubbing his/her hands the activity is completed.
8. Repeat the activity one more time. Have a student helper lead the activity with you. During step "E" (slap your hands on your legs and stomp your feet), walk over to the light switch and rapidly turn it on and off to help create a "lightning" atmosphere. During step "F" give gentle squirts from your squirt gun to the students. This will cause a lot of squealing and laughing and will indicate that "rain" has happened in the thunderstorm. Finish the activity.
9. This activity can be repeated multiple times, with different student leaders or the teacher leading, depending on time constraints.

CLEAN UP AND SET UP FOR NEXT SESSION

1. Rewind video to your pre-determined position
2. Refill the squirt gun
3. After students have finished the activity, compliment them on their good behavior, answer any questions they may have, and distribute handouts.

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FINAL CLEAN UP **Approximately 15 minutes**

- Replace all instructions and cue cards in folder
- Gather any unused copies of handout and place with presenter kit folder
- Empty squirt gun
- Rewind video and shut off TV/VCR
- Replace video, squirt gun and instructions in storage container